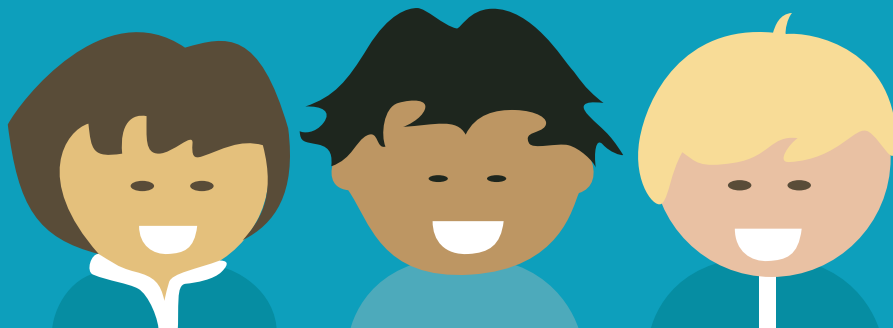


IASCL 2011

MONTREAL

The International Association for the Study of Child Language

12th Congress | 19 - 23 July, 2011 | Montréal, Canada



**Social, genetic and cognitive determinants
in the acquisition and development of language**

The International Association
for the Study of Child Language



Social, genetic and cognitive determinants in the acquisition and development of language

12th Congress, 19 – 23 July 2011

Université du Québec à Montréal, Canada

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WELCOME

Welcome to the campus of Université du Québec à Montréal for the 12th meeting of the International Association for the Study of Child Language. The IASCL conference is the largest interdisciplinary event in the field, bringing together researchers from diverse horizons with a common interest in child language.

An excellent program is offered, including 63 thematic symposia (250 oral presentations) and 343 posters. We received a high volume of submissions (over 600 poster abstracts, and 98 symposium submissions). All proposals were reviewed by a minimum of two external referees who paid special attention to originality, coherence, methodology and significance to the field. Many thanks go to all who graciously contributed their time to evaluate large number of abstracts for the conference.

There are several special events beginning with Tuesday's reception and opening plenary session, including an evening at Pointe-à-Callières Museum (Advance admission ticket required), special poster, training and student competition sessions, and a fun end of day with quite a special guest on Friday.

IASCL 2011 is organized by Henri Cohen with the professional assistance of NeuroSolutions. The conference is sponsored by the Cognitive Science Institute, UQÀM. Special thanks are owed to Elena Lieven and Martha Crago who generously contributed their time, advice and help with many aspects of this conference. Our gratitude also goes to Suzanne Cailloux-Cohen, Sanja Obradovic and Jennifer Desrochers for their tireless efforts and attention to detail in organizing this conference.

We very much hope that, in addition to enjoying and learning from the conference, you'll have a chance to explore the UQÀM campus and the many cultural events that Montreal is offering this summer. And we hope that you will join IASCL in Amsterdam, summer of 2014.

July 2011

Henri Cohen
Université du Québec à Montréal & Université Paris Descartes-CNRS

NeuroSolutions Inc
Montréal

GENERAL INFORMATION

Venue

IASCL 2011 will be held in three adjacent pavilions of the *Université du Québec à Montréal* conveniently identified during the Congress as:

- **IASCL Central** Color-coded signage: Teal (Judith Jasmin - J Building)
- **Satellite 1** Color-coded signage: Lime (Sciences de la gestion - R Building)
- **Satellite 2** Color-coded signage: Orange (De Sève - DS Building)

The main entrances to the conference are located at:

- 405 Ste-Catherine E.
- Berri-UQAM Metro Station, Exit *Université du Québec à Montréal (UQAM)*

Registration

The registration desk is located in **IASCL Central** (Metro level of J Building), 405 Ste-Catherine E.

Pre-registered participants are entitled to:

- Conference bag, name badge and conference material
- Attendance at plenary lectures, symposium, special and poster sessions
- Morning refreshment breaks as published in the program
- Invitation to the Pointe-à-Callière Museum (Advance admission ticket required).
- Invitation to IASCL's in-house comedy show

The Registration Desk will be open at the following times:

Tuesday July 19	10:15 - 18:30
Wednesday July 20	07:45 - 16:00
Thursday July 21	07:45 - 16:00
Friday July 22	07:45 - 16:00
Saturday July 23	07:45 - 12:00

Refreshment and lunch arrangements

Coffee, tea and juice will be served during breaks in **Satellite 1** (metro level, R-Bldg) and **Satellite 2** (ground floor, DS-Bldg). Please, note that lunch **is not** provided at this conference. Pre-paid lunch boxes will be distributed in **IASCL Central** (12:30 – 13:00, corridor). A list of local restaurants and bars is included in the conference bag.

Location of lecture amphitheaters

All plenary and poster sessions will be held in **IASCL Central**. Parallel symposium sessions will take place in **Satellite 1** (Amphitheaters A, B, C, D) and **Satellite 2** (Amphitheaters E, F, G, H).

Information for symposium conveners and speakers

All lecture amphitheaters are equipped with Windows laptop and data projector. Each symposium consists of four presentations and is allocated a total of two hours, including time for questions. Chairs should ensure that speakers strictly observe the time allocated to them and follow the order of presentations listed in the program. (This is especially important so that participants can rely on the start and finish times for each session when planning their conference activities). Speakers must bring a copy of their talk on USB flash memory drive (with embedded files, if required), compatible with MS PowerPoint and use the PC in situ. Please locate your session room at least 30 minutes prior to the start of the session.

Information for poster presenters

Posters are set up by 10:00 and removed promptly at 18:30 on the day they are scheduled. Posters will be located in the foyers of Marie-Gérin-Lajoie and Alfred-Laliberté Halls (**IASCL Central**). Although posters can be viewed any time during the day, poster discussion takes place at 16:45 - 18:30 with the responsible author present to interact with conference attendees. Hors d'oeuvres are served and there is a cash bar.

Full presentation of symposium and poster abstracts

Available for download only (as pdf doc) from the conference website.

Internet access

Campus wireless internet access (WiFi) is provided to all conference attendees. The necessary information for connecting to the campus network will be available at registration. Internet access is also available at the conference hotels.

Conference etiquette

Mobile phones should be switched off during sessions. Please also respect speakers and other participants and refrain from talking during presentations.

Social program

- *Welcome Cocktail Reception*
Tuesday July 19 – 17:00 to 18:30, IASCL Central • Agora

Enjoy a warm welcome to Montréal and the 12th International Congress for the Study of Child Language. Meet and mingle with colleagues from all over the world while enjoying a drink and canapés in the grandiose setting of the UQÀM Agora whose unique architecture integrates the historical site of the ancient Saint-Jacques neo-gothic church. The Welcome Cocktail Reception will be followed at 18:30 by the Opening Plenary Session.

- *Social evening at the Pointe-à-Callière Museum* (Advance admission ticket required).
Wednesday July 20 – 19:00 to 22:00

Cocktail, socializing, film presentation and intriguing underground tour of an archaeological crypt, open to the first 250 delegates who confirmed their presence to the event. The Museum rises above the birthplace of Montreal (first known as Ville-Marie), established as a fur trading post in 1611, a base for further French exploration in North America, before becoming one of the first permanent French settlements in the New World in 1642. The Museum also houses evidence of more than 1,000 years of human activity. Canapés and one free drink will be served. There will be a cash bar for extra drinks.

Delegates should make their own way there and back from the events as transportation will not be provided. The [515](#) bus next to IASCL Venue (bus stop on Berri near Sainte-Catherine) brings you directly to the Museum's door. Because of the fireworks competition in Old Montreal on that day at 22:00, you may have to take a 10 minute walk back to your hotel.

- *IASCL's in-house comedy show*
Friday July 22 – 18:30 to 20:00, IASCL Central • Main Amphitheater

Special Comedy-Presentation by Thomas Fraps*
Language Acquisition revisited: Comedy, Magic and the Brain
How to turn adults into children

* *"Germans and Comedy - it takes a magician to make this miracle happen!"*

IASCL 2011 Sponsors

The organisers gratefully acknowledge support from the following sponsors:

- Université du Québec à Montréal
- Cambridge University Press
- Benjamins Publishing
- Institut des Sciences Cognitives
- Wiley

**Book and publisher exhibit**

Exhibits during conference hours in **Satellite 1**:

- Cambridge University Press
- Benjamins Publishing

Insurance

The conference cannot accept any liability for personal injuries, loss or damage to property either during or as a result of the meeting.

Safety and emergency information

Lost objects: Dial 3101 on red phones
Emergency: Dial 3131 on red phones
Medical: Hôpital Saint-Luc, 1058 St-Denis (tel. 514-890-8000)

DAY 1		TUESDAY JULY 19	
10:15 – 18:30	IASCL CENTRAL - FOYER	REGISTRATION	
14:30 – 16:30	IASCL SATELLITE 2, 5 TH FLOOR (DS-5760)	EDITORIAL BOARD MEETING – <i>JOURNAL OF CHILD LANGUAGE</i>	
16:45 – 18:30	IASCL CENTRAL - AGORA	WELCOME COCKTAIL RECEPTION	
18:30 – 19:45	IASCL CENTRAL - AMPHITHEATER	PLENARY SESSION 1 OPENING REMARKS MYTHS AND MISUNDERSTANDINGS ABOUT DUAL LANGUAGE ACQUISITION IN YOUNG LEARNERS FRED GENESEE, <i>MCGILL</i>	



John Benjamins Publishing Company is an independent, family-owned academic publisher headquartered in Amsterdam with a North American office in Philadelphia.

Over the years JB has been firmly rooted in every imaginable subfield of Language and Linguistics. Further fields of focus are Cognitive Science, Psychology, (Contemporary) Philosophy, Terminology, Information Design, Literary Studies and Art History. In the past decade, JB has also been building a significant list of electronic publications.

JB publications are selected under expert academic editorship and peer-reviewing by and for academic researchers and trainers, and include, in addition to works of pure research, excellent university-level course books. JB takes pride in maintaining a constant dialogue with the various academic communities to stay at the forefront of research developments and needs, and in serving as an academic exchange for scholars from every part of the world.

The Conference Program at a Glance | IASCL 2011

DAY 2		WEDNESDAY JULY 20	
7:45 – 16:00	IASCL CENTRAL - FOYER REGISTRATION		
7:45 – 8:30	IASCL CENTRAL - AGORA LIGHT BREAKFAST		
8:30 – 9:45	IASCL CENTRAL - AMPHITHEATER PLENARY SESSION 2 WHERE AND WHITHER? THE ACQUISITION OF SPATIAL LANGUAGE IN A MAYAN CULTURE PENELOPE BROWN, <i>MAX PLANCK INSTITUTE FOR PSYCHOLINGUISTICS</i>		
09:45 – 10:15	COFFEE BREAK (SATELLITES 1 & 2)		
10:15 – 12:30	SYMPOSIUM SESSION 1 – SATELLITE 1		
	AMPHITHEATER A	REFERENTIAL EXPRESSIONS AND TEXT COHERENCE IN PRE-SCHOOL CHILDREN	
	AMPHITHEATER B	BILINGUAL DEVELOPMENT IN CONTEXTS OF VARIATION AND CHANGE	
	AMPHITHEATER C	PROSODIC DEVELOPMENT IN COCHLEAR IMPLANT USERS: A CROSS-LINGUISTIC PERSPECTIVE	
	AMPHITHEATER D	MEMORY SYSTEMS IN LANGUAGE ACQUISITION: CHILDREN AND ADULTS	
	SYMPOSIUM SESSION 1 – SATELLITE 2		
	AMPHITHEATER E	WH-QUESTIONS IN BILINGUAL ACQUISITION	
	AMPHITHEATER F	THE IMPORTANCE OF INFORMATION STRUCTURE FOR EARLY LANGUAGE DEVELOPMENT	
	AMPHITHEATER G	GRAMMAR AND THE LEXICON IN FIRST LANGUAGE ACQUISITION: CROSS-LINGUISTIC PERSPECTIVES ON NOUNS AND VERBS	
	AMPHITHEATER H	GESTURAL SUPPORT FOR LEARNING IN VERBAL CONTEXTS	
12:30 – 14:30	LUNCH LUNCH BOX DISTRIBUTION (IASCL CENTRAL – CORRIDOR) PRE-POSTER SESSION 1 (IASCL CENTRAL – FOYER)		
	SYMPOSIUM SESSION 2 – SATELLITE 1		
	AMPHITHEATER A	EARLY STEPS INTO LANGUAGE IN INFANTS BORN PRE-TERM: PHONETIC PERCEPTION AND COMMUNICATIVE DEVELOPMENT DATA	
	AMPHITHEATER B	THE RELATIONSHIP BETWEEN THE ACQUISITION OF NARRATIVES AND OTHER SKILLS AS SHOWN IN DIVERSE POPULATIONS	
	AMPHITHEATER C	ADVANCES IN THE STUDY OF INPUT EFFECTS IN BILINGUAL DEVELOPMENT	
	AMPHITHEATER D	DEVELOPING PHONOLOGICAL AND MORPHOLOGICAL REPRESENTATIONS UNDER CONDITIONS OF VARIABLE INPUT	
	SYMPOSIUM SESSION 2 – SATELLITE 2		
	AMPHITHEATER E	FACTORS INFLUENCING RETENTION OF NEWLY LEARNED WORDS	
	AMPHITHEATER F	NEW GENERATIVIST APPROACHES TO MORPHOSYNTACTIC DEVELOPMENT	
	AMPHITHEATER G	LINKS BETWEEN LANGUAGE AND SOCIAL-COGNITIVE DEVELOPMENT: INSIGHTS FROM DEAFNESS	
	AMPHITHEATER H	FROM VERB INPUT TO GRAMMATICAL REPRESENTATION	
16:45 – 18:30	POSTER SESSION 1 (IASCL CENTRAL – FOYER) HORS-D'OEUVRES & CASH BAR		
18:30 -19:45	EVENING AT POINTE-À-CALLIÈRE MUSEUM (PRE-BOOKED REGISTRANTS ONLY)		

The Conference Program at a Glance | IASCL 2011

DAY 3	THURSDAY JULY 21	
7:45 – 16:00	REGISTRATION (IASCL CENTRAL – FOYER)	
7:45 – 8:30	LIGHT BREAKFAST (IASCL CENTRAL – AGORA)	
8:30 – 9:45	PLENARY SESSION 3 (IASCL CENTRAL – AMPHITHEATER) BUILDING BRIDGES BETWEEN GENES, BRAINS AND LANGUAGE SIMON FISHER, <i>WELLCOME TRUST CENTER FOR HUMAN GENETICS & MPI PSYCHOLINGUISTICS</i>	
09:45 – 10:15	COFFEE BREAK (SATELLITES 1 & 2)	
10:15 – 12:30	SYMPOSIUM SESSION 3 – SATELLITE 1	
	AMPHITHEATER A	FROM SOUND TO MEANING: NEW INSIGHTS INTO THE ROLE OF SOUND SYMBOLISM IN LANGUAGE ACQUISITION
	AMPHITHEATER B	LANGUAGE AND MOTOR LINKS IN TYPICAL AND ATYPICAL DEVELOPMENT
	AMPHITHEATER C	LANGUAGE IN CHILDREN WITH A COCHLEAR IMPLANT: CROSSLINGUISTIC AND MULTI-DOMAIN COMPARISONS
	AMPHITHEATER D	MEMORY MECHANISMS AND LANGUAGE IN CHILDREN WITH AND WITHOUT SPECIFIC LANGUAGE IMPAIRMENT
	SYMPOSIUM SESSION 3 – SATELLITE 2	
	AMPHITHEATER E	NEURAL CORRELATES OF LEXICAL SEGMENTATION IN INFANCY: CROSSLINGUISTIC ERP AND NIRS DATA
	AMPHITHEATER F	TALKING TO CHILDREN IN THE 21 ST CENTURY
	AMPHITHEATER G	(DIS)CONTINUITY BETWEEN GESTURE AND LANGUAGE? REFERRING TO YOU AND ME IN FRENCH AND IN FRENCH SIGN LANGUAGE
	AMPHITHEATER H	USING LENA TO STUDY TYPICAL LANGUAGE DEVELOPMENT: PROMISES AND CHALLENGES
12:30 – 14:30	LUNCH LUNCH BOX DISTRIBUTION (IASCL CENTRAL – CORRIDOR) PRE-POSTER SESSION 2 (IASCL CENTRAL – FOYER)	
	SPECIAL SEMINAR (SATELLITE 1 - AMPHITHEATER B) CLAN AND PHON: DEMONSTRATION OF SOFTWARE-ASSISTED RESEARCH WITHIN CHILDES/PHONBANK	
14:30 – 16:45	SYMPOSIUM SESSION 4 – SATELLITE 1	
	AMPHITHEATER A	MORPHOLOGICAL PROCESSES IN DELAYED-READERS OF FRENCH: AN ALTERNATIVE ROUTE TO WORD PROCESSING
	AMPHITHEATER B	THE FORMATION AND RESTRICTION OF LINGUISTIC GENERALIZATIONS
	AMPHITHEATER C	CLOSE MATCHING OF ADULT INPUT AND CHILD OUTPUT IN MORPHO-SYNTACTIC DEVELOPMENT
	AMPHITHEATER D	THE POWER OF ELICITED IMITATION: NEW INSIGHTS FROM TYPICALLY DEVELOPING CHILDREN, SOCIALLY DISADVANTAGED CHILDREN AND CHILDREN WITH SLI
	SYMPOSIUM SESSION 4 – SATELLITE 2	
	AMPHITHEATER E	CROSS-LINGUISTIC TOOL KIT OF BASIC LANGUAGE MEASURES
	AMPHITHEATER F	MODELING LANGUAGE LEARNING USING CORPUS ANALYTIC METHODS: CURRENT SUCCESSES AND FUTURE DIRECTIONS
	AMPHITHEATER G	LANGUAGE AND LITERACY DEVELOPMENT IN BILINGUAL CONTEXTS: EVIDENCE FOR CROSS-LINGUISTIC TRANSFER
	AMPHITHEATER H	USE OF CONTEXTUAL INFORMATION FOR SPEECH AND LANGUAGE PROCESSING IN CHILDREN WITH AUTISM SPECTRUM DISORDER: WHAT EYE-TRACKING MEASURES CAN SHOW US
16:45 – 18:30	POSTER SESSION 2 (IASCL CENTRAL – FOYER) HORS-D'OEUVRES & CASH BAR	

DAY 4		FRIDAY JULY 22	
7:45 – 16:00	REGISTRATION	(IASCL CENTRAL – FOYER)	
7:45 – 8:30	LIGHT BREAKFAST	(IASCL CENTRAL – AGORA)	
8:30 – 9:45	PLENARY SESSION 4	(IASCL CENTRAL – AMPHITHEATER) A STUDY OF LANGUAGE DEVELOPMENT IN CONTEXT DEB ROY, MIT & BLUEFIN LABS	
09:45 – 10:15	COFFEE BREAK	(SATELLITES 1 & 2)	
10:15 – 12:30	SYMPOSIUM SESSION 5 – SATELLITE 1		
	AMPHITHEATER A	STABILITY OF LANGUAGE DEVELOPMENT: FROM INFANCY TO ADULthood	
	AMPHITHEATER B	CHILDREN'S UNDERSTANDING OF SPACE: TRACKING DEVELOPMENT IN (SPATIAL) LANGUAGE AND (SPATIAL) COGNITION	
	AMPHITHEATER C	A CROSS-LINGUISTIC STUDY OF PRESCHOOLERS' NARRATIVES AND THEIR DEVELOPMENT	
	AMPHITHEATER D	FREQUENCY EFFECTS	
	SYMPOSIUM SESSION 5 – SATELLITE 2		
	AMPHITHEATER E	RULES VERSUS CONSTRUCTIONS: A DEBATE ON QUESTION ACQUISITION	
	AMPHITHEATER F	DEVELOPMENT OF VERBAL AND GESTURAL EXPRESSIONS OF MOTION EVENTS: NEW INSIGHTS FROM DIFFERENT LINGUISTIC ENVIRONMENTS AND AGES	
AMPHITHEATER G	BRIDGING L1 AND L2 ACQUISITION: SYMPOSIUM IN HONOR OF BRIAN MACWHINNEY		
AMPHITHEATER H	THE MENTAL LEXICON IN LATER LANGUAGE DEVELOPMENT: INSIGHTS FROM HEBREW		
12:30 – 14:30	LUNCH		
	LUNCH BOX DISTRIBUTION (IASCL CENTRAL – CORRIDOR)		
	PRE-POSTER SESSION 3 (IASCL CENTRAL – FOYER)		
IASCL BUSINESS MEETING (IASCL CENTRAL - 2 ND FLOOR: J-2805)			
14:30 – 16:45	SYMPOSIUM SESSION 6 – SATELLITE 1		
	AMPHITHEATER A	EARLY GENDER DIFFERENCES IN LANGUAGE: A DEVELOPMENTAL PERSPECTIVE	
	AMPHITHEATER B	CONSTRUCTING VERBS AND THEIR MEANINGS	
	AMPHITHEATER C	THE SOCIALLY CONSTRUCTED COMMUNICATIVE ACT OF MUSIC ACQUISITION	
	AMPHITHEATER D	NEW METHODS AND APPLICATIONS FOR PARENT-REPORT MEASURES OF CHILD LANGUAGE	
	SYMPOSIUM SESSION 6 – SATELLITE 2		
	AMPHITHEATER E	DEVELOPMENT OF CHILDREN'S SYMBOLIC GESTURES	
	AMPHITHEATER F	LANGUAGE AND LITERACY DEVELOPMENT THROUGH CHILDHOOD AND ADOLESCENCE: CROSS-LINGUISTIC AND CROSS-MODAL PERSPECTIVES ON COMPLEX SYNTAX	
AMPHITHEATER G	IDENTIFYING THE AGENT: HOW CHILDREN LEARN AND USE SEMANTIC ROLES		
AMPHITHEATER H	VERBAL AND NONVERBAL MODALITIES CONTRIBUTE TO BUILDING SOCIAL INTERACTION AND THE LEXICON IN AT-RISK AND ATYPICALLY DEVELOPING CHILDREN		
16:45 – 18:30	POSTER SESSION 3 (IASCL CENTRAL – FOYER)		
	HORS-D'OEUVRES & CASH BAR		
18:30 – 19:40	<ul style="list-style-type: none"> - PRESENTATION OF IASCL'S ROGER BROWN AWARD - SPECIAL COMEDY – PRESENTATION BY THOMAS FRAPS* LANGUAGE ACQUISITION REVISITED: COMEDY, LANGUAGE AND THE BRAIN: HOW TO TURN ADULTS INTO CHILDREN - PRIZE DRAW 		

DAY 5 SATURDAY JULY 23															
7:45 – 8:30	LIGHT BREAKFAST (IASCL CENTRAL – AGORA)														
8:30 – 9:45	<p>PLENARY SESSION 5 (IASCL CENTRAL – AMPHITHEATER)</p> <p>STUDENT AWARD PRESENTATIONS</p> <ul style="list-style-type: none"> ACQUIRING A FIRST-LANGUAGE IN ADOLESCENCE NAJA FERJAN RAMIREZ, AMY LIEBERMAN, RACHEL MAYBERRY, <i>UCSD</i> RULE LEARNING IS CONSTRAINED WHEN MULTIPLE INTERPRETATIONS ARE POSSIBLE ELENA KULAGUINA, RUSHEN SHI, <i>UNIVERSITÉ DU QUÉBEC À MONTRÉAL</i> JOINT ATTENTION AND VOCABULARY DEVELOPMENT: A CROSS-CULTURAL, OBSERVATIONAL STUDY OF MOZAMBICAN INFANTS FROM 12- TO 18-MONTHS J. DOUGLAS MASTIN, <i>TILBURG UNIVERSITY</i> LEXICAL TONALITY AFFECTS SPEECH PERCEPTION AND WORD LEARNING BY BILINGUAL CHILDREN LAURA MORETTI¹, SEOK HUI TAN², ¹<i>UNIVERSITY OF CALIFORNIA AT SANTA CRUZ</i>, ²<i>NATIONAL UNIVERSITY OF SINGAPORE</i> <p>FINAL REMARKS</p>														
09:45 – 10:15	COFFEE BREAK (SATELLITES 1 & 2)														
10:15 – 12:30	<p>SYMPOSIUM SESSION 7 – SATELLITE 1</p> <table border="1"> <tr> <td>AMPHITHEATER A</td> <td>EARLY ADJECTIVES IN INPUT AND OUTPUT: A CROSS-LINGUISTIC LONGITUDINAL STUDY</td> </tr> <tr> <td>AMPHITHEATER B</td> <td>PROFILES OF PRAGMATIC LANGUAGE IMPAIRMENT IN CHILDREN WITH AUTISM SPECTRUM DISORDERS</td> </tr> <tr> <td>AMPHITHEATER C</td> <td>DEVELOPMENT OF LANGUAGE AND LITERACY SKILLS IN FRENCH IMMERSION</td> </tr> <tr> <td>AMPHITHEATER D</td> <td>DEVELOPING THE CDI-III FOR DIFFERENT LANGUAGES: SPECIFIC CONSIDERATIONS AND PRELIMINARY NORMS FOR EUSKERA, SPANISH AND SWEDISH</td> </tr> </table> <p>SYMPOSIUM SESSION 7 – SATELLITE 2</p> <table border="1"> <tr> <td>AMPHITHEATER F</td> <td>DETECTING AND INTERPRETING AGREEMENT MORPHOLOGY: CROSS-LINGUISTIC ISSUES</td> </tr> <tr> <td>AMPHITHEATER G</td> <td>WORD SEGMENTATION IN INFANTS: DISTRIBUTIONAL CUES, SPEECH CUES AND TOP-DOWN PROCESSING</td> </tr> <tr> <td>AMPHITHEATER H</td> <td>HOW TO MAP FORM TO MEANING: TESTING EMERGENTIST PERSPECTIVES</td> </tr> </table>	AMPHITHEATER A	EARLY ADJECTIVES IN INPUT AND OUTPUT: A CROSS-LINGUISTIC LONGITUDINAL STUDY	AMPHITHEATER B	PROFILES OF PRAGMATIC LANGUAGE IMPAIRMENT IN CHILDREN WITH AUTISM SPECTRUM DISORDERS	AMPHITHEATER C	DEVELOPMENT OF LANGUAGE AND LITERACY SKILLS IN FRENCH IMMERSION	AMPHITHEATER D	DEVELOPING THE CDI-III FOR DIFFERENT LANGUAGES: SPECIFIC CONSIDERATIONS AND PRELIMINARY NORMS FOR EUSKERA, SPANISH AND SWEDISH	AMPHITHEATER F	DETECTING AND INTERPRETING AGREEMENT MORPHOLOGY: CROSS-LINGUISTIC ISSUES	AMPHITHEATER G	WORD SEGMENTATION IN INFANTS: DISTRIBUTIONAL CUES, SPEECH CUES AND TOP-DOWN PROCESSING	AMPHITHEATER H	HOW TO MAP FORM TO MEANING: TESTING EMERGENTIST PERSPECTIVES
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12:30 – 14:30	<p>LUNCH</p> <p>LUNCH BOX DISTRIBUTION (IASCL CENTRAL – CORRIDOR)</p> <p>PRE-POSTER SESSION 4 (IASCL CENTRAL – FOYER)</p>														
14:30 – 16:45	<p>SYMPOSIUM SESSION 8 – SATELLITE 1</p> <table border="1"> <tr> <td>AMPHITHEATER A</td> <td>ACQUISITION OF MORPHOLOGY AND SYNTAX IN HEARING-IMPAIRED CHILDREN</td> </tr> <tr> <td>AMPHITHEATER B</td> <td>LANGUAGE ACQUISITION AND DEVELOPMENT IN INTERNATIONALLY-ADOPTED CHILDREN</td> </tr> <tr> <td>AMPHITHEATER C</td> <td>LINGUISTIC AND COGNITIVE ASPECTS OF EVIDENTIALITY</td> </tr> <tr> <td>AMPHITHEATER D</td> <td>BRIDGING SYNTACTIC, SEMANTIC AND VISUAL CUES IN CHILDREN'S REFERENCE ASSIGNMENT</td> </tr> </table> <p>SYMPOSIUM SESSION 8 – SATELLITE 2</p> <table border="1"> <tr> <td>AMPHITHEATER F</td> <td>MORPHOLOGY IN TYPICAL AND DISORDERED ACQUISITION: CROSS-LINGUISTIC EVIDENCE FOR THE INVOLVEMENT OF MORPHOLOGY IN LITERACY PROCESSES</td> </tr> <tr> <td>AMPHITHEATER G</td> <td>FLUENCY AS A MARKER OF EXPRESSIVE LANGUAGE DEVELOPMENT SKILL IN CHILDREN</td> </tr> <tr> <td>AMPHITHEATER H</td> <td>PSYCHOLOGICAL SIGNIFICANCE AND TYPOLOGY OF PHONOLOGICAL TEMPLATES IN EARLY WORD LEARNING</td> </tr> </table>	AMPHITHEATER A	ACQUISITION OF MORPHOLOGY AND SYNTAX IN HEARING-IMPAIRED CHILDREN	AMPHITHEATER B	LANGUAGE ACQUISITION AND DEVELOPMENT IN INTERNATIONALLY-ADOPTED CHILDREN	AMPHITHEATER C	LINGUISTIC AND COGNITIVE ASPECTS OF EVIDENTIALITY	AMPHITHEATER D	BRIDGING SYNTACTIC, SEMANTIC AND VISUAL CUES IN CHILDREN'S REFERENCE ASSIGNMENT	AMPHITHEATER F	MORPHOLOGY IN TYPICAL AND DISORDERED ACQUISITION: CROSS-LINGUISTIC EVIDENCE FOR THE INVOLVEMENT OF MORPHOLOGY IN LITERACY PROCESSES	AMPHITHEATER G	FLUENCY AS A MARKER OF EXPRESSIVE LANGUAGE DEVELOPMENT SKILL IN CHILDREN	AMPHITHEATER H	PSYCHOLOGICAL SIGNIFICANCE AND TYPOLOGY OF PHONOLOGICAL TEMPLATES IN EARLY WORD LEARNING
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AMPHITHEATER H	PSYCHOLOGICAL SIGNIFICANCE AND TYPOLOGY OF PHONOLOGICAL TEMPLATES IN EARLY WORD LEARNING														
16:45 – 18:30	<p>POSTER SESSION 4 (IASCL CENTRAL – FOYER)</p> <p>HORS-D'OEUVRES & CASH BAR</p>														

SATELLITE 2

14:30 – 16:30
IASCL Satellite 2 – 5th Floor (DS-5760)

EDITORIAL BOARD MEETING – JOURNAL OF CHILD LANGUAGE

●
IASCL CENTRAL
WELCOME COCKTAIL RECEPTION
Sponsored by Cambridge University Press
●

17:00 – 18:30
IASCL Central • Agora
Welcome Reception

IASCL 2011 will open with a Welcome Cocktail Reception.
Please join us for this opportunity to enjoy drinks, snacks and good company before the first plenary session.

IASCL CENTRAL
OPENING PLENARY SESSION

18:30 – 19:45
IASCL Central • Main Amphitheater
Plenary Session 1

Opening Remarks, Henri Cohen, *UQÀM & Université Paris Descartes - CNRS*

Speaker Fred Genesee, *McGill University*

MYTHS AND MISUNDERSTANDINGS ABOUT DUAL LANGUAGE ACQUISITION IN YOUNG LEARNERS

There has been growing interest in children who learn language in diverse contexts and under diverse circumstances. In particular, dual language acquisition has become the focus of much research attention, arguably as a reflection of the growing awareness that dual language learning is common in children. A deeper understanding of dual language learning under different circumstances is important to ensure the formulation of theories of language learning that encompass all language learners and to provide critical information for clinical and other practical decisions that touch the lives of all language learners. This plenary will selectively review research findings on dual language learning in both school and non-school settings, among simultaneous and sequential bilinguals, and in typically-developing learners and those with an impaired capacity for language learning. Key findings with respect to common myths and misunderstandings that surround dual language acquisition in young learners will be reviewed and discussed and their implications for both theoretical and practical matters will be considered.

●
IASCL CENTRAL
Light Breakfast and Poster Set Up

●
IASCL CENTRAL
PLENARY SESSION

8:30 – 9:45

IASCL Central • Main Amphitheater

Plenary Session 2

Speaker Penelope Brown, *Max Planck Institute for Psycholinguistics*

WHERE AND WHITHER? THE ACQUISITION OF SPATIAL LANGUAGE IN A MAYAN CULTURE

Spatial cognition is a crucial part of normal practical and social cognition, and children have to rapidly learn the nature of their spatial world and how to talk about it. Spatial language turns out to vary quite fundamentally cross-culturally. This talk explores how Tzeltal Mayan children learn a system of spatial description that differs markedly from those familiar in European languages; in particular: (i) spatial relations in Tzeltal are encoded in nouns and verbs, not in adpositions, (ii) an absolute spatial frame of reference based on the uphill/downhill slope of the land is the predominant frame of reference for locating things at all scales, and (iii) there is a richly spatialized vocabulary of relational nouns, positional verbs, and placement verbs that encode shape, orientation, and other spatial properties of objects being located or placed. Drawing on longitudinal observations, elicited interactions and parental interviews, I will present an overview of Tzeltal Mayan children's acquisition of spatial language, highlighting the language specificity of their acquisition patterns and the importance of interactional routines in what and how they learn. I conclude with a discussion of the theoretical implications of children's acquisition of spatial vocabulary of this kind, and the lessons to be learned from studying child language acquisition in a small-scale, non-western language and culture.

●
SATELLITES 1 & 2
Coffee Break

●
SATELLITE 1
MORNING SYMPOSIA
AMPHITHEATERS A•B•C•D

10:15 – 12:30

Amphitheater A • Satellite 1

Symposium Session 1 • A

REFERENTIAL EXPRESSIONS AND TEXT COHERENCE IN PRE-SCHOOL CHILDREN

Convener Dagmar Bittner, *Center for General Linguistics, Berlin*

Information structure cues in children's pronoun comprehension

Juhani Järvikivi¹, Pirita Pyykkönen², Sarah Schimke³, Saveria Colonna³, Barbara Hemforth⁴, ¹*Max Planck Institute for Psycholinguistics & University of Helsinki*, ²*Saarland University*, ³*University of Paris 8-CNRS*, ⁴*Paris Descartes University-CNRS*

Do children integrate coherence relation, verb semantic and/or tense information when producing pronouns?

Eva Valcheva, Dagmar Bittner, *Center for General Linguistics, Berlin*

Pronoun resolution in the presence of the connector but - evidence from child Bulgarian

Milena Kuehnast¹, Tom Roeper², Dagmar Bittner¹, ¹*Center for General Linguistics*, ²*University of Massachusetts*

10:15 – 12:30
 Amphitheater B • Satellite 1
Symposium Session 1 • B

BILINGUAL DEVELOPMENT IN CONTEXTS OF VARIATION AND CHANGE

Convener Netta Abugov, *Tel-Aviv University*
Discussant Dorit Ravid, *Tel-Aviv University*

When a language exists only in bilingual speakers: Issues regarding acquisition, language dominance, language balance, language variation and change
 Virginia Gathercole, *Bangor University*

Bilingual acquisition in a variegated linguistic context: The acquisition of Yiddish noun plurals in Israel
 Netta Abugov, Dorit Ravid, *Tel-Aviv University*

Acquisition of regular and irregular inflectional morphology in Hebrew (L2) among early sequential Russian-Hebrew speaking bilinguals: A longitudinal multiple case study
 Mark Leikin¹, Mila Schwartz¹, Bracha Nir¹, Ronit Levie², Dorit Ravid¹, ¹*Haifa University*, ²*Tel-Aviv University*

Effects of Quantity and Quality of Input and of Language Contact in Heritage Language Learners: Insights from the Acquisition of Yiddish by Hasidic Toddlers
 Isabelle Barriere¹, Yakov Blum², Lazere Gillig², Mordechai Meisels¹, ¹*City University of New York*, ²*Yeled V'Yalda Research Institute, NY*

10:15 – 12:30
 Amphitheater C • Satellite 1
Symposium Session 1 • C

PROSODIC DEVELOPMENT IN COCHLEAR IMPLANT USERS FROM A CROSS-LINGUISTIC PERSPECTIVE

Convener Ignacio Moreno-Torres, *University of Málaga*
Discussant Marie-Thérèse Le Normand, *CNRS-Université Paris-Descartes*

Prosody in French speaking children with cochlear implants
 Marie-Thérèse Le Normand, Anne Lacheret, *INSERM*

Early segmental and supra-segmental development in pediatric cochlear implant users learning Spanish
 Ignacio Moreno-Torres¹, Maria del Mar Cid¹, Rafael Santana², Maria Heliadora Cuenca³, Marina Barrio³, ¹*University of Málaga*, ²*University of Las Palmas de Gran Canaria*, ³*University of Sevilla*

Prosody in Swedish Children with Cochlear Implants: Relationship with Grammar and Working Memory
 Christina Samuelsson, *Linköping University*

Lexical tone development in prelingually-deafened children with cochlear implants
 Li Xu¹, Ning Zhou¹, Juan Huang², Xiuwu Chen³, Yongxin Li³, Xiaoyan Zhao³, Demin Han³, ¹*Ohio University*, ²*Peking University*, ³*Beijing Tongren Hospital*

10:15 – 12:30
 Amphitheater D • Satellite 1
Symposium Session 1 • D

MEMORY SYSTEMS IN LANGUAGE ACQUISITION: CHILDREN AND ADULTS

Convener Avi Karni, *Haifa University*

A critical look at 'critical periods' in skill acquisition: from motor sequences to language skills
 Avi Karni, *Haifa University*

Adults outperform children in acquiring a language skill: Evidence from learning an artificial morphological rule in different conditions
 Sara Ferman¹, Avi Karni², ¹*Tel Aviv University*, ²*Haifa University*

Qualitative differences in second language memory as a function of late learning
 Robert DeKeyser, Derek Monner, So-One Hwang, Giovanna Morini, Karen Vatz, *University of Maryland*

The role of age and continuity in L1 attrition and L2 acquisition
 Monika Schmid, *University of Groningen*

SATELLITE 2
MORNING SYMPOSIA
AMPHITHEATERS E•F•G•H

10:15 – 12:30
Amphitheater E • Satellite 2
Symposium Session 1 • E

WH-QUESTIONS IN BILINGUAL ACQUISITION

Convener Nelleke Strik, *University of Toronto*

The role of syntactic transfer in Spanish-English bilingual children: the case of interrogative inversion
Alejandro Cuza, *Purdue University*

The effect of computational complexity on the production of errors in wh-questions used by L2 children learning French and French children with SLI
Philippe Prévost, Laurie Tuller, *University of Tours*

Dutch-French wh-questions: a complexity based account for cross-linguistic influence
Nelleke Strik, *University of Toronto*

Cross-linguistic influence at the level of syntactic features: The case of wh-questions
Lyn Tieu, *University of Connecticut*

10:15 – 12:30
Amphitheater F • Satellite 2
Symposium Session 1 • F

THE IMPORTANCE OF INFORMATION STRUCTURE FOR EARLY LANGUAGE DEVELOPMENT

Convener Eileen Graf, *Max Planck Institute for Evolutionary Anthropology*

Give him a hat: Givenness and pronominality in early child datives
Nola Stephens, *Pennsylvania State University*

Children's understanding of contrastive versus anaphoric reference
Susanne Grassmann, *University of Groningen*

The acquisition of word order and information structure in German
Nadja Kühn, *Center for General Linguistics*

Information structure accounts for young children's argument omissions
Eileen Graf¹, Anna Theakston², Elena Lieven^{1,2}, Michael Tomasello¹, *Max Planck Institute for Evolutionary Anthropology*, ²*University of Manchester*

10:15 – 12:30
Amphitheater G • Satellite 2
Symposium Session 1 • G

GRAMMAR AND THE LEXICON IN FIRST LANGUAGE ACQUISITION: CROSS-LINGUISTIC PERSPECTIVES ON NOUNS AND VERBS

Convener Dominique Bassano & Maya Hickmann, *CNRS & Université Paris 8*
Discussant Elena Lieven, *MPI-EVA & University of Manchester*

Noun grammaticalization and the acquisition of determiners in French and German: Morphological and lexical factors
Dominique Bassano¹, Katharina Korecky-Kröll², Isabelle Maillochon¹, Wolfgang U. Dressler², ¹*CNRS-Université Paris 8*, ²*Austrian Academy of Science*

The dynamics between child language and child directed speech: An application to noun grammaticalization
Marijn Van Dijk, Paul Van Geert, *University of Groningen*

Lexicalization patterns and event types in the expression of motion across child languages: English, French, German and Chinese
Maya Hickmann¹, Henriette Hendriks², Anne Ochsenbauer³, Helen Engemann², ¹*Université Paris 8 - CNRS*, ²*University of Cambridge*, ³*Ludwign Maximilian Universität*

Development of motion expressions in Korean children with crosslinguistic comparisons with French and English
Soonja Choi, *San Diego State University*

10:15 – 12:30
 Amphitheater H • Satellite 2
Symposium Session 1 • H

GESTURAL SUPPORT FOR LEARNING IN VERBAL CONTEXTS

Convener Natalie Munro, *The University of Sydney*

Do lexical skills and task influence maternal gestural input?

Katharina Rohlfing, Angela Grimming, *Bielefeld University*

The role of iconic gestures and pictures in word learning for monolingual and dual-language pre-schoolers

Meredith Rowe, Rebecca Silverman, Bridget Mullan, *University of Maryland*

Iconic gestures support toddlers' retention of word-referent pairings

Natalie Munro¹, Elise Baker¹, Karla McGregor², Kimberley Docking¹, Joanne Arciuli¹, ¹*The University of Sydney*, ²*The University of Iowa*

The Role of Gesture in Learning Across Development

Susan Wagner Cook, *The University of Iowa*



LUNCH



IASCL CENTRAL

12:30 – 13:00
 IASCL Central • Corridor
Prepaid Lunch Box Distribution

12:30 – 14:30
 IASCL Central • Foyer
Pre-Poster Session 1

SATELLITE 1
 AFTERNOON SYMPOSIA
 AMPHITHEATER A•B•C•D

14:30 – 16:45
 Amphitheater A • Satellite 1
Symposium Session 2 • A

EARLY STEPS INTO LANGUAGE IN INFANTS BORN PRETERM: PHONETIC PERCEPTION AND COMMUNICATIVE DEVELOPMENT DATA

Convener Laura Bosch, *University of Barcelona*

Cognitive and communicative-linguistic developmental trajectories of extremely preterm infants: a longitudinal study in the first year of life

Silvia Savini, Alessandra Sansavini, Annalisa Guarini, Rosina Alessandroni, Giacomo Faldella, *University of Bologna*

First language and communication development of preterm children

Miguel Pérez-Pereira¹, Pilar Fernández¹, Carmen Díaz¹, Mariela Resches¹, María Luisa Gómez-Taibo², Manuel Peralbo², ¹*University of Santiago de Compostela*, ²*University of Coruña*

Language experience and early phonetic discrimination in infants born preterm

Laura Bosch¹, Jorgina Solé¹, Martí Iriondo², Thais Agut², Francesc Botet³, ¹*University of Barcelona*, ²*Hospital Sant Joan de Déu, Barcelona*, ³*Maternitat-Hospital Clínic, Barcelona*

Phonological acquisition in healthy preterm infants is not delayed

Nayeli González-Gómez, Thierry Nazzi, *Université Paris Descartes - CNRS*

14:30 – 16:45
Amphitheater B • Satellite 1
Symposium Session 2 • B

THE RELATIONSHIP BETWEEN THE ACQUISITION OF NARRATIVES AND OTHER SKILLS AS SHOWN IN DIVERSE POPULATIONS

Convener Anne Baker, *University of Amsterdam*

Non-present talk in early interaction as a precursor of narrative ability age 7
Akke de Blauw, Anne Baker, Judith Rispens, *University of Amsterdam*

The Relationship between Maternal Narrative Scaffolding and Children's School Readiness
Gigliana Melzi, Adina Schick, *New York University*

Narrative and Vocabulary Skills of Sequential Bilingual Children
Pui Fong Kan, Danielle Kemp, *University of Colorado at Boulder*

Low-income preschoolers' narrative abilities and how to best promote them
Ageliki Nicopoulou, Hande Ilgaz, Aline de Sa, *Lehigh University*

14:30 – 16:45
Amphitheater C • Satellite 1
Symposium Session 2 • C

ADVANCES IN THE STUDY OF INPUT EFFECTS IN BILINGUAL DEVELOPMENT

Convener Theres Grüter, *Stanford University*
Discussant Martha Crago, *Dalhousie University*

The effect on amount of bilingual exposure on morphosyntactic development in simultaneous bilinguals
Elin Thordardottir, *McGill University*

The relation between language exposure and processing efficiency in bilingual toddlers
Nereyda Hurtado, Theres Grüter, Virginia A. Marchman, Anne Fernald, *Stanford University*

Effects of the Quantity and Quality of Dual Language Exposure on Early Bilingual Development
Erika Hoff¹, Cynthia Core², Silvia Place¹, ¹*Florida Atlantic University*, ²*The George Washington University*

Maternal input to bilingual and monolingual children
Annick De Houwer¹, Marc H. Bornstein², ¹*University of Erfurt*, ²*National Institute of Child Health and Human Development*

14:30 – 16:45
Amphitheater D • Satellite 1
Symposium Session 2 • D

DEVELOPING PHONOLOGICAL AND MORPHOLOGICAL REPRESENTATIONS UNDER CONDITIONS OF VARIABLE INPUT

Convener Katherine Demuth, *Macquarie University*
Discussants Katherine Demuth and Mark Johnson, *Macquarie University*

Learning from vowel variation in maternal speech in Gurindji Kriol
Caroline Jones¹, Felicity Meakins², Shujau Muawiyath¹, ¹*University of Wollongong*, ²*University of Queensland*

Phonological variation within lexical forms in maternal speech in Gurindji Kriol and regional Australian English: a longitudinal study
Heather Buchan, *University of Wollongong*

Learning to be variable in Valley Zapotec
Joseph Paul Stemmer, *University of British Columbia*

Acoustic properties of /s/ lenition in Chilean Spanish: consequences for acquisition of morphology
Karen Miller¹, Cristina Schmitt², ¹*Pennsylvania State University*, ²*Michigan State University*

SATELLITE 2
AFTERNOON SYMPOSIA
AMPHITHEATERS E•F•G•H

14:30 – 16:45
Amphitheater E • Satellite 2
Symposium Session 2 • E

FACTORS INFLUENCING RETENTION OF NEWLY LEARNED WORDS

Convener Katharina Rohlfing, *Bielefeld University*
Discussant Karla McGregor, *University of Iowa*

Slow down: High attentional demands hinder children's word learning via fast mapping
Jessica Horst¹, Karla McGregor², ¹*University of Sussex*, ²*University of Iowa*

Familiarity of objects and domain knowledge in retention of newly fast-mapped words
Sarah Kucker, Larissa Samuelson, *University of Iowa*

A story about a word: Discursive influences on fast mapping and retention of newly learned words
Kerstin Nachtigäller, Katharina Rohlfing, *Bielefeld University*

A Computational account on fast and slow mapping during word learning
Claudius Gläser, *Honda Research Institute Europe*

14:30 – 16:45
Amphitheater F • Satellite 2
Symposium Session 2 • F

NEW GENERATIVIST APPROACHES TO MORPHOSYNTACTIC DEVELOPMENT

Convener Matthew Rispoli, *University of Illinois, Urbana-Champaign*

Learning Tense with Morphology
Julie Legate, Charles Yang, *University of Pennsylvania*

Predicting Tense and Agreement Productivity before Three
Pamela Hadley, Matthew Rispoli, *University of Illinois at Urbana-Champaign*

Bilingual children's representation of Tense
Virginia Valian, *Hunter College, NY*

Incomplete Acquisition: What, How, When
Silvina Montrul, *University of Illinois at Urbana-Champaign*

14:30 – 16:45
Amphitheater G • Satellite 2
Symposium Session 2 • G

LINKS BETWEEN LANGUAGE AND SOCIAL-COGNITIVE DEVELOPMENT: INSIGHTS FROM DEAFNESS

Convener Gary Morgan, *City University London*
Discussant Michael Siegal, *Sheffield University*

The processing of emotional and linguistic facial expressions in British Sign Language (BSL) by deaf children with Autism Spectrum Disorder
Tanya Denmark, John Swettenham, *UCL*

The Importance of access to language: Evidence from intention attribution and ToM reasoning in deaf infants
Gary Morgan¹, Marek Meristo¹, Alessandra Geraci², Luca Surian², Laura Iozzi³, Erland Hjelmquist¹, Michael Siegal⁵,
¹*Gothenburg University*, ²*University of Trento*, ³*University of Trieste*, ⁴*City University London*, ⁵*Sheffield University*

Language and Theory of Mind in Typically-Developing and Oral Deaf Children
Peter de Villiers¹, Kathryn Hobbs², ¹*Smith College*, ²*Harvard University*

Theory of Mind and Language in Children with Cochlear Implants
Kimberly Peters, Ethan Rimmel, *Western Washington University*

14:30 – 16:45
 Amphitheater H • Satellite 2
Symposium Session 2 • H

FROM VERB INPUT TO GRAMMATICAL REPRESENTATION

Convener Ana T. Pérez-Leroux, *University of Toronto*
Discussant Michaela Pirvulescu

A role for prepositions in children's acquisition of verb argument structure
 Letitia Naigles, *University of Connecticut*

Learning to "think" out loud: the role of verb input on the development of children's epistemic representations
 Valerie San Juan, *University of Toronto*

Parental input strategy and acquisition of verb argument structures in Japanese
 Yuhko Kayama¹, Yuriko Oshima-Takane², ¹*University of Manitoba*, ²*McGill University*

Input and direct object clitic realization in French children
 Ana Pérez-Leroux, Mihaela Pirvulescu, Yves Roberge, Nelleke Strik, *University of Toronto*

●
 IASCL CENTRAL
 Hors-d'Œuvres & Cash Bar

●
POSTER SESSION 1

16:45 – 18:30
 IASCL Central - Foyer
Poster Session 1

Bilingual first language acquisition

- 01** ***Do deaf bilingual children have phonological awareness (PA) of Quebec sign language (LSQ)? A comparative study of PA in three bilingual deaf populations***
 Anne-Marie Parisot, Julie Rinfret, *UQÀM*
- 02** ***Caregiver-child interaction in early bilingual development: An analysis of a bilingual toddler's responses to questions***
 Janice Nakamura, *International Christian University*
- 03** ***Code-switching with Grandma: Input effects on a bilingual preschooler***
 Suzanne Quay, *International Christian University*
- 04** ***Acquisition of Mandarin Relative Clauses by Mandarin-English Bilingual Children***
 Ruiting Jia, Johanne Paradis, *University of Alberta*
- 05** ***Structural Similarity elicits codemixing in German-English Bilingual Children vs. German-Russian Bilingual Children***
 Antje Endesfelder Quick, Elena Lieven, Michael Tomasello, *Max-Planck-Institute for Evolutionary Anthropology*
- 06** ***First Words, First Steps of Language: Language-Specific Trajectories Have Roots in First Words***
 Lauren Friedman, Erika Hoff, *Florida Atlantic University*
- 07** ***Crosslinguistic influence in the acquisition of ser and estar by Spanish-English bilinguals***
 Carmen Silva-Corvalán, *University of Southern California*
- 08** ***A case study of speech rhythm acquisition in a Cantonese-English bilingual child***
 Donald White, Peggy Mok, *The Chinese University of Hong Kong*
- 09** ***Do Children Block Learning from Accented-Speakers? The Roles of Social and Phonetic Information***
 Erica Beck, *University of Michigan*

Child second language acquisition

- 10 ***Differing effects of individual child-level variables in different linguistic domains: Turkish L1 children learning L2 Dutch***
A. Baker¹, E. Blom¹, J. de Jong¹, A. Orgassa², F. Weerman¹, ¹University of Amsterdam, ²Radboud University
- 11 ***From Bare To Non-Bare: Factors Affecting The Development of Mandarin Nominals***
Hsiang-Hua (Melanie) Chang, Oakland University
- 12 ***A longitudinal study on vowel development of Mandarin-English bilingual children***
Jing Yang, Robert Fox, The Ohio State University
- 13 ***Nonword repetition and receptive vocabulary in bilingual kindergarteners: Concurrent correlations in a longitudinal study***
Todd A. Gibson, D. Kimbrough Oller, Linda Jarmulowicz, University of Memphis
- 14 ***Acquisition of Spanish as a Second language by Mexican Deaf Children***
Antoinette Hawayek de Ezcurdia², Giuseppe Cappelli¹, Riccardo Del Gratta¹, Edy Lopez², Ricardo Rincòn², ¹ILC -CNR, Italy, ²UAM, Mexico
- 15 ***The acquisition of lexical routines in letter writing by learners of English as a second language***
Rosa M^a Jiménez Catalán, University of La Rioja
- 16 ***Individual variations in the English vocabulary status among Hong Kong learners of English with varying socio-economic status (SES)***
Kwok Shing Wong, Hong Kong Institute of Education
- 17 ***Phonological Development and Child L2 Learners' Nonword Repetition Performance***
Tamara Sorenson Duncan, Anne-Michelle Tessier, Johanne Paradis, University of Alberta
- 18 ***Language and Identity: Attitudes among English-speaking Pre-school Children in Israel***
Susie Joffe, Joel Walters, Bar Ilan University

Cognition and language development

- 19 ***Arabic-English bilingual children's Phonological awareness***
Mohammed Alhuqbani Aldossari, King Fahd Security College, Riyadh
- 20 ***Are language tests usable? A population based case-control study in Finland***
Sinikka Hannus², Timo Kauppila², Janne Pitkäniemi², Kaisa Launonen², ¹City of Vantaa, Finland, ²University of Helsinki
- 21 ***Joint Attention & Vocabulary Development - A cross-cultural, observational study of Mozambican infants from 12- to 18-months***
J Douglas Mastin, Tilburg University
- 22 ***Early predictors of comprehension and interventions to prevent reading difficulties-A longitudinal study on French-speakers at kindergarten***
Catherine Pellenq, Laboratoire des Sciences de l'Éducation, Grenoble
- 23 ***Learning words in familiar vs. unfamiliar frames***
J. Salas Poblete², K. Rohlfing¹, Joublin³, ¹Bielefeld University, ²CoR-Lab, Bielefeld, ³Honda Research Institute Germany
- 24 ***Rabbits are Jumping, Balls are Bouncing: Korean Preschoolers' Use of Ontological Categories of Actors in Mapping Novel Verbs to Motion Events***
Ha Yeon Kim¹, Soon Hyung Yi², ¹New York University, ²Seoul National University
- 25 ***Integrative comprehension of information in speech and iconic gesture in 3-, 5-year-olds and adults***
Kazuki Sekine¹, Hannah Sowden², Sotaro Kita³, ¹National Institute of Informatics, Tokyo, ²University of Leeds, ³University of Birmingham

26 **The Interaction between Gesture and Language in Children's Descriptions of Directed Motion Events**
Areum Kim, Laura Wagner, *The Ohio State University*

27 **Young children's understanding of the relational component of noun-noun compound meaning**
Simon Snape, Andrea Krott, *University of Birmingham*

Cultural and social factors

28 **'I knowd that word before I comed to school': The Impact of the Every Child a Talker Programme in two Bristol primary schools**
Christine Screech, *University of the West of England*

29 **The effect of using multimodal gesture on infants' vocabulary development in natural environments**
Paul Vogt, J. Douglas Mastin, *Tilburg University*

30 **Responsiveness and Assertiveness Skills of Italian and Japanese toddlers**
Luigi Girolametto¹, Serena Bonifacio², Tadashi Hamada³, Kayoko Hamada³, ¹*University of Toronto*, ²*IRCCS Burlo Garofolo, Trieste*, ³*Hamada Medical Clinic, Japan*

First language acquisition

31 **Narrative and Vocabulary skills of Sequential Bilingual Children**
Pui Fong Kan, Danielle Kemp, *University of Colorado at Boulder*

32 **In search for Criteria to Measure Verb Morphology Acquisition**
Natalia Gagarina¹, Sigal Uziel-Karl², Wolfgang Dressler³, ¹*Center for General Linguistics, Berlin*, ²*Ono Academic College (OAC) and Haifa University*, ³*Austrian Academy of Sciences*

33 **Similarity and generalization in novel construction learning -- Evidence from German-speaking 3- to 8-year-olds**
Anne-Kristin Siebenborn, *Ludwig-Maximilians-Universität; Max Planck Child Study Centre, Manchester*

34 **Do incremental changes in phonotactic probability and neighbourhood density matter?**
Holly Storkel, Junko Maekawa, Su-Yeon Lee, *University of Kansas*

35 **The Acquisition of Bidd- 'want' in Spoken Palestinian Arabic**
Irit Meir¹, Sigal Uziel-Karl¹, Khadiji Moed², Rachel Yifat¹, ¹*University of Haifa*, ²*Ono Academic College*

36 **Acquisition of long distance weak quantification by French-speaking children**
Marie Labelle¹, Geneviève Lemieux-Lefebvre¹, Daniel Valois², ¹*Université du Québec à Montréal*, ²*Université de Montréal*

37 **Grammatical composition of early expressive vocabularies: evidence from Maltese-speaking children**
Daniela Gatt¹, Helen Grech¹, Barbara Dodd², ¹*University of Malta*, ²*City University London*

38 **Causative-Formation: A Comparative Perspective**
Reili Argus³, Klaus Laalo⁴, Sigal Uziel-Karl^{1,2}, ¹*Haifa University, Israel*, ²*Ono Academic College*, ³*Tallinn University*, ⁴*University of Tampere*

39 **Is Interaction with the Caregiver the Birthplace of Infant Gesture?**
Patricia Zukow-Goldring, *UCLA*

40 **Lexicon composition, lexicon organization and vocabulary size: designing a new picture vocabulary test**
Ewa Haman¹, Krzysztof Fronczyk², Magdalena Smoczyńska³, Aneta Miekisz¹, ¹*University of Warsaw*, ²*University of Finance and Management in Warsaw*, ³*Jagellonian University*

41 **Beyond a preference: Word learning and infant-directed speech**
Cassandra Foursha-Stevenson¹, Elena Nicoladis², ¹*Mount Royal University*, ²*University of Alberta*

- 42 **The role of function words and prosody for word segmentation in French-learning infants**
Erin Robertson¹, Rushen Shi², ¹Cape Breton University, ²Université du Québec à Montréal
- 43 **C-command and First Language Acquisition by Persian Children**
Sara Sharifpour¹, Ali Darzi¹, Tehran University
- 44 **Frequency and Neighborhood Density Effects During First Word Acquisition in French**
Christophe dos Santos¹, Sophie Kern¹, Stephanie Stokes¹, ¹Université François-Rabelais, ²Laboratoire Dynamique du Langage, ¹CNRS-Lyon 2, ³University of Canterbury
- 45 **Phonological development in Swedish children with otitis-proneity**
Helena Stålnacke, Jan van Doorn, Peter Czigler, Orebro University
- 46 **A standardization and validity study of a speech and language screening tool: a look at a Canadian linguistic minority outside Québec**
Michèle Minor-Corriveau, Laurentian University
- 47 **Mean length of utterance in morphemes, syllables and words in Slovak as a flexive language - theory and practice**
Daniela Slancova¹, Svetlana Kapalkova², Jana Kesselova¹, Stanislava Zajacova¹, ¹Presov University, ²Comenius University
- 48 **The development of novel metaphor and metonymy comprehension in typically developing children**
Jo Van Herwegen¹, Dagmara Annaz², Gabriella Rundblad³, ¹Kingston University, ²Middlesex University, London, ³King's College London
- 49 **Children's understanding of the logical words 'not', 'every', and 'or'**
Anna Notley¹, Rosalind Thornton¹, Stephen Crain¹, ¹Macquarie University
- 50 **Early prosodic development: evidence from intonation and tempo in European Portuguese**
Marina Vigário, Sónia Frota, Nuno Matos, Universidade de Lisboa
- 51 **Acquiring Early Verb Constructions in Mandarin Chinese: A Comparison of 2 and 3 Year Olds' Verb Use in Naturalistic and Experimental Contexts**
Juan Hu, Nancy Budwig, Clark University
- 52 **Eliciting noun plurals in German: a comparison of children's productions in a classical elicitation and a playful naming task**
Sabine Laaha, Austrian Academy of Sciences
- 53 **Sex-related acoustical differences in a mother's speech toward opposite-sex twin infants**
Katsuko Niwano, Tohoku Fukushi University
- Language development in atypical populations**
- 54 **Multimodal strategies for teaching children with Down Syndrome new words**
Seok Hui Tan¹, Leong Janice¹, Joanna Lim¹, Kang Poh Sim², ¹National University of Singapore, ²Rainbow Centre Margaret Drive School
- 55 **The assessment of pre-linguistic communication in severely motor-impaired preschool children**
Raz Tenenbaum¹, Dana Roth², Esther Dromi¹, ¹Tel Aviv University, ²Beit Issie Shapiro
- 56 **Slow mapping lexical learning and immediate list recall in children with and without SLI**
Natalie Munro, Elise Baker, University of Sydney
- 57 **Comprehension of subject and object relatives by SLI and typically developing children: comparing Act-Out and Sentence-picture tasks**
Alexandrina Martins, Ana Catarina Baptista, Catarina Afonso, Susana Rodrigues, Universidade de Lisboa
- 58 **Language Development in Individuals with Specific Language Impairment (SLI): Trajectories and Subgroups**
Gina Conti-Ramsden¹, Kevin Durkin², Andrew Pickles³, Michelle St. Clair⁴, ¹University of Manchester, ²University of Strathclyde, ³King's College London, ⁴University of Cambridge
- 59 **Verbal and Nonverbal Intelligence in Individuals with a History of Specific Language Impairment (SLI): Developmental Trajectories**
Kevin Durkin¹, Gina Conti-Ramsden², Andrew Pickles³, Michelle St. Clair⁴, ¹University of Strathclyde, ²University of Manchester, ³King's College London, ⁴University of Cambridge

- 60 **Socio-conversational skills and verbal behaviour of Slovenian-speaking talkers aged from 24 to 36 months: a comparative analysis of late talkers with normal language development**
Barbara Penko¹, Damjana Kogovšek¹, Martina Ozbic¹, ¹Faculty of Education, Ljubljana, ²Center of deaf and hard of hearing, Slovenia
- 61 **Statistical bootstrapping in emerging lexicons: Late talkers do it differently**
Stephanie Stokes¹, Sophie Kern², Dorthe Bleses³, Christophe dos Santos⁴, Hans Basboll³, Claus Lambertsen³, ¹University of Canterbury, ²Laboratoire Dynamique de Langage, ³University of Southern Denmark, ⁴Université François Rabelais de Tours
- 62 **Vowel acoustics of hearing impairment: a comparison between typically developing, hearing-assisted and cochlear implant speech**
Oydis Hide¹, Jo Verhoeven², San Gillis³, Steven Gillis¹, ¹University of Antwerp, ²City University London, ³Katholieke Universiteit Leuven
- 63 **The early predictors of expressive language performance for three-year-old late-talking children**
Huei-Mei Liu, Yu-Sha Cho, Hui-Ying Hsu, Feng-Ming Tsao, National Taiwan Normal University
- 64 **Investigating relative clauses in children with Specific Language Impairment**
Pauline Frizelle, Paul Fletcher, University College Cork
- 65 **Production and perception of speech in children with cochlear implants**
Vesna Mildner, University of Zagreb
- 66 **Predicting language outcomes from early pragmatics assessed by the Language Use Inventory**
Diane Pesco¹, Daniela O'Neill¹, ¹Concordia University, ²University of Waterloo
- 67 **Language skills of the prematurely born very-low-birth-weight Finnish children at two years of age with the focus on the emergence of grammar**
Suvi Stolt¹, Leena Haataja², Helena Lapinleimu², Liisa Lehtonen², PIPARI Study Group², ¹University of Turku, ²Turku University Hospital
- 68 **Simultaneous Processing in Children with Primary Language Impairment: Identifying Sources of Performance Breakdown**
Naomi Eichorn, Campanelli Luca, Cruz Joseline, Puglik Ingrid, Scheuer Jessica, Goral Mira, Obler Loraine, Marton Klara, Graduate Center / CUNY
- Language evolution and language acquisition**
- 69 **On the effect of morphophonological complexity in the acquisition of plural noun forms in European Portuguese**
Catarina Afonso, Maria João Freitas, Universidade de Lisboa
- Literacy and language**
- 70 **SLI and reading in Finnish at ages 7 to 10**
Pia Isoaho¹, Kaisa Launonen³, Timo Kauppila², ¹Health Centres of Vantaa, Finland, ²Network of Academic Health Centres, University of Helsinki, ³Institute of Behavioral Sciences, University of Helsinki
- 71 **The Effect of Foot + Foot Structure on Reading Performance in Japanese Young Children**
Shino Sakono¹, Tomohiko Ito¹, Suzy E. Fukuda², Shinji Fukuda³, ¹Tokyo Gakugei University, ²Aoyama Gakuin University, ³Health Sciences University of Hokkaido
- 72 **Phonological processing and reading development in bilingual children with speech delay**
María Fernanda Lara-Díaz¹, Eva María Aguilar-Mediavilla², Miquel Serra³, ¹Universidad Nacional de Colombia, ²Universitat de les Illes Balears, ³Universitat de Barcelona
- 73 **Educators' Print Referencing Strategies and Children's Responses in Two Emergent Literacy Contexts**
Lisa-Christine Girard¹, Luigi Girolametto¹, Elaine Weitzman², Janice Greenberg², ¹University of Toronto, ²The Hanen Centre, Toronto
- 74 **Parent's Use of Elaborative Forms of Language in Two Contexts: Reminiscing and Book Reading with Children from Linguistically Diverse, Low-Income Backgrounds**
Alison Sparks, Amherst College
- 75 **Dire, lire et écrire: The development of language and reading skills in French and English of multilingual and English monolingual Grade 4 children in French immersion**
Daniel Berube, Stefka Marinova-Todd, University of British Columbia

- 76 **Oral narratives, dialogical intervention and reading comprehension: A study of 5-to-8 years old French children**
 Edy Veneziano¹, Hélène Makdissi², Laetitia Albert¹, Marie-Pierre Baron², Andrée Boisclair², Chantal Caracci¹, Juliette Elie³, Émilie Hébert⁷, Christian Hudelot⁷, Marie Thérèse Le Normand⁴, Marie-Hélène Plumet⁵, Serge Poncin¹, Nathalie Salagnac⁶, ¹Université Paris Descartes-CNRS, ²Université Laval, ³Université Toulouse-Le Mirail, ⁴INSERM, ⁵Université Paris Descartes-INSERM, ⁶IUFM de Lille, ⁷CNRS-Université Nice Sophia-Antipolis
- Neurocognitive correlates**
- 77 **Who is Doing What to Whom? The Processing of Topicalized Objects in Preschool Children**
 Christine S. Schipke¹, Regine Oberecker², Angela D. Friederici¹, ¹Max Planck Institute for Human Cognitive and Brain Sciences, ²Berlin School of Mind and Brain
- 78 **Syllables in word segmentation by French-learning infants: an ERPs study**
 Louise Goyet, Thierry Nazzi, ¹Université Paris Descartes
- New methods in child language research**
- 79 **Acoustic analysis from Brazilian Portuguese fricative voiced and voiceless sounds**
 Luciana Pagan-Neves¹, Haydée Wertzner¹, Adriana Gurgueira², ¹University of Sao Paulo, ²School of Medical Sciences, Sao Paulo
- 80 **Adaptations of the MacArthur-Bates Communicative Development Inventories into Other Languages: A 2011 Update**
 Philip S. Dale¹, Melissa J. Penfold¹, Larry Fenson², ¹University of New Mexico, ²San Diego State University
- 81 **Are there defaults in sentence processing? How pronominal and noncanonical sentences are processed by English-learning 3-year-olds**
 Letitia Naigles¹, Caitlin Reynolds¹, Aylin Kuntay², ¹University of Connecticut, ²Koc University
- Other themes in child language research**
- 82 **Stability of Child Language Competence from Infancy to Preschool: A Multi-method Study**
 Marc Bornstein, Eunice Kennedy Shriver National Institute of Health
- 83 **Gestures with and without speech: What do they reveal about the developing gesture-speech system?**
 Nicole Weidinger¹, Katrin Lindner², Wolfram Ziegler¹, Georg Goldenberg¹, Katharina Hogrefe¹, ¹Clinical Neuropsychology Research Group, Munich, ²Ludwig-Maximilians-University
- 84 **Examining the relationship between language and emotional competence in middle childhood**
 Luna Beck, Klann-Delius Gisela, Eid Michael, Kumschick Irina, Excellence Cluster Languages of Emotion, Free University
- 85 **Children's Acquisition of the Word All: Evidence for Slow-Mapping**
 Naomi J. Aldrich, Kaia Huus, Patricia J. Brooks, College of Staten Island & The Graduate Center, CUNY
- 86* **Helping hands: Recognising iconicity in gestures and its advantage during verb acquisition**
 Katherine Mumford, Sotaro Kita, University of Birmingham
- Qualitative and quantitative input factors**
- 87 **Communicative Interactions in Childcare Centers**
 Carol Westby, Bilingual Multicultural Services
- 88 **Factors Analysis for a Computational Model of Emergent Simple Syntax**
 Hao Yu, Xiaojie Wang, Beijing University of Posts and Telecommunications
- 89 **Mothers' Infant Directed Speech (IDS) in face-to-face interaction with typically developing (TD) infants and infant siblings (SIBS-A) of children with Autistic Spectrum Disorder, aged 3 to 12 months**
 Jean Quigley, Trinity College Dublin

* Student Poster Competition

Speech

- 90 ***Use of irony by teenagers, face-to-face versus internet forums***
Marc Aguer¹, Virginie Laval¹, Nadia Gauducheau², Hassan Atifi², Michel Marcocchia², ¹*Université de Poitiers -CNRS*,
²*Technological University of Troyes-CNRS*
- 91 ***Phonetic, phonotactic, and neighborhood effects on syllable production in child Southern Min***
James Myers, Jane Tsay, *National Chung Cheng University, Taiwan*

●
EVENING AT POINTE-À-CALLIÈRE MUSEUM
(Advance admission ticket required)
AND FIREWORKS
●

17:45 – 22:00
Evening at the Pointe-à-Callière Museum
350 Place Royale/Corner of de la Commune, Old Montréal

OTHER REGISTRANTS
PLEASE, SEE THE WHAT TO DO TONIGHT SECTION OF THIS PROGRAM

●
IASCL CENTRAL
Light Breakfast and Poster Set Up
●

8:30 – 9:45
IASCL Central • Main Amphitheater
Plenary Session 3

Speaker Simon Fisher, *Honorary research fellow at the Wellcome Trust Centre for Human Genetics (WTCHG), University of Oxford, UK, and Director of the Max Planck Institute for Psycholinguistics in Nijmegen*

BUILDING BRIDGES BETWEEN GENES, BRAINS AND LANGUAGE

Genes that are implicated in neurodevelopmental disorders can provide novel insights into neural mechanisms contributing to human spoken language. My colleagues and I previously discovered that people with mutations of the *FOXP2* gene have problems mastering sequences of mouth movements needed for fluent speech, accompanied by expressive and receptive language impairments. *FOXP2* is an evolutionarily ancient gene which switches on and off other genes in brain circuits of diverse vertebrates. Researchers are now studying it in a wide range of systems, from neuronal models, mutant mice and songbirds, to humans themselves. Intriguingly, dysfunction of this gene impairs neural plasticity and motor-skill learning in mice, and impedes vocal imitation during song learning in zebra finches. Analyses of molecular evolution in primates indicate that *FOXP2* protein sequence underwent accelerated change on the human lineage after splitting from the chimpanzee. Nevertheless, *FOXP2* should not be viewed as the mythical “gene for language” but as one piece of a complex puzzle. Overall, my talk will demonstrate how our multidisciplinary investigations of genes like *FOXP2* are helping build the first bridges between genes, brains and spoken language.

●
SATELLITES 1 & 2
Coffee Break
●

SATELLITE 1
MORNING SYMPOSIA
AMPHITHEATERS A•B•C•D

10:15 – 12:30
Amphitheater A • Satellite 1
Symposium Session 3 • A

FROM SOUND TO MEANING: NEW INSIGHTS INTO THE ROLE OF SOUND SYMBOLISM IN LANGUAGE ACQUISITION

Convener Morten Christiansen, *Cornell University*

Sound Symbolism: The Mapping of Sound to Shape in English-learning Children
Daphne Maurer, Ferrinne Spector, *McMaster University*

Cross-Linguistic Sound Symbolism in Language Learning
Laura Namy, Christina Tzeng, Brandi Biscoe Kenner, Lynne Nygaard, *Emory University*

Universal Sound Symbolism Facilitates Verb Learning and Generalization in Three-Year Olds
Sotaro Kita¹, Mutsumi Imai², Katerina Kantartzis¹, ¹*University of Birmingham*, ²*Keio University*

A Trade-Off between Arbitrary and Systematic Form-Meaning Mappings in Language Learning
Morten Christiansen¹, Stanka Fitneva², Padraic Monaghan¹, ¹*Cornell University*, ²*Queen's University*, ³*Lancaster University*

10:15 – 12:30
Amphitheater B • Satellite 1
Symposium Session 3 • B

LANGUAGE AND MOTOR LINKS IN TYPICAL AND ATYPICAL DEVELOPMENT

Convener Katie Alcock, *Lancaster University*

Oral and Gestural Motor Abilities and Early Language - Talking with the Mouth

Katie Alcock, Kirsty Krawczyk, Simon Connor, *Lancaster University*

Motoric and cognitive influences on sign language production in adult hearing learners

Gerardo Ortega¹, Gary Morgan², Bencie Woll¹, ¹*University College, London*, ²*City University London*

Relating Vocal and Motor Development in Infant Siblings of Children with Autism

Eve LeBarton, Jana Iverson, *University of Pittsburgh*

Oral motor control, speech and language in Down Syndrome

Adam Goody, Katie Alcock, *Lancaster University*

10:15 – 12:30
Amphitheater C • Satellite 1
Symposium Session 3 • C

LANGUAGE IN CHILDREN WITH A COCHLEAR IMPLANT: CROSSLINGUISTIC AND MULTI-DOMAIN COMPARISONS

Convener Steven Gillis, *University of Antwerp*

Discussant Dorit Ravid, *Tel Aviv University*

Early lexical development in Hebrew- and Dutch-speaking children with cochlear implants compared with their normally hearing peers

Orly Herzberg¹, Dorit Ravid¹, Steven Gillis², ¹*Tel Aviv University*, ²*University of Antwerp*

Effects of auditory and linguistic experience on infants' sensitivity to lexical stress

Derek M. Houston¹, Osnat Segal², Liat Kishon-Rabin², ¹*Indiana University*, ²*Tel Aviv University*

The impact of typological differences on the morphosyntactic development of children with a cochlear implant

Steven Gillis¹, Orly Herzberg², Dorit Ravid², Bracha Nir³, Joris Gillis⁴, Sven De Mayer¹, ¹*University of Antwerp*, ²*Tel Aviv University*, ³*Haifa University*, ⁴*University of Hasselt, Belgium*

Vocabulary and grammar development in French-speaking children who received a cochlear implant at an early age

Louise Duchesne¹, Ann Sutton², François Bergeron³, ¹*Université du Québec à Trois-Rivières*, ²*Université d'Ottawa*, ³*Université Laval*

10:15 – 12:30
Amphitheater D • Satellite 1
Symposium Session 3 • D

MEMORY MECHANISMS AND LANGUAGE IN CHILDREN WITH AND WITHOUT SPECIFIC LANGUAGE IMPAIRMENT

Convener Edith Bavin, *La Trobe University*

Discussant James Montgomery, *Ohio University*

Verbal and Visual-spatial Short-term Memory in Preschool Children

Stephanie Stokes, Thomas Klee, *University of Canterbury*

Word Learning in School Age Children with Language and/or Working Memory Impairments

Lisa Archibald, Marc Joanisse, *University of Western Ontario*

The Impact of Lexical Processes on Verbal Working Memory in Children with and without SLI

Elina Mainela-Arnold¹, Julia Evans², Jeffry Coady³, Carol Miller⁴, Maya Misra⁴, Gerard Poll⁴, Ji Sook Park⁴, ¹*University of Toronto*, ²*San Diego State University*, ³*University of Colorado*, ⁴*Pennsylvania State University*

The Impact of Working Memory, Inhibition and Attention Switching on Language Comprehension in 10-13 year old Children

Klara Marton^{1,2}, Loraine Obler², Mira Goral^{2,3}, Luca Campanelli², Naomi Eichorn², Jungmee Yoon², ¹*Brooklyn College*, ²*The graduate Center of CUNY*, ³*Lehman College, CUNY*

SATELLITE 2
MORNING SYMPOSIA
AMPHITHEATERS E•F•G•H

10:15 – 12:30
Amphitheater E • Satellite 2
Symposium Session 3 • E

NEURAL CORRELATES OF LEXICAL SEGMENTATION IN INFANCY: CROSSLINGUISTIC ERP AND NIRS DATA

Convener Claudia Männel, *MPI for Human Cognitive and Brain Sciences*

Spontaneous speech segmentation ability in Dutch infants as a marker for language development

Caroline Junge¹, Anne Cutler³, Peter Hagoort², ¹*Max Planck Institute for Psycholinguistics*, ²*Radboud University*, ³*University of Western Sydney*

Electrophysiological evidence of lexical and syllabic segmentation by French-learning infants

Louise Goyet, Thierry Nazzi, *CNRS-Université Paris Descartes*

Accentuation facilitates early word recognition: ERP studies in 6- and 12-month-old German infants

Claudia Männel, Angela D. Friederici, *Max Planck Institute for Human Cognitive and Brain Sciences*

Influences of acoustic salience and familiarity in and out of fluent speech: Behavioral and NIRS studies with English-learning infants

Heather Bortfeld, *University of Connecticut & Haskins Laboratories*

10:15 – 12:30
Amphitheater F • Satellite 2
Symposium Session 3 • F

TALKING TO CHILDREN IN THE 21ST CENTURY

Convener Elaine Reese, *University of Otago*
Discussant Catherine Snow, *Harvard University*

Influences on Trajectories of English and Spanish Development in Preschoolers from Bilingual Homes

Erika Hoff, Rosario Rumiche, *Florida Atlantic University*

Child-Directed Speech and Child Language Development in Pacific Island Families Living in New Zealand

Mele Taumoepeau, Elaine Reese, *University of Otago*

“Te Acordai?” How Chilean Parents Support Preschoolers’ Personal Narratives

Diana Leyva, Monica Rodriguez, Magdalena Infante, Monica Berrocal, *Harvard University*

Parent-Child Emotion Talk and Children’s Narrative Development in New Zealand Māori Families

Tia Neha, Elaine Reese, *University of Otago*

10:15 – 12:30
Amphitheater G • Satellite 2
Symposium Session 3 • G

(DIS)CONTINUITY BETWEEN GESTURE AND LANGUAGE? REFERRING TO YOU AND ME IN FRENCH AND IN FRENCH SIGN LANGUAGE

Convener Aliyah Morgenstern, *Université Sorbonne Nouvelle*
Discussant Virginia Volterra, *CNR, Italy*

Talking about you and me: the development of self- and interlocutor-reference in two mother-child French-speaking dyads

Stéphanie Caet, *Université Sorbonne Nouvelle*

Personal reference in a deaf signing child

Fanny Limousin¹, Aliyah Morgenstern², ¹*Université Paris 8*, ²*Université Sorbonne Nouvelle*

First and second person reference in a Hearing bilingual child (LSF-French): an intermediate profile?

Marion Blondel, *CNRS*

Hearing children’s use of pointing gestures: from pre-linguistic buds to the blossoming of communication skills

Aliyah Morgenstern¹, Dominique Boutet², Stéphanie Caet¹, ¹*Université Sorbonne Nouvelle*, ²*CNRS-Université d’Ivry*

10:15 – 12:30
Amphitheater H • Satellite 2
Symposium Session 3 • H

USING LENA TO STUDY TYPICAL LANGUAGE DEVELOPMENT: PROMISES AND CHALLENGES

Convener Melanie Soderstrom, *University of Manitoba*

Comparing and contrasting the daycare and home environments using LENA
Melanie Soderstrom, Dana Bernier, *University of Manitoba*

Temporal dynamics of adult-child vocal interaction as measured by automated analysis of naturalistic day-long recordings
Anne Warlaumont, D. Kimbrough Oller, Rick Dale, *University of Memphis*

How infants' daily experiences with language support the development of language processing skills and vocabulary
Adriana Weisleder, Anne Fernald, *Stanford University*

Naturalistic social communication and speech development in monolingual and bilingual infants
Nairán Ramirez-Esparza, Adrián Garcia-Sierra, Elina Sanchez, Patricia Kuhl, *University of Washington*



LUNCH



IASCL CENTRAL

12:30 – 13:00
IASCL Central • Corridor
Prepaid Lunch Box Distribution

12:30 – 14:30
IASCL Central • Foyer
Pre-Poster Session 2

SATELLITE 1

12:30 – 14:30
Satellite 1 • Amphitheater B
Special Seminar

CLAN AND PHON: SOFTWARE- ASSISTED RESEARCH WITHIN CHILDES/PHONBANK

SATELLITE 1
AFTERNOON SYMPOSIA
AMPHITHEATERS A•B•C•D

14:30 – 16:45
Amphitheater A • Satellite 1
Symposium Session 4 • A

MORPHOLOGICAL PROCESSES IN DELAYED-READERS OF FRENCH: AN ALTERNATIVE ROUTE TO WORD PROCESSING

Conveners: Rachel Berthiaume & Daniel Daigle, *Université de Montréal*

How can one compensate for early reading difficulties? Morphological strategies in university students with a history of reading difficulties

Hélène S. Deacon, X. Tong, R. Parrila, *Dalhousie University*

Written verbal morphology and dyslexic children

Joëlle Varin, Noémia Ruberto, Rachel Berthiaume, Anne Plisson, Daniel Daigle, *Université de Montréal*

How does morphological awareness relate to reading in dyslexic French readers?

Séverine Casalis, *Université Charles-de-Gaulle Lille 3*

Morphological knowledge and reading: the case of deaf students

Rachel Berthiaume¹, Daniel Daigle¹, Elisabeth Demont², ¹*Université de Montréal*, ²*Université Louis Pasteur*

14:30 – 16:45
Amphitheater B • Satellite 1
Symposium Session 4 • B

THE FORMATION AND RESTRICTION OF LINGUISTIC GENERALIZATIONS

Convener Ben Ambridge, *University of Liverpool*

The Development of Levels of Construction Generality

Brian MacWhinney, *Carnegie Mellon University*

Learning what not to say: categorization and statistical pre-emption

Jeremy K. Boyd, Adele E. Goldberg, *Princeton University*

The formation and restriction of linguistic generalizations

Afra Alishahi, Suzanne Stevenson, *Saarland University*

Testing a probabilistic semantic account of the formation and restriction of linguistic generalizations: A grammaticality judgment study

Ben Ambridge, Julian M. Pine, Caroline F. Rowland¹, *University of Liverpool*

14:30 – 16:45
Amphitheater C • Satellite 1
Symposium Session 4 • C

CLOSE MATCHING OF ADULT INPUT AND CHILD OUTPUT IN MORPHO-SYNTACTIC DEVELOPMENT

Convener & Discussant Patricia Brooks, *City University of New York*

Convergence of Output to Input in Stage I Syntax of English-speaking Children

Anat Ninio, *Hebrew University of Jerusalem*

Systematic matching of noun morphology in Lithuanian parent-child conversation

Ineta Dabašinskiene¹, Patricia Brooks², ¹*Vytautas Magnus University*, ²*City University of New York*

Parent-Child Matching of Sentence Structure in Early German Acquisition

Ozlem Yuksel-Sokmen, Patricia Brooks, *City University of New York*

Exploring the match between quantitative characteristics of adult input and child output for Russian inflectional morphology

Vera Kempe, *University of Abertay*

14:30 – 16:45
Amphitheater D • Satellite 1
Symposium Session 4 • D

THE POWER OF ELICITED IMITATION: NEW INSIGHTS FROM TYPICALLY DEVELOPING CHILDREN, SOCIALLY DISADVANTAGED CHILDREN AND CHILDREN WITH SLI

Convener Shula Chiat, *City University London*
Discussant Belinda Seeff-Gabriel, *City University London*

The power of immediate verbal recall: Evidence from typically developing English- and Czech-speaking children

Kamila Poliřenská, *City University London*

The power of sentence imitation as a tool for diagnosing morphosyntactic difficulties in young children: Evidence from diverse groups

Penny Roy, Shula Chiat, Belinda Seeff-Gabriel, *City University London*

The power of nonverbal imitation: An investigation of profiles of imitation and language in young German-speaking typically developing and language delayed children

Andrea Dohmen, *City University London, London*

The power of imitation to capture developmental change: Imitation of nonwords over time mirrors developing phonological knowledge in SLI

Cristina McKean, Carolyn Letts, David Howard, *University of Newcastle upon Tyne*

**SATELLITE 2
AFTERNOON SYMPOSIA
AMPHITHEATERS E•F•G•H**

14:30 – 16:45
Amphitheater E • Satellite 2
Symposium Session 4 • E

CROSS-LINGUISTIC TOOL KIT OF BASIC LANGUAGE MEASURES

Convener Susanne Miyata, *Aichi Shukutoku University, Nagoya, Aichi*

The development of parallel language measures: The example of Japanese DSSJ

Susanne Miyata¹, Brian MacWhinney², ¹*Aichi Shukutoku University*, ²*Carnegie Mellon University*

A Morphologically-Analyzed CHILDES Corpus of Hebrew

Aviad Albert¹, Brian MacWhinney², Bracha Nir³, Shuly Wintner³, ¹*Tel Aviv University*, ²*Carnegie Mellon University*, ³*University of Haifa*

Transcription for computational analysis

Brian MacWhinney, *Carnegie Mellon University*

Developing grammatical analysis tools for “the language without a grammar” – Mandarin Chinese

Twila Tardif¹, Ching-Ching Lu¹, Brian MacWhinney¹, ¹*University of Michigan*, ²*National Hsinchu University of Education*, ³*Carnegie Mellon University*

14:30 – 16:45
Amphitheater F • Satellite 2
Symposium Session 4 • F

MODELLING LANGUAGE LEARNING USING CORPUS ANALYTIC METHODS: CURRENT SUCCESSES AND FUTURE DIRECTIONS

Convener & Discussant Elena Lieven, *MPI-EVA & University of Manchester*

Syllabifying MOSAIC

Daniel Freudenthal¹, Julian Pine¹, Fernand Gobet², ¹*University of Liverpool*, ²*Brunel University*

What does language usage tell us about grammar?

Charles Yang, Julie Legate, *University of Pennsylvania*

A connectionist model of the acquisition of English and Korean spatial language

Franklin Chang, *University of Liverpool*

14:30 – 16:45
 Amphitheater G • Satellite 2
Symposium Session 4 • G

LANGUAGE AND LITERACY DEVELOPMENT IN BILINGUAL CONTEXTS: EVIDENCE FOR CROSS-LINGUISTIC TRANSFER

Convener Mila Schwartz, *Oranim College of Education, & Haifa University*
Discussant Esther Geva, *Ontario Institute for Studies in Education*

Considering the Interplay of Language Typology, Emergent Language, Reading Skills and Transfer
 Esther Geva, Dana Shafman, *University of Toronto*

Positive Language Transfer and Language Preservation of Morphosyntactic Structures in the Context of L1 Literacy: Evidence from Different Tasks
 Elena Zaretsky, *University of Massachusetts-Amherst*

Cross-language Transfer of Morphological Awareness in Chinese-English Bilinguals: The Effects on Word Reading, Vocabulary, and Reading Comprehension
 Becky Xi Chen, Adrian Pasquarella, Katie Lam, Yang C. Luo, Gloria Ramirez, *University of Toronto*

Cross-linguistic transfer of emergent literacy skills for Russian to Hebrew: The interplay of linguistic, orthographic and instructional factors
 Mila Schwartz, David L. Share, Katia Khariton, *University of Haifa*

14:30 – 16:45
 Amphitheater H • Satellite 2
Symposium Session 4 • H

USE OF CONTEXTUAL INFORMATION FOR SPEECH AND LANGUAGE PROCESSING IN CHILDREN WITH AUTISM SPECTRUM DISORDER: WHAT EYE-TRACKING MEASURES CAN SHOW US

Convener Aparna Nadig, *McGill University*

Eye Say! Language production in developmental disorders
 Courtenay Norbury, David Kelly, *University of London*

Use of sentence context for lexical ambiguity resolution in high functioning autism
 Aparna Nadig, *McGill University*

Use of visible articulatory information for speech perception in autism
 Julia Irwin, *Haskins Laboratories & Southern Connecticut State University*

Cognitive and Developmental Factors in Prosody Comprehension in Children with Autism Spectrum Disorders
 Joshua Diehl¹, Jesse Snedeker², Karen Tang¹, Rhea Paul³, ¹*University of Notre Dame*, ²*Harvard University*, ³*Yale Child Study Center*

●
 IASCL CENTRAL
 Hors-d'Œuvres & Cash Bar

●
 POSTER SESSION

16:45 – 18:30
 IASCL Central • Foyer
Poster Session 2

Bilingual first language acquisition

01 *The first 10 signs lexicon of a hearing child of deaf parents*
 Orit Fuks, *Kaye College, Israel*

02 *Rhythmic development of monolingual and bilingual children at 2;06*
 Peggy Mok, *Chinese University of Hong Kong*

- 03 ***Is Nonword Repetition a Good Measure for Bilingual Preschoolers?***
Myrto Brandeker¹, Elin Thordardottir¹, ¹McGill University, ²Centre interdisciplinaire de recherche en réadaptation du Montréal métropolitain
- 04 ***The Construction of Narrative Temporality in Dual Language Learning Latino Head Start Children***
Joy Lorenzo Kennedy¹, ¹New York University, ²The Children's Aid Society
- 05 ***Linguistic diversity in a nationally representative sample of Australian 4- to 5-year-old children and their parents***
Sharynne McLeod, Charles Sturt University
- Child second language acquisition**
- 06 ***Root infinitives in the early successive acquisition of German***
Monika Rothweiler, University of Bremen
- 07 ***Development of ergative case marking in Basque L1 and L2***
Itziar Idiazabal, Margareta Almgren, Ibon Manterola, University of the Basque Country
- 08 ***How do Turkish-German early successive bilinguals acquire German past participles?***
Franziska Sterner, University of Hamburg
- 09 ***The L2-Acquisition of the German Number System by Children with Russian or Turkish as their First Language and its Implications for Morphological Theories***
Verena Wecker, Westfälische Wilhelms-Universität
- 10 ***Text connectors in oral narratives in Basque and Spanish L1 and L2***
Ibon Manterola, Margareta Almgren, Itziar Idiazabal, University of the Basque Country
- 11 ***Developing of a detached discourse stance in L2 Spanish***
Elisa Rosado¹, Melina Aparici², Liliana Tolchinsky¹, Joan Perera¹, ¹Universitat de Barcelona, ²Universitat Autònoma de Barcelona
- 12 ***Narrative Development across Tasks and Languages in Dual Language Learning Latino Children***
Joy Lorenzo Kennedy, New York University & The Children's Aid Society
- 13 ***An Assessment Tool for Child L2 Mandarin Receptive Vocabulary***
Angel CHAN¹, Kathy LEE², Virginia YIP², ¹The Hong Kong Polytechnic University, ²The Chinese University of Hong Kong
- 14 ***Does syntactic development in early second language acquisition need nouns and verbs?***
Barbara Geist¹, Petra Schulz, Goethe-Universität
- Cognition and language development**
- 15 ***Relationships between Toddler's Mental State Language and Their Theory of Mind Abilities***
Sabrina Sarah Chiarella¹, Diane Poulin-Dubois¹, Susanne Kristen², Beate Sodian², ¹Concordia University, ²Ludwig Maximilian University of Munich
- 16 ***The Effect of Ecological Factors and Linguistic Skills on Event Memory***
Ercenur Unal, Aylin C. Kuntay, Koc University
- 17 ***Can English-speaking and Korean-speaking Children Use Variability Across Events in Verb Learning?***
Kristin Benavides¹, Jae Paik², Jane Childers¹, Neathery Thurmond¹, Clarissa Terrell¹, ¹Trinity University, ²San Francisco State University
- 18 ***Language vs. Cognition Preferences in Two and Four Year Olds***
Hartman Brawley, Laura Wagner, Ohio State University
- 19 ***Does a Behavioral Experiment on Language-Based Reasoning Support the Neurological Findings?***
Jodi Tommerdahl¹, Paul Moran¹, ¹University of Texas in Arlington, ²University of Chester
- 20 ***The role of within-category semantic variability in word learning***
Gwyneth Rost, Karla McGregor, The University of Iowa
- 21 ***Children's Talk about Art***
Laura Schneebaum, Adina Schick, Gigliana Melzi, New York University

- 22 **Relevance inferences in 3-year-olds based on pre-conditions for actions**
Cornelia Schulze¹, Susanne Grassmann², Michael Tomasello¹, ¹Max Planck Institute for Evolutionary Anthropology, ²University of Groningen
- Cultural and social factors**
- 23 **Children's self-talk in the context of triadic parent-sibling interaction**
Hiroko Kasuya¹, Kayoko Uemura¹, ¹Bunkyo Gakuin University
- 24 **Transmission of linguistic variables during childhood: mutual influences in the peer group**
Stéphanie Barbu¹, Aurélie Nardy², Jean-Pierre Chevrot², ¹CNRS, ²LIDILEM, Grenoble
- 25 **Oppositional Discourse Markers in Turkish Children's Peer Conversations**
Bahar Köymen¹, Aylin Küntay¹, ¹Koç University
- 26 **Learning Words from a Skirt-Wearing Boy: Exploring the Depth of Conventionality Bias in Children's Word Learning**
Sevda Bahtiyar, Mark Sabbagh, Jenna Rines, Queen's University
- First language acquisition**
- 27 **The Development of Morphological Complexity in the Verb System of an Arabic Speaking Child**
Sigal Uziel-Kar^{2,3}, Rossana Isaaq¹, Roni Henkin⁴, Dorit Ravid¹, ¹Tel Aviv University, ²Haifa University, ³Ono Academic College, ⁴Ben Gurion University of the Negev
- 28 **Spanish-Colombia Normalization of the MacArthur-Bates Communicative Development Inventories CDI**
María Fernanda Lara-Díaz¹, Angela Gómez¹, Elisabet Serrat², ¹Universidad Nacional de Colombia, Columbia, ²Universitat de Girona
- 29 **Language Specificity in the Production of Derivations and Compounds in Polish and American English-Speaking Preschool Children**
Andrea Zevenbergen¹, Ewa Haman², Joanna Pilat², Stephanie Potkova¹, ¹SUNY Fredonia, ²University of Warsaw
- 30 **Phonological neighbourhoods in the vocabularies of Dutch typically developing children and children with a familial risk of dyslexia**
Elise de Bree¹, Tania Zamuner¹, Frank Wijnen¹, ¹Utrecht University, ²University of Ottawa
- 31 **ERP responses to morphosyntactic agreement violations in a passive listening task**
Emily Zane, Sarah Kresh, Marisa Genuardi, Valerie L. Shafer, Richard G. Schwartz, CUNY Graduate Center
- 32 **Stages in late phonological development: Expansion, Stabilization and Resolution**
Verónica Martínez¹, Eliseo Diez-Itza², ¹University of Barcelona, ²University of Oviedo
- 33 **Japanese 28-month-olds' inference about verb meaning from syntactic frames**
Tessei Kobayashi¹, Takaaki Suzuki², ¹NTT Communication Science Laboratories, Kyoto, ²Kyoto Sangyo University
- 34 **The acquisition of two-consonant clusters in Finnish**
Sari Kunnari, Tuula Savinainen-Makkonen, University of Oulu, Finland
- 35 **Investigating children's omission of English third singular -s: The defaulting hypothesis**
Sanna Rasanen, Julian Pine, Ben Ambridge, University of Liverpool
- 36 **Acquisition of non-adjacent phonological dependencies in the first year of life: Consonant versus vowel dependencies**
Nayeli Gonzalez Gomez, Thierry Nazzi, Université Paris Descartes-CNRS
- 37 **German Children's Pronoun Case Errors are not Rare but Systematic**
Barbara Stumper, Elena Lieven, MPI-EVA, Germany
- 38 **The adaptation into French of a screening tool aimed at identifying language impairment for children between 12 and 71 months**
Marianne Paul, McGill University
- 39 **Vocabulary development and Word & Non-Word repetition, in Spanish 2 to 4 year-olds**
Sonia Mariscal, Carlos Gallego, Berta Puig, Susana Lopez-Ornat, Universidad Nacional de Educación a Distancia
- 40 **CLEX: Cross-linguistic lexical norms online**
Rune Nørgaard Jørgensen¹, Philip S. Dale², Dorthe Bleses¹, Larry Fenson³, ¹University of Southern Denmark, ²University of New Mexico, ³San Diego State University

- 41 **Retrieving the meaning of words from syntactic cues: A comprehension study of 2 to 4 yrs old French-speaking children**
Edy Veneziano¹, Christophe Parisse², ¹Université Paris Descartes-CNRS, ²Université Paris Ouest-CNRS
- 42 **Learning verbs before nouns: Early sensitivity to verb morphosyntactic cues in Japanese 16-month-old children**
Yuriko Oshima-Takane¹, Tessei Kobayashi², ¹McGill University, ²NTT Communication Science Laboratories, Kyoto
- 43 **Space and language: the acquisition of *aquí* in Spanish**
Soraya Cortiñas-Ansoar, *Universidade de Santiago de Compostela*
- 44 **Proposal for the codification of communicative intentions in the Koiné corpus of child talk**
Beatriz Dieste Quiroga, *Universidade de Santiago de Compostela*
- 45 **A CHILDES-based study of English where-questions: The important role of input in language development**
Nobuyo Fukaya, *Tsuda College*
- 46 **Production and Comprehension of the plural: Examining converging versus isolated cues**
Ulrike Hahn¹, Merce Prat-Sala², ¹Cardiff University, ²The University of Winchester
- 47 **Understanding early grammar acquisition in Spanish: a multi-method approach**
Marta Casla¹, Sonia Mariscal², Irene Rujas¹, Javier Aguado-Orea³, Ana Prior⁴, ¹Universidad Autonoma de Madrid, ²Universidad Nacional de Educacion a Distancia, ³Universidad Complutense de Madrid, ⁴University of Haifa
- 48 **Giving directions: linguistic strategies by children aged 6 to 9**
Susanne Guckelsberger, *University of Hamburg*
- 49 **Motion events in German early child language: a naturalistic longitudinal study**
Eva Maria Freiburger, *Austrian Academy of Sciences*
- 50 **Negative input: Evidence from Russian**
Victoria Kazakovskaya, *Institute of Linguistic Studies, St. Petersburg*
- 51 **Understanding maternal behaviours that promote early language acquisition**
Penny Levickis¹, Melissa Wake¹, Sheena Reilly¹, Luigi Girolametto², Obioha Ukoumunne³, ¹Murdoch Childrens Research Institute, ²University of Toronto, ³University of Exeter
- 52 **Priming the production of subordinate clauses in a narrative context**
Ludovica Serratrice, Anne Hesketh, Rachel Ashworth, *University of Manchester*
- Language development in atypical populations**
- 53 **Consonant production in *cri du chat* syndrome – a multi-case study**
Kristian Emil Kristoffersen, Hanne Gram Simonsen, Nina Gram Garmann, *University of Oslo*
- 54 **On-line comprehension of object clitics by French-speaking SLI, L2 and L2-SLI children**
Aude Laloi, Anne Baker, Jan de Jong, *University of Amsterdam*
- 55 **Narratives across Contexts in School Age Children with High Functioning Autism**
Janie Lai, Judy Reilly, *San Diego State University*
- 56 **Communicative acts during shared book reading: Mandarin-speaking mothers and infants in Taiwan**
Ching-Yun Lee, Yueh-Huey Wang, Chien-Ju Chang, *National Taiwan Normal University*
- 57 **Effect of Word Length on the Frequency of Stuttering in Japanese Children Who Stutter**
Sachiyo Shimamori¹, Tomohiko Ito¹, Suzy.E Fukuda², Shinji Fukuda³, ¹Tokyo Gakugei University, ²Aoyama Gakuin University, ³Health Science University of Hokkaido
- 58 **The Impact of Dual-Tasking on Sentence Comprehension in Children with Specific Language Impairment**
Anne-Lise Leclercq, Steve Majerus, Gaid Prigent, Christelle Maillart, *University of Liege*
- 59 **A new tool to test the perception of the phonemes relevant for German verb-morphology**
Johannes Hennies¹, Eva Wimmer², Martina Penke³, Monika Rothweiler², Markus Hess¹, ¹University Medical-Center Hamburg-Eppendorf, ²University of Bremen, ³University of Cologne
- 60 **A phonetic and phonological account of «consonantless children»**
Annie Rialland¹, Sophie Wauquier², Marie-Thérèse Le Normand³, ¹CNRS-Paris 3, ²CNRS-Paris 8, ³CNRS-INSERM
- 61 **Morphosyntactic disorders as a consequence of categorization difficulty in children with specific language impairment**
Sandrine Leroy, Christophe Parisse, Christelle Maillart, *University of Liège*

- 62 **Phonological representations in children with SLI : a study of French vowels**
Christelle Maillart¹, Julia Cazeneuve¹, Andrea MacLeod², ¹University of Liege, ²University Laval
- 63 **The comparative effect of two intervention procedures on the evaluative component of narratives in SLI French children**
Marie-Thérèse Le Normand¹, Edy Veneziano¹, Audrey Scrizac², Fanny Testagrossa², ¹Université Paris Descartes-CNRS, ²Ecole d'Orthophonie, Nantes
- 64 **On the acquisition of adjective gradation by Austrian and Lithuanian typically developing (TD) and SLI children**
Wolfgang U. Dressler¹, Bettina Fürst¹, Laura Kamandulyte-Merfeldiene², Sabine Laaha¹, ¹Austrian Academy of Sciences, ²Vytautas Magnus University
- 65 **Storytelling co-construction based on a wordless picture book: comparison between mother-specific language impairment children and mother-normally developing children dyads**
Geneviève de Weck¹, Anne Salazar Orvig², Somayeh Rahmati¹, Tiziana Bignasca¹, Christine da Silva², Stefano Rezzonico¹, ¹University of Neuchâtel, ²University Paris3 - Sorbonne Nouvelle
- 66 **Characteristics of explanations and justifications produced by mother-child dyads with or without SLI**
S. Rezzonico¹, G. de Weck¹, A. Salazar Orvig², ¹University of Neuchâtel, ²University Paris3 Sorbonne-Nouvelle
- 67 **Anticipatory Sentence Processing in Children with Specific Language Impairment (SLI): Evidence from Eye Movements During Listening**
Mònica Sanz-Torrent¹, Llorenç Andreu Barrachina², Lucia Buil³, John Trueswell⁴, ¹Universitat de Barcelona, ²Universitat Oberta de Catalunya, ³Universitat Illes Balears, ⁴University of Pennsylvania
- Literacy and language**
- 68 **Oral language skills as predictors of reading development in Spanish**
María Fernanda Lara-Díaz¹, Angela Gómez¹, Esperanza Silva¹, Eva Águila Martínez², ¹Universidad Nacional de Colombia, ²Universitat Oberta de Catalunya
- 69 **Home Literacy Environment and Maternal Responsiveness as Predictors of Preschool Outcomes**
Caitlin Phillips, Michelle Jackson, Margaret Friend, San Diego State University
- 70 **Is Print key information for young children during storybook independent reading: evidence from the comparison of eye movements on the print and main character**
Baogen Liu, Jing Zhou, Xiaomei Gao, Linhui Li, East China Normal University
- 71 **LOLE: From oral to written language. An instruction program for phonological awareness in kindergarten**
Angeles Mayor¹, Begoña Zubiauz¹, Manuel Peralbo², Luz Fernandez², Alejandro Tunas², Juan Brenlla², ¹University of Salamanca, ²University of Coruña
- 72 **From picture to print: The reading and literacy development of Chinese young children**
Jing Zhou, Jing Zhou, Baogen Liu, East China Normal University
- 73 **Interactive reading with deaf pupils: progress in discourse and morphosyntactic development**
Marie-Pierre Baron¹, Hélène Makdissi¹, Andrée Boisclair¹, Edy Veneziano², ¹Université Laval, ²Université Paris Descartes
- 74 **The Continuity of the Home-School Storytelling Experiences of Dual-Language Learners**
Adina Schick, Gigliana Melzi, New York University
- 75 **Oral narratives with pedagogical intervention as a way to improve reading comprehension: A longitudinal study**
Hélène Makdissi¹, Edy Veneziano², Andrée Boisclair¹, Marie-Pierre Baron¹, Chantal Caracci², Christian Hudelot³, Marie-Hélène Plumet⁴, Serge Poncin², Nathalie Salagnac⁵, ¹Université Laval, ²Université Paris Descartes - CRNS, ³CNRS-Université de Nice Sophia-Antipolis, ⁴Université Paris Descartes - INSERM, ⁵IUFM de Lille
- 76 **Skills related to phonological and morphological processing in first grade children with reading difficulties**
Marie-Catherine St-Pierre, Edith Lambert-Bonin, Christel Mérette-Attiew, Université Laval
- 77* **Abstract language use during mother-toddler book sharing: A comparison of storybook and vocabulary book genres**
Angela Nyhout, Daniela O'Neill, University of Waterloo

* Student Poster Competition

- 78 ***A mismatch preference in Japanese children's mapping between particles and intentionality***
Franklin Chang¹, Tessei Kobayashi², ¹University of Liverpool, ²NTT Communication Sciences Laboratories, Japan

Neurocognitive correlates

- 79 ***The Roots of Action Verbs in Event Structure: A Neurophysiological Perspective***
Amy Pace¹, Margaret Friend¹, Leslie Carver², ¹San Diego State University, ²University of California at San Diego

- 80 ***Children's reliance on the pause as prosodic boundary marker: ERP studies on intonational phrase perception in German 3- and 6-year-olds***
Claudia Männel, Angela D. Friederici, Max Planck Institute for Human Cognitive and Brain Sciences

New methods in child language research

- 81 ***The role of gaze behavior in interaction between children with hearing impairment and normally hearing peers***
Olof Sandgren, Richard Andersson, Kristina Hansson, Birgitta Sahlén, Lund University

- 82 ***Production-comprehension asymmetry of word order: Dutch preschoolers tested with three different comprehension tasks***
Gisi Cannizzaro, University of Groningen

Other themes in child language research

- 83 ***Simultaneous Gesture and Language Production in School-age Children with Perinatal Stroke***
Angel H. Li, Philip T. Lai, Judy S. Reilly, San Diego State University

- 84 ***Language and Affective Expression in Children with Perinatal Stroke***
Philip Lai^{1,2}, Angel Li¹, Judy Reilly^{1,3}, ¹San Diego State University, ²University of California San Diego, ³Université de Poitiers

Quantitative and qualitative input factors

- 85 ***What the eyes don't see: How the visual scene affects children's ability to demonstrate linguistic knowledge in visual world paradigms***
Caroline Rowland¹, Angel Chan², University of Liverpool, ²Hong Kong Polytechnic University

- 86* ***Parental Linguistic Input and Children's Vocabulary Development***
Christine Cox Eriksson, Stockholm University

Speech

- 87 ***Toddler's recognition of noise-vocoded speech***
Monita Chatterjee, Rochelle Newman, Giovanna Morini, Daniel Eisenberg, University of Maryland

- 88 ***Phonological development in Dutch SLI***
Annelies Bron, Annette Scheper, Royal Dutch Kentalis

- 89 ***Phonetic and Phonological Acquisition Among French Preschool-Aged Children***
Andrea A.N. MacLeod, Université Laval

- 90 ***Can children perceive fine phonetic detail from own productions?***
Larissa Cristina Berti, São Paulo State University

- 91 ***Nouns and Verbs in children with Specific Language Impairment (SLI): Evidence from eye movements***
Llorenç Andreu Barrachina¹, Jennifer Johnson², Cristina Martí², Javier Rodríguez Ferreiro², Lucia Buil Legaz³, Mònica Sanz-Torrent², ¹Universitat Oberta de Catalunya, ²Universitat de Barcelona, ³Universitat de les Illes Balears

PLEASE, SEE THE WHAT TO DO TONIGHT SECTION OF THIS PROGRAM

* Student Poster Competition

●
IASCL CENTRAL
Light Breakfast and Poster Set Up

●
IASCL CENTRAL
MORNING PLENARY SESSION

8:30 – 9:45

IASCL Central • Main Amphitheater

Plenary Session 4

Speaker Deb Roy, *Director of the Cognitive Machines group at the MIT Media Lab*

A STUDY OF LANGUAGE DEVELOPMENT IN CONTEXT

Naturalistic longitudinal recordings of child development promise to reveal fresh perspectives on basic questions of language learning. In a pilot effort, we have recorded 230,000 hours of multi-track audio and video recordings spanning the first three years of one child's life at home. To study a corpus of this scale and richness, we are developing new methods for data analysis and interpretation that combine pattern recognition algorithms with interactive user interfaces and data visualization. Preliminary speech analysis reveals surprising levels of linguistic fine-tuning by caregivers that may provide crucial support for word learning. Ongoing analyses of the corpus aim to understand the influence of social activity patterns on language development as revealed through motion analysis of video. Initial efforts to collect similar corpora from more children based on a transportable recording system are also underway.

●
SATELLITES 1 & 2
Coffee Break

●
SATELLITE 1
MORNING SYMPOSIA
AMPHITHEATERS A•B•C•D

10:15 – 12:30

Amphitheater A • Satellite 1

Symposium Session 5 • A**STABILITY OF LANGUAGE DEVELOPMENT: FROM INFANCY TO ADULTHOOD**

Convener Sheena Reilly, *Murdoch Children's Research Institute, Melbourne*

Discussant Gina Conti-Ramsden, *University of Manchester*

Profiles of language development in pre-school children: a longitudinal latent class analysis of data

Obi Ukoumunne¹, Sheena Reilly², Melissa Wake³, Edith Bavin³, John Carlin³, Joanne Williams³, Jarrad Lum³, Jemma Skeat¹, ¹*Murdoch Children's Research Institute*, ²*University of Melbourne*, ³*Royal Children's Hospital*

Mapping patterns of change from 12 months to 8 years

James Law¹, Sue Roulstone², ¹*Newcastle University*, ²*University of the West of England*

Group and individual differences in adult outcome of children identified as language impaired at school entry

James Law, *Newcastle University*

Growth trajectories of vocabulary and sentence use from school entry into adolescence

Bruce Tomblin, *University of Iowa*

10:15 – 12:30
Amphitheater B • Satellite 1
Symposium Session 5 • B

CHILDREN'S UNDERSTANDING OF SPACE: TRACKING DEVELOPMENT IN (SPATIAL) LANGUAGE AND (SPATIAL) COGNITION

Convener Hannah De Mulder, *Utrecht University*

Understanding minds through space: The relationship between theory of mind and spatial language
Hannah De Mulder, *Utrecht University*

Children's spatial thinking: Does talk about space matter?
Shannon Pruden¹, Susan C. Levine², Janellen Huttenlocher², ¹*Florida International University*, ²*University of Chicago*

Words from space: Spatial cognition and (spatial) language in early development
Ora Oudgenoeg-Paz, Chiel Volman, Paul Leseman, Marian Jongmans, *Utrecht University*

Infant sequential learning across domains: Language and visuospatial perception
Desiree Capel, Frank Wijnen, *Utrecht University*

10:15 – 12:30
Amphitheater C • Satellite 1
Symposium Session 5 • C

A CROSS-LINGUISTIC STUDY OF PRESCHOOLERS' NARRATIVES AND THEIR DEVELOPMENT

Convener Ageliki Nicolopoulou, *Lehigh University*
Discussant Dan Slobin, *University of California at Berkeley*

Emerging narratives: A cross-linguistic study
Judy Reilly¹, Ayhan Aksu-Koc², Mark Appelbaum¹, Dorte Bleses³, Chien-ju Chang⁴, Marten Eriksson⁵, Svetlana Kapalkova⁶, Sophie Kern⁷, Jelena Kuvac-Kraljevic⁸, Ageliki Nicolopoulou⁹, Julian Parris¹, Miguel Perez Pereira¹⁰, Alessandra Sansavini¹¹, Ralf Vollmann¹², ¹*San Diego State University*, ²*Bogazici University*, ³*University of Southern Denmark*, ⁴*National Taiwan Normal University*, ⁵*University of Gävle*, ⁶*Comenius University in Bratislava*, ⁷*University of Lyon*, ⁸*University of Zagreb*, ⁹*Lehigh University*, ¹⁰*University of Santiago de Compostela*, ¹¹*University of Bologna*, ¹²*University of Graz*

A cross-linguistic study of character reference in young children's narratives
Ageliki Nicolopoulou¹, Ayhan Aksu-Koc², Aylin Kuntay³, Christina Andersen⁴, Chien-ju Chang⁵, Matt Ignacio⁶, Daniela Slancová⁹, ¹*Lehigh University*, ²*Bogazici University*, ³*Koc University*, ⁴*University of Southern Denmark*, ⁵*National Taiwan Normal University*, ⁶*San Diego State University*, ⁷*University of Presov*

Coordination and subordination in preschoolers' narratives in nine languages
Ralf Vollmann¹, Katrin Bartl¹, Maria Papakonstantinou², Alessandra Sansavini³, Chien-ju Chang⁴, Sophie Kern⁵, Jelena Kuvac-Kraljevic⁶, ¹*University of Graz*, ²*Aristotle University of Thessaloniki*, ³*University of Bologna*, ⁴*National Taiwan Normal University*, ⁵*University of Lyon*, ⁶*University of Zagreb*

10:15 – 12:30
Amphitheater D • Satellite 1
Symposium Session 5 • D

FREQUENCY EFFECTS

Convener Heike Behrens, *University of Basel*

Introduction: What counts? Frequency effects across constructions
Heike Behrens, *University of Basel*

More than words: how frame frequency and predictability affect children's word production
Inbal Arnon¹, Eve V. Clark², ¹*University of Manchester*, ²*Stanford University*

Input (in)sensitivity in the acquisition of novel phrasal constructions
Jeremy K. Boyd¹, Elizabeth Wonnacott², Jennifer Thomson², Adele E. Goldberg³, ¹*University of Illinois*, ²*University of Oxford*, ³*Princeton University*

Processing cue frequencies across constructions
Silke Brandt¹, Elena Lieven^{1,2}, Michael Tomasello¹, ¹*MPI-EVA*, ²*University of Manchester*

Flat frequency distribution facilitates learning of novel morphological constructions
Grzegorz Krajewski¹, Ann-Kristin Siebenborn², ¹*University of Manchester*, ²*Ludwig-Maximilians-Universität*

SATELLITE 2
MORNING SYMPOSIA
AMPHITHEATERS E•F•G•H

10:15 – 12:30
Amphitheater E • Satellite 2
Symposium Session 5 • E

RULES VERSUS CONSTRUCTIONS: A DEBATE ON QUESTION ACQUISITION

Convener Ben Ambridge, *University of Liverpool, UK*

The acquisition of yes/no and wh-questions in English
Lucia Pozzan, Lidiya Tornyova, Virginia Valian, *CUNY*

What factors affect children's production of double marking errors in questions?
Thea Cameron Faulkner, Anna Theakston, *University of Manchester*

Why are non-inverted wh-question errors observed in English but not German? A cross-linguistic experimental/corpus study
Daniel Schmerse¹, Ben Ambridge², Silke Brandt¹, Caroline F. Rowland², Elena V. M. Lieven¹, ¹MPI-EVA, ²University of Liverpool

The Acquisition of Question Word Order in English and Norwegian: Micro-cues vs Frames
Marit Westergaard, Kristine Bentzen, *University of Tromsø*

10:15 – 12:30
Amphitheater F • Satellite 2
Symposium Session 5 • F

DEVELOPMENT OF VERBAL AND GESTURAL EXPRESSIONS OF MOTION EVENTS: NEW INSIGHTS FROM DIFFERENT LINGUISTIC ENVIRONMENTS AND AGES

Convener Michèle Guidetti, *University of Toulouse*
Discussant Maya Hickmann, *Université Paris 8-CNRS*

Early language-specificity in Turkish children's caused motion event expressions in speech and gesture
Reyhan Furman, Asli Ozyurek, *Max Planck Institute for Psycholinguistics*

Development of iconic gestures and sound symbolic words in motion event narratives in Japanese
Sotaro Kita¹, Asli Ozyurek², Shanley Allen³, Tomoko Ishizuka⁴, ¹University of Birmingham, ²MPI, Nijmegen, ³Boston University, ⁴Tama University

Development of speech-gesture relations in the context of French and Czech descriptions of motion events
Katerina Fibigerova¹, Michèle Guidetti¹, Lenka Sulova², ¹University of Toulouse, ²Charles University, Prague

Speaking and gesturing about placement: The development of verb meaning in Tamil and Dutch
Marianne Gullberg¹, Bhuvana Narasimhan², *Lund University*, ²University of Colorado

10:15 – 12:30
 Amphitheater G • Satellite 2
Symposium Session 5 • G

BRIDGING L1 AND L2 ACQUISITION: SYMPOSIUM IN HONOR OF BRIAN MACWHINNEY

Convener Ping Li, *Pennsylvania State University*

Is L2 acquisition fundamentally different from L1 acquisition?

Brian MacWhinney, *Carnegie Mellon University*

Why we don't need a theory of language acquisition

William O'Grady, *University of Hawaii at Manoa*

Modeling the interactive dynamics of L1 and L2 lexical development

Ping Li, *Pennsylvania State University*

The landscape of word learning in first language, second language, and bilingual acquisition: The search for causes and effects

Barbara Zurer Pearson, *University of Massachusetts*

Native and non-native speech perception in infancy: The development of lexical-tone and consonant perception

Feng-Ming Tsao¹, Huei-Mei Liu², ¹*National Taiwan University*, ²*National Taiwan Normal University*

10:15 – 12:30
 Amphitheater H • Satellite 2
Symposium Session 5 • H

THE MENTAL LEXICON IN LATER LANGUAGE DEVELOPMENT: INSIGHTS FROM HEBREW

Convener Ruth Berman, *Tel Aviv University*

Discussant Batia Seroussi, *Tel Aviv University*

Introduction: Goals and design

Ruth A. Berman, *Tel Aviv University*

Sublexical offline and online processing

Bracha Nir, *Haifa University*

Word associations in lexical development

Batia Seroussi, *Tel Aviv University*

Knowledge of Words Isolated and in Context

Lyle Lustigman, *Tel Aviv University*

●
 LUNCH

●
 IASCL CENTRAL

12:30 – 13:00
 IASCL Central • Corridor
Prepaid Lunch Box Distribution

12:30 – 14:30
 IASCL Central • Foyer
Pre-Poster Session 3

SATELLITE 1

12:30 – 14:30
 IASCL Central • 2nd Floor, Room J 2805

IASCL BUSINESS MEETING

SATELLITE 1
AFTERNOON SYMPOSIA
AMPHITHEATERS A•B•C•D

14:30 – 16:45
Amphitheater A • Satellite 1
Symposium Session 6 • A

EARLY GENDER DIFFERENCES IN LANGUAGE: A DEVELOPMENTAL PERSPECTIVE

Convener Stéphanie Barbu, *Université de Rennes 1 - CNRS*
Discussant Marc Bornstein, *NIH/NICHHD*

Dolls vs. cars: Quantitative and qualitative differences in first words production according to gender at two years of age

Sophie Kern¹, Toni Alfaiate², Barbara Heude², Maria De Agostini², ¹*Laboratoire Dynamique du Langage*, ²*INSERM*

Do early sex differences in gesture predict later language outcomes for boys and girls?

Seyda Ozçaliskan¹, Caroline Trofatter², Susan Goldin-Meadow², ¹*Georgia State University*, ²*University of Chicago*

Small but consistent gender differences in children's vocabulary

Marc H. Bornstein¹, ¹*National Institute of Child Health and Human Development*

Gender differences in language vary according to family socioeconomic status: what is the influence of mothers' and fathers' input during early childhood?

Stéphanie Barbu¹, Bahia Guellai¹, Ludivine Glas¹, Aurélie Nardy², Jean-Pierre Chevrot², Alban Lemasson¹, ¹*University of Rennes 1 - CNRS*, ²*University of Grenoble 3*

14:30 – 16:45
Amphitheater B • Satellite 1
Symposium Session 6 • B

CONSTRUCTING VERBS AND THEIR MEANINGS

Conveners: Eve Clark¹ and Edy Veneziano², ¹*Stanford University*, ²*Université Paris Descartes-CNRS*
Discussant Bruno Estigarribia, *University of North Carolina*

Acquiring verbs in French: Inflections, constructions and conversational usage

Edy Veneziano¹, Eve V. Clark², ¹*Université Paris Descartes-CNRS*, ²*Stanford University*

Building on Adult Verb Uses

Eve V. Clark, Marie Catherine de Marneffe, *Stanford University*

Using Contrast to Infer Verb Meaning

Jane B. Childers, Amy Hirshkowitz, *Trinity University*

Setting up contrasting verb forms in Mexican Spanish

Cecilia Rojas-Nieto, *Universidad Nacional Autónoma de México*

14:30 – 16:45
Amphitheater C • Satellite 1
Symposium Session 6 • C

THE SOCIALLY CONSTRUCTED COMMUNICATIVE ACT OF MUSIC ACQUISITION

Convener & Discussant Suzanne Burton, *University of Delaware, Newark*

Links in Adult-Infant Chains of Interaction in Language and Music Acquisition

Jill Reese, *Temple University*

Is It Music? Investigating Sequences Of Vocal And Movement Events Among Adults And Young Children In Early Childhood Settings

Alison Reynolds¹, Suzanne Burton², Jill Reese¹, ¹*Temple University*, ²*University of Delaware*

Language Acquisition: A Lens on Musical Development

Suzanne Burton, *University of Delaware*

Anthony, Autism, and Communicating with Him through Music Play

Wendy Valerio, *University of South Carolina*

14:30 – 16:45
Amphitheater D • Satellite 1
Symposium Session 6 • D

NEW METHODS AND APPLICATIONS FOR PARENT-REPORT MEASURES OF CHILD LANGUAGE

Convener Dorthe Bleses, *University of Southern Denmark*
Discussant Philip Dale, *University of New Mexico*

Using the Internet for data collection for CDI: an example from Norway
Kristian Kristoffersen, Hanne Gram Simonsen, *University of Oslo*

A new checklist method for narrative development
Dorthe Bleses¹, Judy Reilly², Svetlana Kapalkova³, Daniella Slancova³, ¹*University of Southern Denmark*, ²*San Diego State University*, ³*Cornelius University*

Self reported child input frequency information
Rune Jorgensen¹, Ivan Iashine¹, Werner Vach², ¹*University of Southern Denmark*, ²*University of Freiburg*

New approaches to utilizing the parent checklist format for more advanced grammatical and pragmatic development
Werner Vach¹, Philip Dale², ¹*University of Freiburg*, ²*University of New Mexico*

**SATELLITE 2
AFTERNOON SYMPOSIA
AMPHITHEATERS E•F•G•H**

14:30 – 16:45
Amphitheater E • Satellite 2
Symposium Session 6 • E

DEVELOPMENT OF CHILDREN'S SYMBOLIC GESTURES

Convener Elena Nicoladis, *University of Alberta*

Preverbal Pragmatists: The developmental trajectory of preverbal children's symbolic gestures in enriched gesturing environments
Claire Vallotton, Kalli Decker, Ashley Karsten, Jessica Topor, Michelle Scott, *Michigan State University*

Recognition of iconicity in symbolic gestures emerges gradually over development
Laura Namy, *Emory University*

A longitudinal case study of the acquisition of symbolic gestures as object labels
Elena Nicoladis, Jennifer St. Jean, Paula Marentette, *University of Alberta*

Get by with a little help from a word: multimodal input facilitates 26-month-olds' ability to learn symbolic gestures as labels
Makeba Parramore Wilbourn, Jacqueline Prince Sims, *Duke University*

Amphitheater F • Satellite 2
Symposium Session 6 • F

LANGUAGE AND LITERACY DEVELOPMENT THROUGH CHILDHOOD AND ADOLESCENCE: CROSS-LINGUISTIC AND CROSS-MODAL PERSPECTIVES ON COMPLEX SYNTAX

Convener Judy Reilly, *San Diego State University*
Discussant Ruth Berman, *University of Tel Aviv*

Clause combining across modality and text types

Florence Chenu¹, Harriet Jisa^{1,2}, Audrey Mazur-Palandre¹, ¹*Université Lyon 2 - CNRS*, ²*Institut Universitaire de France*

The development of syntactic depth in Spanish spoken narratives

Liliana Tolchinsky¹, Melina Aparici², Nayme Salas³, ¹*Universitat de Barcelona, Barcelona*, ²*Universitat Autònoma de Barcelona, Barcelona*, ³*Bangor University*

The entry to complex syntax: Conjuncts as a strategy in developing text construction

Dorit Ravid, Ruth Berman, *Tel Aviv University*

Spoken and Written Narratives in English and French Speaking Children with Language Impairment

Jun O'Hara¹, Stephanie Chaminaud², Josie Bernicot², Joel Uze³, Beverly Wulfeck¹, Thierry Olive², Monik Favart², Mark Appelbaum⁴, Judy Reilly¹, ¹*San Diego State University*, ²*Université de Poitiers*, ³*Centre Hospitalier Henri Laborit*, ⁴*University of California at San Diego*

14:30 – 16:45
Amphitheater G • Satellite 2
Symposium Session 6 • G

IDENTIFYING THE AGENT: HOW CHILDREN LEARN AND USE SEMANTIC ROLES

Convener Caroline Rowland, *University of Liverpool*

Comprehension of intransitive argument structure: The first-noun-as-agent bias

Claire Noble¹, Anna Theakston², Elena Lieven^{1,2,3}, ¹*Max Planck Child Study Centre*, ²*University of Manchester*, ³*Max Planck Institute for Evolutionary Anthropology*

Learning agents from child-directed speech: A computational perspective

Afra Alishahi¹, Suzanne Stevenson², ¹*Saarland University*, ²*University of Toronto*

The first-noun-as-agent bias: Using eye tracking to investigate how children and adults process transitive sentences

Caroline Rowland¹, Kirsten Abbot-Smith², Heather Ferguson², ¹*University of Liverpool*, ²*University of Kent*

Using perceptual agency to guide syntax acquisition: A connectionist model

Franklin Chang, *University of Liverpool*

14:30 – 16:45
Amphitheater H • Satellite 2
Symposium Session 6 • H

VERBAL AND NONVERBAL MODALITIES CONTRIBUTE TO BUILDING SOCIAL INTERACTION AND THE LEXICON IN AT-RISK AND ATYPICALLY DEVELOPING CHILDREN

Convener Alessandra Sansavini¹, Manuela Lavelli², ¹University of Bologna, ²University of Verona
Discussant Virginia Volterra, *Institute of Cognitive Sciences and Technologies, Italy*

Fit and fine-tuning in interactions between mothers and infants at high vs. Low risk for autism spectrum disorders

Jana Iverson, Nina Leezenbaum, Derrecka Butler, Karen Jakubowski, *University of Pittsburgh*

Early lexical processes in extremely preterm infants

Alessandra Sansavini, Annalisa Guarini, Silvia Savini, Cristina Fabbri, *University of Bologna*

Interacting through acting: Action, gesture and word in the construction of meaning in mother and child with Down syndrome

Olga Capirci¹, Maria Cristina Caselli¹, Emiddia Longobardi², Martina Recchia¹, Arianna Bello³, ¹Institute of Cognitive Sciences and Technologies, ²University of Roma La Sapienza, ³University of Parma

Gestures and speech during shared picture-book reading with preschoolers with specific language impairment

Manuela Lavelli¹, Chiara Barachetti¹, Laura Justice², ¹University of Verona, ²Ohio State University

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IASCL CENTRAL - FOYER
Hors-d'Œuvres & Cash Bar

●
POSTER SESSION

16:45 – 18:30
IASCL Central - Foyer
Poster Session 3

**FESTSCHRIFT POSTER SYMPOSIUM IN HONOR OF CATHERINE SNOW
FROM BABY TALK TO ACADEMIC LANGUAGE**

Conveners Meredith Rowe, Paola Uccelli, Joan Test, Patrick Proctor, Mariela Paez, Gina Biancarosa
Speakers Brian MacWhinney, Elena Lieven, Jean Berko Gleason

- 01** ***Word characteristics related to the acquisition of high frequency academic vocabulary in young English language learners and their English proficient classmates***
Diane August, *Center for Applied Linguistics*
- 02** ***Can L1 vocabulary skills predict L2 vocabulary development? A study of Turkish immigrant children learning Norwegian as a second language***
Vibeke Grøver Aukrust¹, Veslemøy Rydland¹, Joshua F. Lawrence², ¹University of Oslo, ²Harvard University
- 03** ***Academic language in transition: Observations of student-teacher interactions across preschool and kindergarten activity settings***
Alison L. Bailey, *UCLA*
- 04** ***Prekindergarten teachers expanding beliefs and knowledge of early writing***
M. Susan Burns, Julie K. Kidd, *George Mason University*
- 05** ***Long-term associations between talk in preschool and grade four language and reading skills***
David Dickinson¹, Michelle Porche², ¹Vanderbilt, ²Wellesley College
- 06** ***Supporting more than basic skills within an adolescent reading intervention***
Lowry Hemphill, *Wheelock College*
- 07** ***EVOCA: Enhancing Vocabulary through Cognate Awareness***
Liz Howard, *University of Connecticut*

- 08 **Learning and maintaining academic vocabulary: A follow-up evaluation of the Word Generation Program**
Joshua F. Lawrence¹, Claire White², Lauren Capotosto¹, Lee Branum-Martin³, Catherine E. Snow¹, ¹Harvard University, ²Strategic Educational research Partnership², ³University of Houston
- 09 **Low-Income Chilean parents' talk about writing: Links to children's literacy skills**
Diana Leyva, Andrea Rolla, Monica Berrocal, Monica Rodriguez, Magdalena Infante, Harvard University
- 10 **Parents' speech to young children: Additional dimensions of syntactic simplicity**
Anat Ninio, The Hebrew University of Jerusalem
- 11 **Patterns of language and literacy development for Spanish-speaking children**
Mariela M. Páez¹, Patton O. Tabors², ¹Boston College, ²Harvard University
- 12 **Verbal fluency in bilingual children**
Kathleen Peets¹, Lynn Luo², Ellen Bialystok², ¹Ryerson University, ²York University
- 13 **Modeling degrees of bilingualism and their relationship to metalinguistic awareness in English and Spanish**
Patrick Proctor¹, Rebecca Silverman², Jeffrey Harrington², ¹Boston College, ²University of Maryland
- 14 **Caregiver input before joint attention: the role of multimodal motherese**
Pam Rollins, University of Texas, Dallas
- 15 **A developmental look at the role of quantity and quality of child-directed-speech in vocabulary development**
Meredith Rowe, University of Maryland
- 16 **Does maternal schooling and literacy play the same role in mother-child communication in low-income US and Venezuelan families?**
Beatrice Schell-Anzola¹, Meredith Rowe², Barbara Alexander Pan¹, Robert A. LeVine¹, ¹Harvard University, ²University of Maryland
- 17 **Comparing vocabulary in narratives written by English-Language learners and native English speakers**
Rebecca Silverman¹, David Coker², ¹University of Maryland, ²University of Delaware
- 18 **Relationships between naturally-occurring social cognition and language in children's early peer play**
Joan Test, Missouri State University
- 19 **"I do agree": Academic discourse development in teenagers' persuasive writing**
Paola Uccelli¹, Martha Shiro², Christina Dobbs², Jessica Scott², ¹Harvard University, ²Universidad Central de Venezuela
- 20 **Oral proficiency and reading comprehension in Cantonese-speaking ELLs in Canada and the U.S.**
Yuuko Uchikoshi¹, Stefka Marinova-Todd², ¹UC Davis, ²University of British Columbia
- 21 **Early literacy in Hindi: The role of oral reading fluency**
Shaher Banu Vagh¹, Gina Biancarosa², ¹Assessment Survey, Evaluation (ASER) Center, ²University of Oregon
- 22 **Relationships between narrative production, word definition, and receptive vocabulary in a South African sample**
Ingrid Willenberg, Macquarie University

Bilingual first language acquisition

- 35 **Frog, where are you?: Language production in young school age L1 Irish speaking bilingual children in a narrative task**
Sarah-Ann Muckley, Stanislava Antonijevic, National University of Ireland
- 36 **The expression of motion events in bilingual first language acquisition**
Helen Engemann, Henriette Hendriks, University of Cambridge
- 37 **Standardised English language tests useful for bilingual children with an exposure to English of more than 60%**
Andrea Krott³, Caroline Floccia¹, Kirsten Abbot-Smith², Allegra Cattani¹, Frederique Arreckx¹, ¹University of Plymouth, ²University of Kent, ³University of Birmingham
- 38 **The Effect of Language Context on Bilingual Word Recognition**
Giovanna Morini, Rochelle Newman, University of Maryland

Cognition and language development

- 39 ***Do children find it easier to learn verb meanings for 'punctual / change-of-location' actions than for non-causative events?***
Kirsten Abbot-Smith¹, Mutsumi Imai², Samantha Durrant³, ¹University of Kent, ²Keio University, Shonan-Fujisawa, ³University of Plymouth
- 40 ***Do Turkish Learners Employ the Accusative Case in Finding the Agent?***
Yelda Semizer¹, Ayse Candan², Ercenur Ünal³, Letitia R. Naigles⁴, Aylin C. Küntay³, ¹Bogaziçi University, ²Cornell University, ³Koç University, ⁴University of Connecticut
- 41 ***Information processing in Dutch children with SLI***
Annette Scheper, Juliane Cuperus, Heleen van der Vlugt, Annelies Bron, Annemiek ter Wal, Brigitte Vugs, Koninklijke Kentalis
- 42 ***Children's emerging understanding of different time metaphors***
Lauren J. Stites, Seyda Özçaliskan, Georgia State University
- 43 ***When no means no: A comprehension study***
Keith Austin¹, Anna Theakston¹, Elena Lieven², Michael Tomasello², ¹University of Manchester, ²Max Planck Institute for Evolutionary Anthropology
- 44 ***Development of Verb Learning: The Changing Role of Syntactic Variation***
Rachel Albert, Jennifer Schwade, Nicole Kardassakis, Heidi Waterwall, Michael Goldstein, Cornell University
- 45 ***Explanations and late multimodal development: evidence from French children***
M. Guidetti¹, A. Reig Alamillo², J.-M. Colletta³, ¹University of Toulouse, ²University of Mexico, ³University Grenoble 3
- 46* ***Comparing Infants' Learning of Statistical Regularities in Auditory and Visual Sequences with Complex, Familiar Stimuli***
Jennifer B. Misyak, Lauren L. Emberson, Jennifer A. Schwade, Morten H. Christiansen, Michael H. Goldstein, ¹Cornell University
- 47 ***The relationship between working memory and syntactic complexity in children with Specific Language Impairment***
Scheuer Jessica, Campanelli Luca, Cruz Joseline, Puglik Ingrid, Naomi Eichorn, Goral Mira, Obler Loraine, Marton Klara, Graduate Center / CUNY
- Cultural and social factors**
- 48 ***A cross-linguistic study on the acquisition of mental state words***
Diane Poulin-Dubois¹, Sabrina Chiarella¹, Susanne Kirsten², Beate Sodian², Tiziana Aureli³, Maria Genco³, ¹Concordia University, ²Ludwig-Maximilian University, ³University of Chieti-Pescara
- 49 ***A Study of the Relationship Between Preschool Chinese-speaking Children's Metaphors and Their Social Cognition***
Li Zheng, Nanjing Normal University
- 50 ***The use of questions by Aboriginal pre-school age children and their caregivers in a Walmajarri community***
Karin Moses, La Trobe University
- 51 ***Difficult Sounds in Ibibio Monolingual Children: Pedagogical and Clinical Implications***
Ekaete Akpan, University of Port Harcourt
- First language acquisition**
- 52 ***The path children follow in the acquisition of the Turkish causative***
Mine Nakipoglu, Özge Sarigul, Neslihan Yumrutas, Esra Yildiz, Bogazici University
- 53 ***A developmental study of referential strategies in the Thai Frog Stories***
Theeraporn Ratitamkul, Chulalongkorn University
- 54 ***The influence of input on the acquisition of liaison in two girls aged 3;0 and 3;4***
Chabanal Damien, Université Blaise Pascal
- 55 ***Production enhances non-word recognition***
Tania Zamuner¹, Mike Page², ¹University of Ottawa, ²University of Hertfordshire

* Student Poster Competition

- 56 **Acquisition of plural noun and past tense morphology in Dutch: The roles of phonology and frequency**
Judith Rispens¹, Elise de Bree², Annemarie Kerkhoff², ¹University of Amsterdam, ²University of Utrecht
- 57 **Does putting make a good pudding? Detecting word-medial mispronunciations of voicing in monomorphemic and bimorphemic forms in Dutch**
Helen Buckler¹, Paula Fikkert¹, ¹Max Planck Institute for Psycholinguistics, ²Radboud University
- 58 **From One Place to the Next**
Sho Tsuji², Paula Fikkert¹, Reiko Mazuka², ¹Radboud University, Nijmegen, ²Riken Brain Science Institute
- 59 **Does novel word learning depend on phonological skills or on phonological short-term memory? A study with 4-to-5-year-old French speaking children**
Daniela Gabriel Mounir, Lucie Schoenhals, Pascal Zesiger, University of Geneva
- 60 **Relationship between parent-rated productive vocabulary size and phonological complexity in Swedish infants**
Ulrika Marklund, Francisco Lacerda, Iris-Corinna Schwarz, Stockholm University
- 61 **Other-repairs in adult-child interactions: insights about adult's representations of children's linguistic development**
Marie Collombel¹, Stéphanie Caët², Naomi Yamaguchi², Aliyah Morgenstern², ¹Université Paris Descartes, ²Université Sorbonne Nouvelle
- 62 **Acquisition of Elliptical Constructions in Child Mandarin**
Ruya Li¹, Dingxu SHI¹, Jianhua HU², ¹The Hong Kong Polytechnic University, ²Chinese Academy of Social Sciences, Beijing
- 63 **Did she blink the tree or blink around the tree?: The development of sentence frame effects on motion verb interpretation**
Emma Keltz, Letitia Naigles, University of Connecticut
- 64 **Connective use in stories by children with and without language impairment**
Phyllis Schneider, University of Alberta
- 65 **This is a question? The influence of non-canonical input and functional factors on the L1-acquisition of polar question constructions**
Ursula Kania, University of Leipzig
- 66 **Predictors of 4-year-old Turkish-speaking Children's Vocabulary and Narrative skills**
Sevcan Ayas Koksall, Nazli Baydar, Aylin Kuntay, Koc University
- 67 **A stealer is not a man that steals: formal structure and semantic content when defining words of different morphological categories**
Milagros Albert, Liliana Tolchinsky, Universidad de Barcelona
- 68 **The acquisition of the passive in European Portuguese**
Antónia Estrela, Universidade Nova de Lisboa
- 69 **Early interpretation of stress and pitch contrasts in European Portuguese**
Sónia Frota, Cátia Severino, Susana Correia, Universidade de Lisboa
- 70 **Early lexical and morphological development assessed by using the Turkish Communicative Development Inventory: A large sample study**
Funda Acarlar⁴, Ayhan Aksu-Koç², Burçak Aktürk¹, Beyza Ates Sen¹, Ilknur Mavis⁵, Aylin Küntay¹, Hatice Sofu⁶, Seyhun Topbas⁵, Figen Turan³, ¹Koç University, ²Bogaziçi University, ³Hacettepe University, ⁴Ankara University, ⁵Anadolu University, ⁶Çukurova University
- 71 **Iconicity in Lexical Acquisition: How Do Children Understand the Sound-Symbolic Words varying in Degree of Iconicity?**
Noburo Saji¹, Mutsumi Imai², Asako Isawa², ¹Keio Advanced Research Centers, Tokyo, ²Keio University at Shonan-Fujisawa
- 72 **The contribution of grammatical and discourse-pragmatic effects to the acquisition of referential choice in child English**
Mary Hughes¹, Shanley Allen², ¹Boston University, ²University of Kaiserslautern
- Language development in atypical populations**
- 73 **Creative errors in spontaneous speech in Japanese specific language impairment: a case study**
Tomohiko Ito¹, Suzy E. Fukuda², Shinji Fukuda³, ¹Tokyo Gakugei University, ²Aoyama Gakuin University, ³Health Science University of Hokkaido

- 74 ***(Re) telling a story: the role of auditory attention and memory in Dutch children with SLI***
Iris Duinmeijer, Annette Scheper, Koninklijke Kentalis

- 75 **Taking into account mutual intentions in natural setting: A comparative study of the negotiation of oppositional episodes in autistic and typical children**
Marie-Hélène Plumet¹, Edy Veneziano², Solenne Pingault³, ¹Université Paris Descartes-INSERM, ²Université Paris Descartes-CNRS, ³CH Charles Perrens
- 76 **Inferential abilities of kindergarten children with specific language impairment**
Pamela Filiatrault-Veilleux, Geneviève Tarte, Chantal Desmarais, Université Laval
- 77 **Morpheme in noise perception in cochlear-implanted and language-impaired children**
Annemiek Hammer¹, Martine Coene², ¹Vrije Universiteit, Amsterdam, ²The Eargroup, Antwerp-Deurne
- 78 **Use of prepositions by monolingual Spanish-speaking children with and without Language Impairment**
Alejandra Auza, Universidad Autónoma de Querétaro
- 79 **Sentence production profiles in children with SLI: Effects of task choice on production of verb argument structure**
Carol-Anne Murphy, University of Limerick
- 80 **Patterns of gaze to speaking faces in children with autism spectrum disorders**
Julia Irwin, Lawrence Brancazio, Lauren Tornatore, Jessica Ross, Haskins Laboratories
- 81 **Comparing specific profiles of phonological and morphological development in Down syndrome**
Eliseo Diez-Itza¹, Manuela Miranda¹, Aranzazu Antón¹, Verónica Martínez², ¹University of Oviedo, ²University of Barcelona
- 82 **Functional categories in the grammar-pragmatic interface: an account of learning disability and Pragmatic Language Impairment**
Jacqueline Rodrigues Longchamps, Leticia M. Sicuro Corrêa, Pontifical Catholic University of Rio de Janeiro
- 83 **Acoustic characteristics of maternal speech to young children with typical development and young children with autism**
Heidi Flores, Jacob Burack, Aparna Nadig, McGill University
- 84 **The predictive value of the development of early vocalizations in very-low-birth-weight children**
Suvi Stolt¹, Liisa Lehtonen², Leena Haataja², Helena Lapinleimu², PIPARI Study Group², ¹University of Turku, ²Turku University Hospital
- 85 **Occlusive sound perception in children with hearing aid and cochlear implant**
Eliane Delgado-Pinheiro, Larissa Berti, Fernanda Antônio, Universidade Estadual Paulista
- 86 **The contribution of grammatical and discourse-pragmatic effects to the acquisition of referential choice in child English**
Mary Hughes¹, Shanley Allen², Boston University, ²University of Kaiserslautern
- Literacy and language**
- 87 **Creative Writing Strategies of Young Children: Evidence from a Study of Chinese Emergent Writing**
Si Chen, East China Normal University
- 88 **The development of complex text construction in Icelandic: Vocabulary and syntactic density in written compared to spoken narratives and expository texts**
Hrafnhildur Ragnarsdóttir, University of Iceland
- Neurocognitive correlates**
- 89* **Event-related gaze analysis in infant eye-tracking studies**
Ellen Marklund, Stockholm University
- Speech**
- 90 **Phonetic and Phonological Characteristics of Childhood Apraxia of Speech in French-Speaking Preschool Aged Children**
Line Charron¹, Ismaël Mériouma-Carron², Marie Gosselin², Andrea A.N. MacLeod², ¹Institut de Réadaptation des Déficiences Physiques de Québec, ²Université Laval
- 91 **Does speaker exposure enhance infants' word recognition?**
Marieke van Heugten, Elizabeth Johnson, University of Toronto

* Student Poster Competition

IASCL CENTRAL
EVENING PLENARY SESSION

18:30 – 19:45
IASCL Central • Main Amphitheater
Plenary Session 5

PRESENTATION OF IASCL'S ROGER BROWN AWARD

SPECIAL COMEDY – PRESENTATION BY THOMAS FRAPS*

Language Acquisition Revisited
Comedy, Language and the Brain: How to Turn Adults into Children

* *"Germans and Comedy - it takes a magician to make this miracle happen!"*

PRIZE DRAW

Free registration to IASCL 2014, among other prizes

●
IASCL CENTRAL
Light Breakfast and Poster Set Up
●

8:30 – 9:45
IASCL Central - Amphitheater
Plenary Session 6

STUDENT AWARD SYMPOSIUM PRESENTATIONS

Acquiring a first-language in adolescence

Naja Ferjan Ramirez, Amy M. Lieberman, Rachel I. Mayberry, *University of California at San Diego*

Rule learning is constrained when multiple interpretations are possible

Elena Kulaguina, Rushen Shi, *Université du Québec à Montréal*

Joint Attention and Vocabulary Development: A cross-cultural, observational study of Mozambican infants from 12- to 18-months

J. Douglas Mastin, *Tilburg University*

Lexical Tonality Affects Speech Perception and Word Learning by Bilingual Children

Laura Morett¹, Seok Hui Tan², ¹*University of California at Santa Cruz*, ²*National University of Singapore*

FINAL REMARKS

●
SATELLITES 1 & 2
Coffee Break
●

SATELLITE 1
MORNING SYMPOSIA
AMPHITHEATERS A•B•C•D

10:15 – 12:30
Amphitheater A • Satellite 1
Symposium Session 7 • A

EARLY ADJECTIVES IN INPUT AND OUTPUT: A CROSS-LINGUISTIC LONGITUDINAL STUDY

Convener Wolfgang Dressler, *Austrian Academy of Sciences*
Discussant Dorit Ravid, *Tel-Aviv University*

Conceptual framework and research questions

Wolfgang Dressler¹, Dorit Ravid², Marianne Kilani-Schoch³, ¹*Austrian Academy of Sciences*, ²*Tel Aviv University*, ³*University of Lausanne*

Methodology

Ayhan Aksu-Koc¹, Steven Gillis², Bracha Nir³, Aris Xanthos⁴, ¹*Bogazici University*, ²*University of Antwerp*, ³*Haifa University*, ⁴*University of Lausanne*

Syntactic and morphological analyses and results

Katharina Korecky-Kröll¹, Sabine Laaha¹, Iris Leibovitch², ¹*Austrian Academy of Sciences*, ²*Tel Aviv University*

Semantic categories in early adjective lexicons

Elena Tribushinina¹, Ronit Levie², ¹*University of Antwerp*, ²*Tel Aviv University*

10:15 – 12:30
Amphitheater B • Satellite 1
Symposium Session 7 • B

PROFILES OF PRAGMATIC LANGUAGE IMPAIRMENT IN CHILDREN WITH AUTISM SPECTRUM DISORDERS

Convener Peter de Villiers, *Smith College*

Pragmatic abilities in narrative production: A cross-disorder comparison

Courtenay Norbury¹, Tracy Gemmell², Rhea Paul³, ¹*University of London*, ²*Winnebago County Special Education Cooperative*, ³*Yale Child Study Center*

Talking pronouns not referring to them: pragmatic limitation of children with ASD in pronoun production in narratives

Rama Novogrodsky, *Boston University*

Him or him: pronoun comprehension in ASD

Rebecca Nappa, Joshua Hartshorne, Jesse Snedeker, *Harvard University*

Conversational implicatures in ASD: some are impaired but others are not

Peter de Villiers, Jill de Villiers, *Smith College*

10:15 – 12:30
Amphitheater C • Satellite 1
Symposium Session 7 • C

DEVELOPMENT OF LANGUAGE AND LITERACY SKILLS IN FRENCH IMMERSION

Convener Helene Deacon, *Dalhousie University, Halifax*

Discussant Xi Chen, *OISE/University of Toronto, Toronto*

The effectiveness of phonological awareness training for struggling readers in early French immersion programs

Nancy Wise, *University of Toronto & The York Region District School Board*

English and French literacy development in children from English-speaking and diverse language backgrounds

Karen Au-Yeung, Xi Chen, *OISE/University of Toronto*

Exploring cognate awareness in first grade French immersion children

Adrian Pasquarella¹, Xi Chen¹, Jin Xue², ¹*OISE/University of Toronto*, ²*Beijing International Studies University*

Understanding the Basis of the Potential Transfer of Orthographic Processing to Reading in Young Bilinguals

Eva Commissaire¹, Helene Deacon², ¹*Université Lille3*, ²*Dalhousie University*

10:15 – 12:30
Amphitheater D • Satellite 1
Symposium Session 7 • D

DEVELOPING THE CDI-III FOR DIFFERENT LANGUAGES: SPECIFIC CONSIDERATIONS AND PRELIMINARY NORMS FOR EUSKERA, SPANISH AND SWEDISH

Convener Donna Jackson-Maldonado, *Universidad Autónoma de Querétaro*

Discussant Barbara Conboy, *University of Redlands*

Towards a CDI-III for Swedish children aged 3-4 years

Mårten Eriksson, *University of Gävle*

A CDI-III for Euskera-speaking children between 30 and 44 months

María José Ezeizabarrena, Iñaki García, Margareta Almgren, Andoni Barreña, *Universidad del País Vasco, Mondragon Unibertsitatea, Hizkuntzaren Jabekuntza eta Erabilera, Universidad de Salamanca*

A CDI-III for Spanish-speaking children between 30 and 47 months of age

Donna Jackson-Maldonado, *Universidad Autónoma de Querétaro*

MORNING SYMPOSIA
AMPHITHEATERS E•F•G•H10:15 – 12:30
Amphitheater F • Satellite 2
Symposium Session 7 • F**DETECTING AND INTERPRETING AGREEMENT MORPHOLOGY: CROSS-LINGUISTIC ISSUES****Convener** Ana Pérez-Leroux, *University of Toronto*
Discussant Mihaela Pirvulescu, *University of Toronto****German children's sensitivity to agreement violations are revealed by looking patterns***
Oda-Christina Brandt-Kobe, Barbara Höhle, *Universität Potsdam****Is there a production/comprehension asymmetry in the acquisition of verbal number marking? Evidence from French***Geraldine Legendre¹, Isabelle Barriere², Louise Goyet³, Thierry Nazzi³, ¹*Johns Hopkins*, ²*Brooklyn College*, ³*Université Paris Descartes****Interpreting subject agreement in a rich agreement language: Data from Brazilian Portuguese***
Letania Ferreira¹, Ana Pérez-Leroux², ¹*Augustana College*, ²*University of Toronto****French object clitics in comprehension***Mihaela Pirvulescu, Ana Pérez-Leroux, Nelleke Strik, Yves Roberge, *University of Toronto*10:15 – 12:30
Amphitheater G • Satellite 2
Symposium Session 7 • G**WORD SEGMENTATION IN INFANTS: DISTRIBUTIONAL CUES, SPEECH CUES AND TOP-DOWN PROCESSING****Convener** Rushen Shi, *Université du Québec à Montréal****Developmental differences in the use of native-language prosody for speech segmentation: Evidence from infant learners of Canadian English and Canadian French***Linda Polka¹, Suzanne Curtin², Shani Abada¹, ¹*McGill University*, ²*University of Calgary****Syllabic- and TP-based segmentation in French-learning 8-month-olds***Thierry Nazzi, Louise Goyet, Léo-Lyuki Nishibayashi, *Université Paris Descartes – CNRS****The Chicken and egg problem in early word segmentation: Investigating the role of top-down and bottom-up cues***Elizabeth K. Johnson¹, Amanda Seidl², Michael D. Tyler³, ¹*University of Toronto*, ²*Purdue University*, ³*University of Western Sydney****Syllable-integrity bias and statistical segmentation in infants***Mireille Babineau, Rushen Shi, *Université du Québec à Montréal*10:15 – 12:30
Amphitheater H • Satellite 2
Symposium Session 7 • H**HOW TO MAP FORM TO MEANING: TESTING EMERGENTIST PERSPECTIVES****Convener** Caroline Rowland, *University of Liverpool****The semantics of early transitive utterances: A corpus study***Anna Theakston¹, Rob Maslen², Elena Lieven³, Michael Tomasello³, ¹*University of Manchester*, ²*Max Planck Child Study Centre*, ³*Max Planck Institute for Evolutionary Anthropology****Universal processing biases versus cue cost and competition: The acquisition of transitive sentences in Italian***Kirsten Abbot-Smith¹, Ludovica Serratrice², ¹*University of Kent*, ²*University of Manchester****Cues to the acquisition of semantic roles: New evidence from Cantonese datives***Angel Chan¹, Caroline Rowland², ¹*Hong Kong Polytechnic University*, ²*University of Liverpool****A usage-based acquisition model of argument productivity in Subject-Verb-Object constructions***Paul Ibbotson¹, Daniel Freudenthal², Anna Theakston³, Elena Lieven^{1,3,4}, Michael Tomasello⁴, ¹*Max Planck Child Study Centre*, ²*University of Liverpool*, ³*University of Manchester*, ⁴*MPI-EVA*

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LUNCH

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IASCL CENTRAL

12:30 – 13:00
IASCL Central • Corridor
Prepaid Lunch Box Distribution

12:30 – 14:30
IASCL Central • Foyer
Pre-Poster Session 4

SATELLITE 1
AFTERNOON SYMPOSIA
AMPHITHEATERS A•B•C•D

14:30 – 16:45
Amphitheater A • Satellite 1
Symposium Session 8 • A

ACQUISITION OF MORPHOLOGY AND SYNTAX IN HEARING-IMPAIRED CHILDREN

Convener Eva Wimmer, *University of Bremen, Bremen*

The acquisition of finite verb morphology in hearing impaired children

Eva Wimmer¹, Martina Penke², Johannes Hennies³, Monika Rothweiler¹, Markus Hess³, ¹*University of Bremen*, ²*Ghent University*, ³*University Medical Center Hamburg-Eppendorf*

Finite verb morphology in spontaneous speech of cochlear-implanted children and hearing-aided children with moderate to severe hearing loss

Annemiek Hammer¹, Martine Coene⁴, Johan Rooryck¹, Paul Govaerts⁴, ¹*Leiden University Centre for Linguistics*, ²*Vrije Universiteit Amsterdam*, ³*The Eargroup, Antwerp-Deurne*, ⁴*University of Antwerp*

Analysis of spontaneous language in congenitally hearing impaired adults: an additional perspective to understand the acquisition of morphosyntax in hearing impaired children

Elke Huysmans¹, Jan De Jong², J.M. Festen¹, Theo Goverts¹, ¹*VU University Medical Center*, ²*University of Amsterdam*

Producing active and passive voice: effects of age, hearing impairment and noise in adults

Mirko Hanke¹, Cornelia Hamann¹, Esther Ruigendijk¹, ¹*University of Oldenburg*

14:30 – 16:45
Amphitheater B • Satellite 1
Symposium Session 8 • B

LANGUAGE ACQUISITION AND DEVELOPMENT IN INTERNATIONALLY-ADOPTED CHILDREN

Convener Fred Genesee, *McGill University*

Early and later language development in children adopted from China as infants/toddlers

Karen Pollock, Stephanie Yan, *University of Alberta*

Divergent paths: Effects of age of arrival on course of language development in internationally-adopted children

Jesse Snedeker¹, Carissa Shafto², Joy Geren¹, ¹*Harvard University*, ²*University of Louisville*

Development of English grammatical morphology in internationally adopted children from China

Lara Pierce, Fred Genesee, *McGill University*

Language abilities of internationally-adopted children from China during the early school years: Evidence for early age effects?

Audrey Delcenserie, Fred Genesee, Karine Gauthier, *McGill University*

14:30 – 16:45
Amphitheater C • Satellite 1
Symposium Session 8 • C

LINGUISTIC AND COGNITIVE ASPECTS OF EVIDENTIALITY

Convener Ayhan Aksu-Koç, *Bogaziçi University*
Discussant Dan Slobin, *University of California*

Developing sensitivity to the sources of knowledge: The use of the Japanese hearsay particle tte in mother-child conversation

Tomoko Matsui¹, Taeko Yamamoto², ¹*Kyoto University*, ²*Meijigakuin University*

Evidentials in adult-child conversations in Turkish

Stanka Fitneva¹, Gökçe Aydogdu², ¹*Queens University*, ²*Bilkent University*

Acquisition of The Reflection Principle in Evidentials in Tibetan Questions

ay Garfield¹, Jill de Villiers¹, Kalsang Kalsang¹, Caroline Sluyter¹, Tashi Dolma², ¹*Smith College*, ²*Central University of Tibetan Studies*

Does the evidential system relate to the development of Theory of Mind?

Hale Ögel-Balaban¹, Uta Kraus², Ayhan Aksu-Koç³, Günther Köhnken⁴, Beate Wagener⁴, ¹*Istanbul Bilgi University & Middle East Technical University*, ²*Julius Maximilians Universitaet*, ³*Bogaziçi University*, ⁴*Christian-Albrechts Universitaet zu Kiel*

14:30 – 16:45
Amphitheater D • Satellite 1
Symposium Session 8 • D

BRIDGING SYNTACTIC, SEMANTIC AND VISUAL CUES IN CHILDREN'S REFERENCE ASSIGNMENT

Convener Pirita Pyykkonen, *Saarland University*

Establishing reference online in non-canonical contexts: The case of object relative clauses

Evan Kidd, *La Trobe University & The University of Manchester*

On-line processing of overt and null subject pronouns: Evidence from Italian- and Spanish-speaking bilinguals and monolinguals

Ludovica Serratrice¹, Antonella Sorace², ¹*University of Manchester*, ²*University of Edinburgh*

Cues to pronoun resolution

Joshua K. Hartshorne, Jesse Snedeker, *Harvard University*

Children's and adults' visually situated pronoun resolution

Pirita Pyykkonen¹, Juhani Jarvikivi², ¹*Saarland University*, ²*MPI Nijmegen*

SATELLITE 2
AFTERNOON SYMPOSIA
AMPHITHEATERS E•F•G•H

14:30 – 16:45
Amphitheater F • Satellite 2
Symposium Session 8 • F

MORPHOLOGY IN TYPICAL AND DISORDERED ACQUISITION: CROSS-LINGUISTIC EVIDENCE FOR THE INVOLVEMENT OF MORPHOLOGY IN LITERACY PROCESSES

Conveners Rachel Schiff¹, Dorit Ravid², ¹*Bar Ilan University*
Discussant Dorit Ravid, *Tel-Aviv University*

Children's strategies in reading and understanding complex words
Kathryn Francis, Hélène Deacon, *Dalhousie University*

Plural agreement marking in Hebrew-speaking children with developmental dyslexia compared with normally developing peers
Rachel Schiff¹, Dorit Ravid², ¹*Bar Ilan University*, ²*Tel Aviv University*

Morphological awareness in French children with Specific Language Impairment: Suffix comprehension and production
Séverine Casalis¹, Lucie Macchi¹, Françoise Boidein², ¹*Université de Lille 3 Charles de Gaulle*, ²*Hopital Saint Vincent de Paul*

Metalinguistic awareness in English poor comprehenders: A longitudinal study
Xiuli Tong¹, Hélène Deacon², Kate Cain³, ¹*University of Western Sydney*, ²*Dalhousie University*, ³*Lancaster University*

14:30 – 16:45
Amphitheater G • Satellite 2
Symposium Session 8 • G

FLUENCY AS A MARKER OF EXPRESSIVE LANGUAGE DEVELOPMENT SKILL IN CHILDREN

Convener & Discussant Frank Wijnen, *Utrecht University, Utrecht, Netherlands*

The significance of revisions in grammatical development
Matthew Rispoli, Pamela Hadley, *University of Illinois at Urbana-Champaign*

Morphosyntactic development and speech disruptions in Dutch school-age children with SLI
Rob Zwitserlood¹, Frank Wijnen¹, Ludo Verhoeven², Marjolijn van Weerdenburg², ¹*Utrecht University*, ²*Radboud University*

On the surface and hidden below: spoken fluency and brain activation in children with typical and impaired language skills
Nan Bernstein Ratner, Mara Steinberg, Madison Berl, William D. Gaillard, *University of Maryland, College Park*

The development of sentence planning: an experimental approach
Dana McDaniel¹, Cecile McKee², Merrill Garrett², ¹*University of Southern Maine*, ²*University of Arizona*

14:30 – 16:45
Amphitheater H • Satellite 2
Symposium Session 8 • H

PSYCHOLOGICAL SIGNIFICANCE AND TYPOLOGY OF PHONOLOGICAL TEMPLATES IN EARLY WORD LEARNING

Convener Marilyn Vihman, *University of York*
Discussant Lise Menn, *University of Colorado*

Phonological templates in French
Sophie Wauquier, Naomi Yamaguchi, *Université Paris 8*

Phonological templates in Lebanese Arabic
Ghada Khattab, Jalal Al-Tamimi, *Newcastle University*

The effect of production templates on word learning and word recognition
Tamar Keren-Portnoy¹, Rory DePaolis², Marilyn Vihman¹, Amy Bidgood¹, Michelle McGillion¹, ¹*University of York*, ²*James Madison University*, ³*Université Paris 8*, ⁴*University of Newcastle*

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IASCL CENTRAL
Hors-d'Œuvres & Cash Bar
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POSTER SESSION

16:45 – 18:30
IASCL Central - Foyer
Poster Session 4

Bilingual first language acquisition

- 01 ***Anaphoric Reference of Null and Overt Subject Pronouns in the Acquisition of Basque***
Maialen Iraola Azpiroz, *Universität Konstanz*
- 02 ***Interlinguistic influence on the distribution of null subjects in child bilingual English***
Anahi Alba de la Fuente¹, Raquel Fernández Fuertes², Juana M. Licerias¹, ¹*University of Ottawa*, ²*Universidad de Valladolid*
- 03 ***Italian clitic placement and the Interface Hypothesis: Evidence from Croatian-Italian simultaneous bilinguals***
Tihana Kras¹, Maja Milicevic¹, ¹*University of Rijeka*, ²*University of Belgrade*
- 04 ***Phonetic Complexity in the First Words of Spanish-English Bilingual Toddlers***
Cynthia Core, *The George Washington University*
- 05 ***Speech development of monolingual and bilingual toddlers: Event-related potential responses and Language measures***
Carol Tessel, Yan Yu, Nancy Vidal, Jennifer Gerometta, *CUNY*
- 06 ***Accelerated bilingual first-language acquisition: the Structural Transfer Hypothesis***
Lisa Hsin, *Johns Hopkins University*
- 07 ***Bilingual experience and executive functioning in 18-month-old infants***
Diane Poulin-Dubois, Jessica Yott, *Concordia University*
- 08 ***Comparing the evaluative means used by CI children and bilingual hearing children in stories they produced in sign language and in spoken language***
Ritva Takkinen, *University of Jyväskylä*

Child second language acquisition

- 09 ***Is a weak L1 categorically different from a cL2?***
Marta Saceda Ulloa, Conxita Lleó, *University of Hamburg*
- 10 ***Comparison of adjective agreement in bilingual Spanish-French children and monolingual French children***
Ève Bergeron¹, Alexandra Marquis², Phaedra Royle¹, ¹*Université de Montréal*, ²*CHU Ste-Justine*
- 11 ***"Putting all pieces together": developing connectivity in native and nonnative discourse***
Melina Aparici¹, Elisa Rosado², Liliana Tolchinsky², ¹*Universitat Autònoma de Barcelona*, ²*Universitat de Barcelona*
- 12 ***Development of Luxembourgish in young L2 learners***
Gudrun Ziegler, Marnie Ludwig, *Université du Luxembourg*

Cognition and language development

- 13 ***Ordering effects in complex sentences***
Bianca Junge¹, Anna Theakston², Elena Lieven³, Michael Tomasello³, ¹*Max Planck Child Study Centre*, ²*University of Manchester*, ³*Max Planck Institute for Evolutionary Anthropology*
- 14 ***Language and Performance on Nonverbal and Verbal Theory of Mind Tasks***
Melissa Smith¹, Elizabeth Kelley², Virginia Edwards⁴, Christine Javier³, ¹*University of North Carolina at Asheville*, ²*Queen's University*, ³*Wilfrid Laurier University*, ⁴*University of North Carolina at Chapel Hill*
- 15 ***Working memory in young children with SLI***
Brigitte Vugs, Juliane Cuperus, Marleen Vissers, *Royal Dutch Kentalis*
- 16 ***Understanding belief reasoning: German children's understanding of the discourse particle 'doch'***
Daniel Schmerse, *Max Planck Institute for Evolutionary Anthropology*

- 17 **The referential status of "c'est" in French speaking toddlers' discourse**
Anne Salazar Orvig¹, Stephanie Caet¹, Cristina Corlateanu¹, Christine da Silva¹, Rouba Hassan², Julien Heurdier¹, Jocelyne Leber-Marin¹, Marine le Mené¹, Haydée Marcos³, Aliyah Morgenstern¹, ¹Université Sorbonne Nouvelle, ²Université Lille 3, ³CNRS
- 18 **Bound morpheme parsing: Evidence of paradigm learning by 11-month-old French-learning infants**
Alexandra Marquis, Rushen Shi, Université du Québec à Montréal
- 19 **Neurobiological correlates of developmental changes in spoken word processing**
Yan Yu¹, Michelle MacRoy-Higgins², Valerie Shafer¹, Richard Schwartz¹, Judy Flax³, April Benasich³, ¹City University of New York, ²Hunter College-CUNY, ³Rutgers University
- 20 **The right visual field attentional bias in reading: a study in skilled reader and dyslexic children**
Eric Siéroff, Laure Bricout-Tomasi, Miléna Riva, Paris Descartes University
- 21 **A conversational intervention procedure as a tool for improving and evaluating narrative skills: A study of 5-to-8 years old French children**
Christian Hudelot¹, Edy Veneziano², Laetitia Albert², Chantal Caracci², Juliette Elie³, Emilie Hebert¹, Marie Thérèse Le Normand^{4,2}, Marie-Hélène Plumet^{2,4}, Serge Poncin², Nathalie Salagnac⁵, ¹CNRS & Université de Nice Sophia-Antipolis, ²Université Paris Descartes-CNRS, ³Université Toulouse-Le Mirail, ⁴INSERM, ⁵IUFM de Lille
- Cultural and social factors**
- 22 **The acquisition of conversational management abilities: evidence from preschoolers' peer interaction**
Juliane Stude, Technical University of Dortmund
- First language acquisition**
- 23 **Phonological specificity for onset and offset consonants in French-speaking 14-, 18- and 24-month-olds**
Jane Lubna Johr, Daniela Gabriel Mounir, Lucie Schoenhals, Ingrid Fourier, Pascal Zesiger, University of Geneva
- 24 **Acquisition of Turkish morphophonology by identical twins**
F. Nihan Ketrez, Istanbul Bilgi University
- 25 **The role of prosody in the acquisition of filler syllables during the transition period between prelinguistic stage and linguistic stage in French**
Guillaume Roux, Université Paul Valéry Montpellier
- 26 **Sound structure impact on morphology: Acquisition of Danish noun plurals as a test case**
Laila Kjærbaek, Hans Basbøll, University of Southern Denmark
- 27 **Lexical tone perception in non-tone-learning infants**
Jun Gao¹, Rushen Shi², Aijun Li¹, ¹Chinese Academy of Social Sciences, Beijing, ²Université du Québec à Montréal
- 28 **Acquisition of syntactic agreement in infants**
Marilyn Cyr, Rushen Shi, Université du Québec à Montréal
- 29 **Phonological neutralization and the representation of lexical tones in toddlers**
Jun Gao¹, Rushen Shi², Aijun Li¹, ¹Chinese Academy of Social Sciences, Beijing, ²Université du Québec à Montréal
- 30 **Multiple vocabulary spurts in Japanese children**
Yasuhiro Minami, Hiroaki Sugiyama, Tessei Kobayashi, NTT Communication Science Laboratories
- 31 **Imageability and inflections: children acquire inflected forms of highly imageable words earlier**
Filip Smolik, AS CR, Prague
- 32 **Non-adjacent dependency learning and grammatical categorization in 11-month-old infants**
Cristina Name¹, Rushen Shi², Elena Koulaguina², ¹Federal University Of Juiz De Fora, ²UQAM
- 33 **Child Relative Clauses: Variable Input and Language Change**
Anca Sevcenco, Larisa Avram, Ioana Stoicescu, University of Bucharest
- 34 **"It's sort of a butterfly": Children are sensitive to cues of attenuated category membership**
Marisa Tice¹, Patricia Amaral², ¹Stanford University, ²University of Liverpool
- 35 **Different paths toward language: Identification of trajectories for language development**
Audette Sylvestre¹, Chantal Mérette², Caroline Bouchard³, François Bergeron³, Natacha Trudeau³, Ann Sutton⁴, Andrea MacLeod⁵, ¹Université Laval, ²Cirris, ³CRUL-RG, ⁴Université de Montréal, ⁵Université d'Ottawa

- 36 ***Independent of Meaning and Form: The Acquisition of Morphological Structure in German 11-12 Year Olds***
Eva Smolka, *University of Konstanz*
- 37 ***Most Frequently Occurring Words in Maternal Infant-Directed Speech with Four-Five Month Olds***
Anthea Vivona, Valerie Shafer, *CUNY Graduate Center*
- 38 ***Acquisition of vowel length in Cantonese-speaking children***
Hui Chen, Thomas Hun-tak Lee, *The Chinese University of Hong Kong*
- 39 ***Cantonese-speaking children's comprehension of deictic locatives***
Margaret Ka-yan Lei, Thomas Hun-tak Lee, *Chinese University of Hong Kong*
- 40 ***Young children can learn part names if they focus on object parts by adults' referential actions***
Harumi Kobayashi, Tetsuya Yasuda, *Tokyo Denki University*
- 42 ***Expressing motion events in Frog Stories in child Cantonese***
Cheung-shing Sam Leung, Yuen-Fan Lornita Wong, *Hong Kong Institute of Education*
- 43 ***Morphological Salience in Turkish child-directed speech***
Hatice Sofu¹, Naime Feyza Türkay¹, Sophie Kern², ¹*Çukurova University*, ²*CNRS-Université de Lyon*
- Language development in atypical populations**
- 44 ***Linguistic aspects of narratives of children with Autism Spectrum Disorder (ASD)***
Rama Novogrodsky, Lisa Edlelson, *Boston University*
- 45 ***Sentence repetition and complex syntax in children with language impairment***
Anne Hesketh, Gina Conti-Ramsden, *The University of Manchester*
- 46 ***Development of syntactic structures in narrative text writing among deaf children***
Andrée Boisclair, Hélène Makdiss, Caroline Leclerc, *Université Laval*
- 47 ***Wh-Question Comprehension Precedes Production in Children with and without Autism***
Anthony Goodwin, Deborah Fein, Letitia Naigles, *University of Connecticut*
- 48 ***Concurrent and clinical validity of the Korean adaptation of MacArthur-Bates Communicative Development Inventory***
Soyeong Pae, Okjoo Kim, Junghee Song, *Hallym University*
- 49 ***Measuring Lexical Diversity in the Spanish and English Narratives of School-age Children with Language Impairment***
Peggy Jacobson, Patrick Walden, *St. John's University*
- 50 ***An ERP investigation of auditory and audiovisual speech in children with autism spectrum disorders***
Julia Irwin, Nicole Landi, Lawrence Brancazio, Amanda Kennedy, Erin Grohman, *Haskins Laboratories*
- 51 ***Evaluation of the quality of assessment tools by international guidelines***
Malene Slott¹, Werner Vach², Dorthe Bleses¹, ¹*University of Southern Denmark*, ²*University Medical Center Freiburg*
- 52 ***Sentence processing in children with Williams syndrome using eye-tracking***
Vesna Stojanovic¹, Diane Nelson², Theo Marinis¹, ¹*University of Reading*, ²*University of Leeds*
- 53 ***Sub-types of Language Impairment: Concordance of morphosyntactic and deep-structure probes***
Janice Jackson¹, Barbara Zurer Pearson², ¹*University of West Georgia*, ²*University of Massachusetts Amherst*
- 54 ***Where do SLI children come from? Late talkers' group as a risk group for SLI***
Magdalena Smoczynska¹, Marcin Szczerbinski², Magdalena Kochanska¹, ¹*Jagellonian University*, ²*Cork University*
- 55 ***Production, comprehension and linguistic awareness of subject-verb agreement and case marking in monolingual German children with and without SLI***
Katrin Lindner, *University of Muenchen*
- 56 ***Social communication abilities of children with speech, language and communication needs: Comparing children with specific language impairment and autism spectrum disorders***
Olympia Palikara¹, Jessie Ricketts², Julie Dockrell¹, Tony Charman¹, Geoff Lindsay², ¹*Institute of Education, London*, ²*CEDAR, Warwick University*

- 57 **Speaker age and language choice in child-directed speech in a multilingual Australian Indigenous community**
Deborah Loakes¹, Karin Moses², Gillian Wigglesworth¹, Jane Simpson³, ¹University of Melbourne, ²La Trobe University, ³Australian National University
- 58 **Narrative production skills of children with Autism Spectrum Disorder and children with Specific Language Impairment**
Heather Morris, Pat Mirenda, Paola Colozzo, *University of British Columbia*
- 59* **The Effect of Plausibility on Sentence Comprehension in Children with and without SLI**
Jungmee Yoon, Luca Campanelli, Naomi Eichorn, Jessica Scheuer, Ingrid Puglik, Mira Goral, Loraine K. Obler, Klara Marton, *City University of New York Graduate Center*
- 60 **Expression of feeling of knowing in the speech of autistic children**
Yui Miura¹, Tomoko Matsui², Yoshikuni Tojo³, Hiroo Osanai⁴, ¹Kanazawa University, ²Kyoto University, ³Ibaraki University, ⁴Musashino Higashi Gakuen
- 61 **Vocabulary growth and sentence production as precursors for developmental dyslexia in Dutch at-risk children**
Evelien Krikhaar, Charlotte Koster, Pieter Been, Ben Maassen, *University of Groningen*
- 62 **Electrophysiological indices of processing pictures and words by three-to-seven year old nonverbal children with Autism Spectrum Disorders**
Sarita C. Austin, Michelle MacRoy-Higgins, Yan H. Yu, Valerie L. Shafer, Richard G. Schwartz, April Benasich, *The City University of New York*
- Language evolution and language acquisition**
- 63* **The role of predispositions and experience in birdsong and language acquisition**
Sita ter Haar¹, Clara Levelt¹, Carel ten Cate¹, *Leiden University*
- Literacy and language**
- 64 **Development of writing skill from the Vygotskian perspective: analysis of difficulties encountered by pupils in Grades 3 – 4**
Alice Vanlint, Pauline Sirois, *Université Laval*
- 65 **Communicative acts during play interaction between Mandarin-speaking mothers and children with Autism : A preliminary study**
Fang-yi Chu, Hui-ju Chen, Chien-ju Chang, *National Taiwan Normal University*
- 66 **Effects of joint book reading on Mandarin-speaking children's early language acquisition**
Chien-ju Chang, *National Taiwan Normal University*
- 67 **Reading and writing acquisition in deaf children: importance of linguistic foundations**
Pauline Sirois, Alice Vanlint, *Université Laval*
- 68 **Prosodic status matters for word segmentation**
Sónia Cardoso, Ana Castro, *Universidade Nova de Lisboa*
- 69 **The Role of Lexical Knowledge in the Repetition of Nonwords**
Tamara Kornacki, Esther Geva, Fataneh Farnia, Dana Shafman, *University of Toronto*
- 70 **The effect of comprehension-strategies instruction on the oral narrative skills of French-speaking kindergarteners**
Christine Devlin, Diane Pesco, *Concordia University*
- 71 **Effects of joint book reading on Mandarin-speaking children's early language acquisition**
Chien-ju Chang, *National Taiwan Normal University*
- Neurocognitive correlates**
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* Student Poster Competition

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Speech

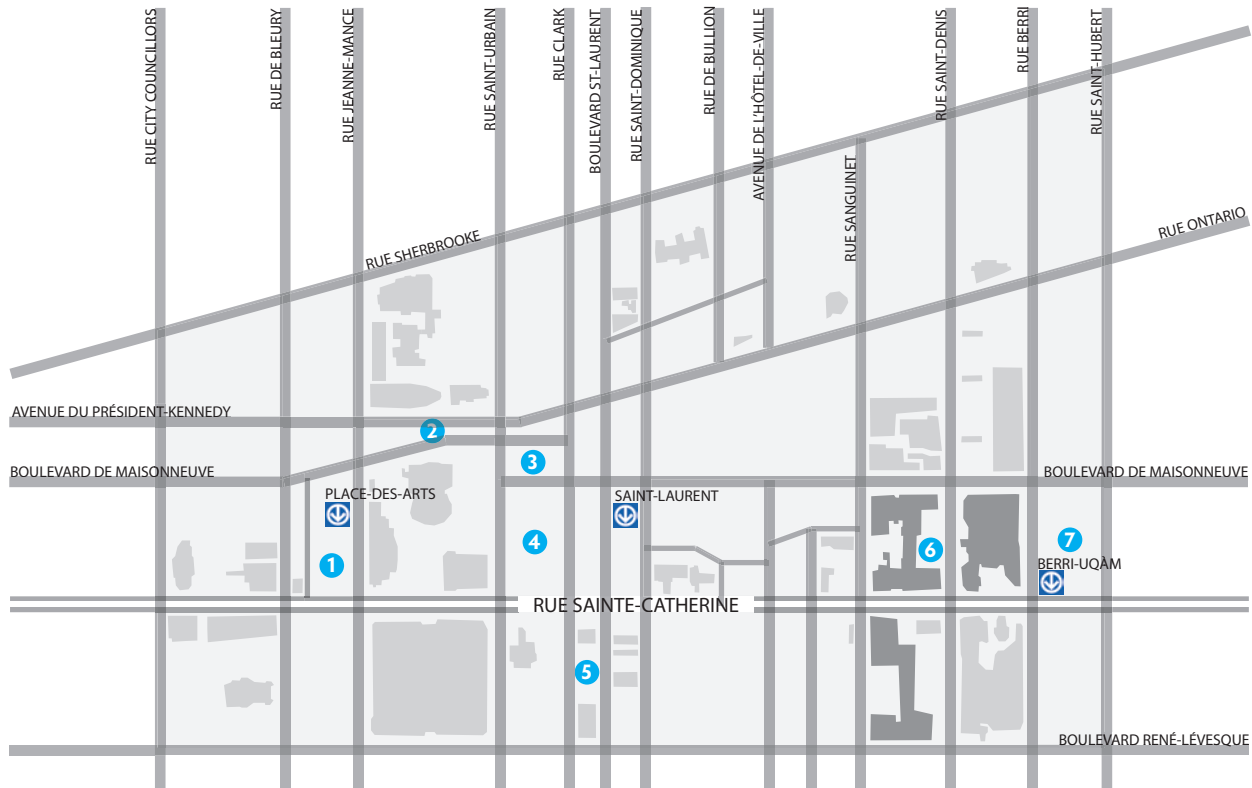
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PLEASE, SEE THE WHAT TO DO TONIGHT SECTION OF THIS PROGRAM

EVENING ATTRACTIONS DURING THE CONFERENCE

At the time of the conference, Montreal will be hosting a number of vibrant festivals featuring free shows in the evening: the Just for Laughs Comedy Festival, the International Fireworks Competition, the International Music Festival "Nuits d'Afrique" (African Nights), and Montréal Complètement Cirque (Circus Festival), to name a few within a short walking distance from the IASCL 2011 Venue.

OUTSIDE VENUES OF THE MONTREAL'S JULY FESTIVALS
(See IASCL's venue between number 6 and 7)



- 1 Place des festivals
- 2 Promenade des artistes
- 3 Le Parterre
- 4 Esplanade Clark
- 5 Place de la Paix
- 6 Place Pasteur
- 7 Place Émilie Gamelin

FREE EVENING SHOWS

IASCL'S IN-HOUSE COMEDY SHOW

Friday, July 22, 2011 - 18:30

Special Comedy-Presentation, IASCL Central • Main Amphitheater

Language Acquisition revisited: Comedy, Magic and the Brain
How to turn adults into children by Thomas Fraps*

JUST FOR LAUGHS FESTIVAL • JULY 21 to 24
<http://www.hahaha.com/en/montreal/outdoor-events>

Just For Laughs has traveled the world to bring you the finest in pupil-popping street-art eye candy. This year's central theme: Victor and Rose get married! Come toast the newlyweds...and stay late for the party. VERY late!

Victor's Follies Cabaret & Le Grand Bisou

Our larger-than-life couple, Victor and Rose, have been together for a few years now, and they've let us know that their relationship is ready for a step up...but we can't tell you exactly what yet! Festivalgoers are invited to party, waltz and drink to the health of Rose and Victor at **Le Grand Bisou** at Place des Festival from July 21 to July 24.

Bang Bang: Street Theatre

Imagine the street filled with fun, colourful, dancing, circus-type stilt-people... pretty cool, no? Trust us, this theatre is a statement in style, high energy and fun. Simply put: It's poetry in motion.

Elliptopume, Elastic-Gymnastic, Great Poles & The Wheel of Destiny

These amazing shows will be omni-present throughout the weekend, with their jaw-dropping aerial manoeuvres guaranteed to raise your curiosity and... make you look up!

The Great Throwdini, Knife Thrower

A Montreal first! The best knife thrower in the world! Owner of...wait for it...25 Guinness World Records! Come see the flying machetes, axes and knives. And watch your head.

Dominic and Martin (Loto-Québec stage)

Part of Just For Laughs' getting comedy back onto the street, this duo will bring you some material that will stop you in your tracks! With newcomers Guillaume Wagner, Stéphane Poirier and Billy Tellier, on July 23rd & 24th.

MONTREAL INTERNATIONAL FIREWORKS COMPETITION

<http://www.internationaldesfeuxloto-quebec.com/en/programmation/calendrier.aspx>

Wednesday, July 20, 2011

In competition : The USA - Theme : The Wizard of Oz

Family-owned firm Zambelli Fireworks is one of the oldest and largest fireworks companies in America. This year, Zambelli pays tribute to one of the great American film classics, "The Wizard of Oz". Movie buffs will follow the yellow brick road into the night sky, then fly off with Dorothy to the Emerald City, while fleeing the Wicked Witch of the West. Find yourself over the rainbow as you relive this classic's most magical moments.

Saturday, July 23, 2011

In competition : Canada - Theme : *Éros & Psyché*

Winner of the Bronze Jupiter in 2005, BEM Fireworks returns to Montreal a 3rd time. Its production of "Éros & Psyché" portrays the burning love between God and the most beautiful mortal woman that ever was. Get carried away by this "tour de force" of Greek mythology—a divine blend of colour and special effects.

FESTIVAL NUITS D'AFRIQUE
PARTERRE, QUARTIER DES SPECTACLES (SEE MAP)

<http://www.festivalnuitsdafrique.com/spectacles>

**Giovanny Arteaga
& The Cuban
Connexion**
July 21, 2011 - 18:40

Stephano Pando
July 21, 2011 - 19:40

Meiway & le Zo Gang
July 21, 2011 - 21:30

Beatrice Deer
July 23, 2011 - 19:40

Coup de Coeur
July 21, 2011 - 20:05

Sexteto de Tabala
July 23, 2011 - 18:40

Soukous Stars
July 23, 2011, - 21:30

PAYING EVENING SHOWS

JUST FOR LAUGHS FESTIVAL

<http://www.hahaha.com/en/montreal/overview>

Many more shows in French on the Festival Website. It is highly recommended to buy tickets in advance for these shows though last minute tickets can be bought at *La Vitrine* at reduced prices: <http://www.lavitrine.com>.

Sarah Quinn "Other People's Problems"

July 20, 21 - 7:00pm

An unhinged motivational speaker gives a self-help seminar. A well-meaning teenage videoblogger doles out advice on the internet. Plain Jane attempts to find her mojo via a self-help sex tape. Other People's Problems is a savage and satirical response to the ever-expanding self-improvement industry. Advice is a hot commodity, and these characters know it. Their questionable philosophies will leave you questioning yours. Hey, we all got problems, man.

Danny Bhoy "Wanderlust"

July 20, 21, 23 - 7:00pm

He is one of the most sought after comedians working in the world today and 2011 sees Danny return to our shores with a brand new show to delight his ever-growing Canadian fan base. More mesmerizing anecdotes and quick fire wit from the globetrotting Scot are guaranteed to leave Montreal audiences with a smile on their face and wanderlust in their hearts. His last run here completely sold out, so early booking is highly recommended for this brilliant, busy Scot.

Kahlil Ashanti "Basic Training"

July 20 - 7:30pm

Hip hop, mambo and non-stop laughs all come together in a hilarious night out when comedian Kahlil Ashanti performs his award-winning one hour theatrical show. With a Scotsman Fringe First Award, New York Times Critics Pick and Broadway Drama League Award for "Distinguished Performance", Ashanti's show chronicles his time as a member of the elite entertainment troupe "Tops in Blue" where he learned to serve his country using his talent as his weapon.

The Ethnic Show: Ethnical Difficulties

July 21, 23 - 7:00pm

Get ready for Montreal's most scrumptious and multicultural buffet of comedy. The host of the Ethnic Show is Middle Eastern comedy sensation Maz Jobrani, who will present Italian master of comedy Sebastian Maniscalco, and as many ethnic comics from different backgrounds that we can pack in the joint! Buckle up for a trip around the globe, because this is the most culturally diverse experience at the fest. Opa! Mazel Tov! Salut! Whatever they say in Iran!

The Pajama Men "In the Middle of No One"

July 21, 23 - 7:00pm

A fast-paced comedy thriller about love, alien abduction, the pressure cooker of solitude and the spirit of adventure. Presented in the Pajama Men's trademark style of blink-of-an-eye character switches and plot twists, underscored with unflinching joke telling, *In The Middle of No One* is a bizarre flight of fancy-pants.

Hannibal Bures "The Hannibal Montanabal Experience"

July 21, 23 - 7:00pm

A natural storyteller who can captivate a room with his words alone, Hannibal Bures generates huge laughs with the laidback, quirky observations that have become his trademark style. Hannibal's stories about his experiences with dating older women, the merits of Courier New font, and his not-so-secret desire to kick pigeons will undoubtedly provide you with one of the best hours at the fest this year!

Adam Hills "Inflatable"

July 21, 23 - 7:00pm

'Inflatable' is a joyous and uplifting show from one of Australia's best comedians. Adam Hills is a regular at Just For Laughs, a triple Perrier Award nominee at the Edinburgh Fringe, and hosts his own talk show back home.

DeAnne Smith "About Freakin' Time"

July 21, 23 - 8:30pm

DeAnne, a 2011 Canadian Comedy Award Nominee, dissects that pesky fourth dimension in a show guaranteed to fling you 50 minutes into the future! (Cue spooky sci-fi sounds.) Includes 370 seconds of bonus unscripted hilarity. This show was nominated for Australia's prestigious Barry award at the Melbourne International Comedy Festival 2011.

ABSTRACT REVIEWERS

We thank the following reviewers who read and rated a large number of abstract submissions. Their time and effort to carefully assess each abstract is greatly appreciated.

Katie Alcock	Andréanne Gagné	Lucie Ménard
Anne Baker	Virginia C. Gathercole	Gary Morgan
Edith Bavin	Fred Genesee	Aliyah Morgenstern
Jessica Barlow	Nayeli Gonzalez	Diane Pesco
Dominique Bassano	Maya Hickmann	Elizabeth Kay-Raining Bird
Heike Behrens	Johanne Paradis	Judy Reilly
Laura Bosch	Kathy Hirsh-Pasek	Caroline Rowland
Patricia Cleave	Donna Jackson-Maldonado	Ludovica Serratrice
Henri Cohen	Reem Khamis-Dakwar	Evelyn Shatil
Martha Crago	Elena Lieven	Rushen Shi
Helene Deacon	Rachel Mayberry	Marie-Thérèse Le Normand
Karen Froud	Jürgen M. Meisel	Edy Veneziano
Marilyn Vihman		

SATELLITE 1
MORNING SYMPOSIA
AMPHITHEATERS A•B•C•D10:15 – 12:30
Amphitheater A • Satellite 1
Symposium Session 1 • A

REFERENTIAL EXPRESSIONS AND TEXT COHERENCE IN PRE-SCHOOL CHILDREN

Convener Dagmar Bittner, *Center for General Linguistics, Berlin***Description:**

This symposium will focus on how and to what extent pre-school children integrate knowledge from different domains when using or interpreting referential expressions across sentences. In the last decades research on text coherence has mainly concentrated on the acquisition of single means of discourse coherence such as particles, connectives, pronouns, and so on. The main goal of this research was to detect general (or at best universal) mechanisms and stages in the acquisition of the target discourse function of these means. However, research on adult language revealed that there is only limited evidence for fixed and structurally determined discourse functions. Proposed preferences often disappear when one varies aspects of the context, e.g. semantic class or aspectual/temporal meaning of the verb, type of connector, pragmatic factors like expectedness of the following information, etc.

These findings suggest that target mental representation of a referential expression's referent requires integration of knowledge from different sources. This means a challenge for language acquisition research too. At what age can children integrate knowledge and from which domains? Are there constraints on when knowledge from certain domains is accessible? What do the linking mechanisms the children must acquire look like? In this symposium we can discuss only some of the possibly relevant parts of knowledge. We will concentrate on pre-school children's abilities to link their use of referential expressions to aspects of information structure, specifically topicalization and focus determination, the focus determining features of various connectors and verb semantic, as well as to pragmatic reasoning.

Information structure cues in children's pronoun comprehension

Juhani Järvikivi¹, Pirita Pyykkönen², Sarah Schimke³, Saveria Colonna³, Barbara Hemforth⁴, ¹*Max Planck Institute for Psycholinguistics & University of Helsinki*, ²*Saarland University*, ³*University of Paris 8-CNRS*, ⁴*Paris Descartes University-CNRS*

Whereas children's anaphor resolution is affected by structural/discourse heuristics, (subjecthood/order-of-mention) less is known about their sensitivity to information structure cues like topicalization and focusing. Two visual world eye-tracking experiments investigated four-year-olds' and adults' pronoun comprehension in spoken German; the effects and time course of order-of-mention, grammatical role, topicalization (dislocation) and focusing (cleft) were manipulated (topicalization and focusing in separate experiments). Animated video clips presented two animals acting out transitive verbs. After sentence *Da sind Der Hase/Fuchs und Der Fuchs/Hase*, dislocated subjects (1) and objects (2) and cleft subjects (3) and objects (4) were compared to SVO/OVS sentences (5, 6).

- 1 Der Hase, der streichelt den Fuchs, als er [ambiguous pronoun]...
- 2 Den Fuchs, den streichelt der Hase,...
- 3 Es ist der Hase, der den Fuchs streichelt,...
- 4 Es ist der Fuchs, den der Hase streichelt,...
- 5 Der Hase streichelt den Fuchs,...
- 6 Den Fuchs streichelt der Hase,...

The results showed interesting differences: an early subject-preference with adults; an early first-mention and later subject-preference with children. While dislocation lead to increased looks at the second-mentioned antecedent with children; a less pronounced eye movement pattern was found with adults. Additionally, adults were only slightly influenced by focus, while children showed an early first-mention effect; and an interaction showing earlier subject-preference in focus compared to control condition. The findings indicate that children are not only sensitive to information structure cues, but actively consider several cues (maybe serially) online. Adults instead seem to settle on their main cue from early on.

Do children integrate coherence relation, verb semantic and/or tense information when producing pronouns?

Eva Valcheva, Dagmar Bittner, *Center for General Linguistics, Berlin*

Our study investigates whether children integrate type of coherence relation, verb semantic and/or tense information when using anaphoric pronouns. It has been shown that children older than 6 integrate some of these aspects in pronoun resolution. However, there are no studies investigating simultaneous applications of these factors.

By analyzing narratives of German 4-6-year olds, we investigated pronoun use in sentences containing the connectors *weil* 'because' and *und* 'and'. We classified coherence relation, type of verb, and tense form as well as thematic role of the pronoun's referent.

We did not find an effect of verb semantic on thematic role since children only rarely used other than action verbs. However, we found a significant difference between *and*- vs. *weil*-sentences. Object pronouns are much more frequent in *and*- than in *weil*-sentences. Subject pronouns are as frequent as object pronouns in *and*-sentences but significantly more frequent in *weil*-sentences. Children predominantly construct parallel resolution structures in *and*-sentences; i.e. subject pronouns refer to subject and object pronouns to object antecedents. This correlation is stronger with the older than with the younger children. In non-parallel constructions, object pronouns are more likely to refer to subject antecedents than vice versa. In *weil*- but not in *and*-sentences, the younger children tend to correlate object reference with past or perfect tense.

These results suggest that children integrate pronoun use with type of coherence relation and tense information. We will further examine these correlations as well as the effect of verb semantic experimentally and present the results.

Pronoun resolution in the presence of the connector but - evidence from child Bulgarian

Milena Kuehnast¹, Tom Roeper², Dagmar Bittner¹, ¹Center for General Linguistics, ²University of Massachusetts

The study explores the role of the adversative connector *but* in the acquisition topic-continuation and topic-shift by pronouns. Topic-shift requires a complex linking mechanism including the identification of language-specific coherence relation(s) and determination of focus by various operators. We argue that acquisition of the focus-related features of *but* affects acquisition of topic-shifting capacity of the Bulgarian personal pronoun.

A comprehension experiment with 5-6-year-old monolingual Bulgarian children investigated the effect of *but* (blg. *no*) on the resolution of null and personal pronoun in sentences exhibiting (strong) semantic vs. no semantic inferences. In the semantically biased conditions, semantic inference and target pronoun reading either fully diverge (anti-pragmatic condition) or converge in their resolution preferences.

The hen sees the woman in the barn *but* Ø/*she* remains sitting on the eggs.

Results show that 5-year-olds reliably resolve null subject to the topic antecedent, even in the anti-pragmatic condition. However, in neither condition they reliably interpret the personal pronoun as a topic-shifting device. The 6-year-olds, however, consider adversative sentences as contexts promoting topic-shift with personal pronouns. Performance in unbiased contexts now also points towards an opposition between null and personal pronoun in terms of topic-maintaining vs. topic-shifting.

Though more knowledge on the acquisition path of adversative connectors is needed our results suggest that the acquisition of the focusing effects of the adversative connective promotes the linking of pronoun interpretation to focus determination. The linking then promotes target interpretation of the Bulgarian personal pronoun as having topic-shifting capacity.

10:15 – 12:30

Amphitheater B • Satellite 1

Symposium Session 1 • B

BILINGUAL DEVELOPMENT IN CONTEXTS OF VARIATION AND CHANGE

Convener Netta Abugov, *Tel-Aviv University*

Discussant Dorit Ravid, *Tel-Aviv University*

Description:

Bilingual development often takes place in "fluid" situations of variation and change. Learning has been shown to be subject to the relative prominence of the languages under consideration, frequency of exposure to each language, and their reciprocal influence. The cultural-pragmatic contexts in which the languages are acquired frame bilingual development and determine timing of acquisition, language dominance and language balance, and the distribution of lexical and communicative inventories. The proposed symposium examines the effects of language prominence, cultural environments, and language typology on simultaneous and sequential bilingual child language acquisition in Welsh-English, Yiddish-English, Yiddish-Hebrew, and Russian-Hebrew contexts.

The symposium abstracts highlight different facets of the interaction among the factors accounting for bilingual acquisition. Welsh-English bilingualism is studied in the framework of a dynamic model of frequency and contexts of exposure, coupled with linguistic and cognitive complexity. The progress of Russian-Hebrew bilingual children in Hebrew is reported to be remarkably rapid since they are learning it in a situation of immersion. Studies in two Hassidic communities in the US and Israel show that Yiddish-English and Yiddish-Hebrew child learners are exposed to contexts fraught with linguistic variation and are thus affected by a high amount of code-switching/mixing in the adult input. The Israeli study, tracing the development of Hassidic Yiddish plural nouns across childhood and adolescence, shows to what extent this system now differs from Standard Yiddish. Taken together, the symposium studies illustrate the complex interplay between socio- and psycholinguistic factors in bilingual acquisition.

When a language exists only in bilingual speakers: Issues regarding acquisition, language dominance, language balance, language variation and change
Virginia Gathercole, Bangor University

This talk examines the phenomena of language acquisition, language dominance, language balance, and language fluency in relation to Welsh, a language that exists virtually in an exclusively bilingual setting, and in relation to its co-language, English. In North Wales, Welsh and English co-exist in a fully bilingual community, but that community is made up of speakers with heterogeneous backgrounds – including L1 Welsh/early L2 English; 2L1 Welsh/English; L1 English/early L2 Welsh; L1 English/late L2 Welsh. Research has indicated that development of some aspects of language, particularly vocabulary and morpho-syntax, is influenced by the level of exposure and that some developments may show interactive influences between the two languages.

Data from children's and adults' performance on vocabulary in W and E, receptive grammar in W and E, and lexical semantics in W and E are brought together from a variety of studies from our labs to examine the roles played by each of these factors. The data point to a dynamic model of acquisition in bilinguals that must take into account (a) frequency of exposure, (b) contexts of exposure, (c) linguistic borrowing and code-switching, (d) linguistic complexity, (e) cognitive complexity, and (f) interaction of semantic structure and cognitive processing. These together help explain relative timing of acquisition across groups, distributed knowledge in bilingual individuals, language convergence in the individual, loci of incomplete learning in individuals, fluid patterns of language dominance and language balance in individuals, and language loss, change, and convergence in a diachronic perspective.

Bilingual acquisition in a variegated linguistic context: The acquisition of Yiddish noun plurals in Israel
Netta Abugov, Dorit Ravid, Tel-Aviv University

This study addresses the acquisition of Yiddish by bilingual Ultra-Orthodox children in Israel. In the Ultra-Orthodox community Yiddish and Hebrew compete as native tongues in a classical bilingual sociolinguistic situation. Our window onto native Yiddish development is the system of noun plurals, whereby a singular noun (e.g. kind 'child') takes on a plural suffix (kinder 'children'). Yiddish noun plurals are especially interesting since the system consists of several categories based on Germanic structures, while others categories distinctly rely on Hebrew structures. Previous studies show that UO Yiddish is fraught with variation and is undergoing a change in a new sociolinguistic context under the pressure of modern life and Israeli Hebrew.

Participants were 118 UO children in six age groups (3-4, 5-6, 7-8, 9-10, 11-12, 17-18) who were administered two tasks (1) the Classical Study – a noun plural naming test in the spirit of the classical Wug Test (2) the Scripts Study – an open-ended elicitation measure based on a set of pictures. Results indicate that Hebrew lexicon and structure impact the UO system from early on. Thus young children produce Yiddish nouns with Germanic suffixes side by side with Hebrew ones, and Hebrew nouns with Hebrew suffixes side by side with Yiddish ones. The earliest plural marker produced by young UO children is the uniquely German -ex, while the most complicated and last to emerge is the Germanic umlaut. These results show to what extent child Hassidic Yiddish retains its Germanic character while accommodating new plural markers from Hebrew.

Acquisition of regular and irregular inflectional morphology in Hebrew (L2) among early sequential Russian-Hebrew speaking bilinguals: A longitudinal multiple case study

Mark Leikin¹, Mila Schwartz¹, Bracha Nir¹, Ronit Levie², Dorit Ravid¹, ¹Haifa University, ²Tel-Aviv University

Prior research has provided substantial evidence to the claim that simultaneous bilingual children proceed through the same developmental phases as monolingual children, and shown that they are able to attain native competence in each of their languages. At the same time, few studies are available on early successive L2 acquisition (age 1 to 4, after the onset of L1 acquisition). The focus of this longitudinal study is on the trajectory of acquisition of noun pluralization in Hebrew among six Russian-speaking bilingual children (three girls and three boys) who were enrolled into bilingual Russian-Hebrew speaking kindergarten and immersed into Hebrew around age three. Data were collected and analyzed by a set of complementary research tools: an elicited pluralization task, a corpus of child-speech, and parental reports on children's language input/output during the nine months of the study.

The overall success rate, the trajectory of acquisition, the specific difficulties in acquisition, and the type of errors in pluralizing task items all matched results obtained for 3-4 year-old monolingual Hebrew-speakers in a previous, comparable study. The analysis of the corpus showed that the children tended to produce more simple and transparent forms without stem change. The progress of these bilingual children seems to be remarkably rapid since they were able to reach the same level as their monolingual 4-year-old peers in only one year of L2 immersion. The differences between children seem to be linked to the variation in quantity of L2-input based on exposure to media as well as to siblings.

Effects of quantity and quality of input and of language contact in heritage language learners: Insights from the acquisition of Yiddish by Hasidic toddlers

Isabelle Barriere¹, Yakov Blum², Lazere Gillig², Mordechai Meisels¹, ¹City University of New York, ²Yeled V'Yalda Research Institute, NY

The recent literature on bilingual development has underscored the importance of the quantity of input for the successful acquisition of minority languages and led to the proposal that Heritage Language Learning contexts lead to incomplete acquisition. The present study focuses on acquisition of Yiddish (and English) by Hasidic toddlers. Two sources of data were used: (a) questionnaire data collected on 100 toddlers, and (b) twenty-minute speech samples collected in the context of naturalistic interactions.

The questionnaire data show that proportion of the input has different effects on the acquisition of different aspects of language. Different percentages of exposure have a gradient effect on vocabulary development. In contrast, age of acquisition for various aspects of Yiddish NPs and VPs is the same for toddlers exposed to 50%-100% Yiddish, but is protracted when children hear Yiddish only 10% of the time. Finally, the use of language to refer to objects/people/events removed from the context varies across the two languages in individual toddlers and is not clearly associated with specific linguistic and demographic factors.

Analyses of the speech samples data reveal much inter-individual variation regarding the proportion of code-switching in caregivers and confirm the acquisition patterns identified in the questionnaire data for the early production of NPs and VPs. At this early developmental stage the minority status of the language does not have a strong impact on toddlers' acquisition of Yiddish morphosyntax, while factors that characterize the linguistic environment have different impacts on distinct aspects of language input and use.

10:15 – 12:30

Amphitheater C • Satellite 1

Symposium Session 1 • C

PROSODIC DEVELOPMENT IN COCHLEAR IMPLANT USERS FROM A CROSS-LINGUISTIC PERSPECTIVE

Convener Ignacio Moreno-Torres, *University of Málaga*

Discussant Marie-Thérèse Le Normand, *CNRS-Université Paris-Descartes*

Description:

Prosody participates in very different linguistic and non-linguistic functions, with important cross-linguistic differences. The heterogeneity of prosody has been confirmed by neurophysiological studies that show no clear localization for prosody in the brain. Such facts make it difficult to determine the role of prosody in typically as well as in atypically developing children.

To date, it appears that few studies have formally analyzed the suprasegmental aspects of speech in cochlear implant users, as compared with the important number of papers that have explored segmental-phonological. In general, researchers have noted that, despite the clear benefits of the CI, some difficulties remain. This situation is compatible with the fact that currently Cochlear implants provide better acoustic cues for segmental than suprasegmental information. Precisely for this reason, exploration of prosody in CI users might provide most fruitful information regarding its role prosody in language development.

Presentations in this symposium will explore different stages of prosodic development (early lexicon, late syntax) in children from different language backgrounds (French, Spanish, Swedish, Chinese) and in relation with other linguistic and/or cognitive skills. Each presentation will answer these questions:

- 1) Is prosody impaired in CI users in language X?
- 2) Is it more impaired than other language skills?
- 3) Are there any variables which correlate with prosodic skills (e.g. age at implantation, etc.) ?

In the discussion, we will analyze the commonalities/differences of prosody development in CI/TD children in different languages, as well as general implications for our knowledge of prosody, and for rehabilitation of CI users

Prosody in French speaking children with cochlear implants

Marie-Thérèse Le Normand, Anne Lacheret, *INSERM*

The pediatric literature shows that the processes of suprasegmental and segmental skills of speech in children with cochlear implants (CIs) develops slowly. The purpose of the present study is to determine the extent to which the development of prosodic skills in French children with CIs differs from those of normal hearing children. Data on 34 French profoundly deaf children followed over a period of 10 years were collected from a narrative task « Frog where are you ? ». Analyses were conducted on segmental and suprasegmental skills at the metric, phonological and morphosyntactic level and revealed that despite the limited temporal information provided by CI, early implanted children developed prosodic skills comparable to typically developing French children. This study suggests that a complex interaction between the dynamics of maturation and cortical plasticity may modulate the prosodic processing of speech and language acquisition in children with a cochlear implant.

Early segmental and supra-segmental development in pediatric cochlear implant users learning Spanish

Ignacio Moreno-Torres¹, Maria del Mar Cid¹, Rafael Santana², Maria Heliodora Cuenca³, Marina Barrio³,
¹University of Málaga, ²University of Las Palmas de Gran Canaria, ³University of Sevilla

It has been observed that typical children's early productions, while often ill-formed from a segmental point of view, are nonetheless prosodically well-formed. However, considering that current cochlear implant (CI) devices provide better segmental than suprasegmental information, in the case of early cochlear implant (CI) users we might expect a different developmental pattern. In order to answer such question, this study will compare segmental and suprasegmental development in a group of CI users. Subjects were 8 pediatric CI users from monolingual Spanish-speaking families (Mean age at implantation = 18 months; Auditory age: 24 months) and a control group of TD children matched for auditory age. Phonological and prosodic errors were analyzed in two datasets: a naming task, and from a non-word repetition (NWR) task. The NWR task had 34 items balanced for stress (iambic: 17; trochaic: 17) and which included a variety of consonants. Results showed that the variability was high in both groups, but specially in the CI group. Though variability was very high, phonological errors were comparable in both datasets and in both groups. On the contrary, stress-errors appeared only in non-words and mostly in the CI group. We conclude that poor suprasegmental cues provided by CI devices have a negative impact in the development of prosodic skills in CI users.

Prosody in Swedish Children with cochlear implants: Relationship with grammar and working memory

Christina Samuelsson, Linköping University

Previous research has shown that demographic factors such as age at implant, duration of deafness, and time with cochlear implants (CI) may correlate with language development, also in Swedish children. Swedish has a complicated prosodic system compared to e.g. English and it is considered a pitch accent language. In the present study, perception and production of prosodic features are investigated in children with CI. These abilities are compared to grammatical skills and to results regarding working memory. Fourteen preschool children with CI participated in the study. To each participant with CI a control child with normal hearing, matched for age, sex and regional dialect was also included. Regarding receptive prosody the children with CI performed almost at the same level as their matched normally hearing controls. The children with CI as a group demonstrated significantly lower results compared to children with normal hearing on tests concerning prosodic production abilities at word, phrase and discourse level and on tests concerning phonological working memory. The prosodic problems of children with CI are in line with the grammatical skills, showing mainly problems with unstressed elements of the phrase. Results also indicate a connection between prosodic abilities and phonological working memory. The fact that children with CI show a slight impairment of prosody and phonological working memory may be explained by the incomplete and modified sound reproduction given by the CI. However, prosodic cues seem to be beneficial for children with CI in non-word identification, which points out the importance of prosody in language acquisition.

Lexical tone development in prelingually-deafened children with cochlear implants

Li Xu¹, Ning Zhou¹, Juan Huang², Xiuwu Chen³, Yongxin Li³, Xiaoyan Zhao³, Demin Han³, Ohio University,
²Peking University, ³Beijing Tongren Hospital

Due to inadequate pitch coding in current cochlear implant (CI) devices, lexical tone perception in Mandarin-speaking children has been shown to be poor. The purpose of the study was (1) to explore lexical tone development (i.e., perception and production) in Mandarin-speaking prelingually deafened children with cochlear implants and (2) to determine significant predictive variables that contribute to tone development in these children. Lexical tone perception was measured in 107 implanted children (age 2.4 – 16.2 years) in a computerized two-alternative forced-choice tone recognition test. The implanted children performed with an average score of 67% correct, significantly lower than the near-perfect scores from the control group that consisted of 129 typically-developing, normal-hearing children (3.2 – 10.0 years). Tone production, elicited from 76 implant children, was analyzed acoustically and was evaluated using an artificial neural network. The results showed that the degree of differentiation of tones produced by the CI group were significantly lower than that of the normal-hearing group. Further, there was a moderate correlation between perception and production performance in the 78 implanted children ($r = 0.53$, $p < 0.001$). General Linear Model analysis was performed to determine significant factors contributing to tone development in CI children. Duration of implant use, age at implantation, and communication mode were significant predictive variables and jointly explained approximately 40% of the variance in the tone perception performance of the implanted children. When duration of implant use, the most significant predictor, was controlled for, age at implantation and communication mode each accounted for unique variance of the perception performance. In contrast, age at implantation was found to be the only significant predictor for tone production performance in the implanted children. In sum, there are marked deficits in tone development in Mandarin-speaking children with CIs. Our results also indicate that early implantation helps improve tone development in tone language speaking children. Other factors, such as duration of implant use and oral communication can predict tone perception performance in children with CIs

10:15 – 12:30
 Amphitheater D • Satellite 1
 Symposium Session 1 • D

MEMORY SYSTEMS IN LANGUAGE ACQUISITION: CHILDREN AND ADULTS

Convener Avi Karni, *Haifa University*

Description:

Are children better than adults in the acquisition or skills, specifically language skills? There is an ongoing debate about the so-called childhood advantage in skill (implicit, "how to", procedural memory) acquisition as well as about the underlying neurological substrates of the putative differences between children and adults. The aim of the symposium is to review and critically address several lines of research (mainly our own) in an attempt to reframe the issue of maturational differences in language acquisition abilities from a behavioral neurology of memory perspective, including: the role of declarative vs. implicit memory systems in language acquisition; notions of "critical periods" in skill acquisition and the constraints and conditions underlying language skill acquisition at different stages of development and linguistic experience.

A critical look at 'critical periods' in skill acquisition: from motor sequences to language skills

Avi Karni, *Haifa University*

Many studies indicate a childhood advantage in the acquisition of skills (procedural memory) specifically in language domains. This has been tied to a widely accepted notion of "critical periods" as restricted periods of brain malleability (plasticity) during childhood. However, adults are highly effective in acquiring and consolidating skills, and in some controlled conditions are better learners than children. Recent behavioral and neuro-physiological studies suggest that the conditions and constraints under which procedural memory is consolidated may differ before and after puberty. A case in point is that puberty affects the time constants of motor memory consolidation processes; however, the effectiveness of motor skill acquisition per-se does not decline. It is conjectured that rather than diminishing its potential to undergo experience-driven plasticity the adult brain may become more selective in the making of long-term skill memory

Adults outperform children in acquiring a language skill: Evidence from learning an artificial morphological rule in different conditions

Sara Ferman¹, Avi Karni², ¹*Tel Aviv University*, ²*Haifa University*

A leading notion is that language skill acquisition declines between childhood and adulthood. This notion has been related to the CPH and to children's superiority in procedural learning. We provided 8-year-olds, 12-year-olds and young adults with an equivalent multi-session training experience in the application of an artificial morphological rule (AMR) to repeated (specific) and novel (generalization) items, using judgment and speech production tasks, without explicit instruction on the nature of the rule. The AMR consisted of phonological transformations of verbs expressing a semantic distinction: whether the preceding noun was animate or inanimate. The results showed that adults outperformed children of both age groups and the 8-year-olds were the poorest learners in all task parameters including in those that were clearly implicit. Adults showed a clear advantage in learning implicit task aspects including applying the AMR to repeated items and generalizing the phonological patterns to novel items. The 8-year-olds, unlike most adults and 12-year-olds, failed to explicitly uncover the semantic aspect of the AMR and subsequently to generalize it accurately to novel items. In two additional experiments, 8-year-olds were afforded the same training experience except that the semantic aspect was made more salient. Even under these conditions, the younger children were outperformed by older participants, with the adults gaining superior fluency and accuracy. Altogether, our findings support the notion of age-dependent maturation in the establishment of declarative but also of procedural memory in a complex language task and do not support a simple notion of language skill learning advantage in children.

Qualitative differences in second language memory as a function of late learning

Robert DeKeyser, Derek Monner, So-One Hwang, Giovanna Morini, Karen Vatz, *University of Maryland*

Several researchers have suggested that 'critical period' phenomena in second language learning may be due to an increased reliance on declarative vs. procedural memory in adolescents and adults compared to children. In this talk we approach this issue from two different angles, with behavioral data and with computer modeling.

In the behavioral part we draw on our recent work and that of others to show qualitative differences in learning processes between children and older learners that can most easily be interpreted in an implicit/procedural vs. explicit/declarative framework. The differential role that that aptitude of individual learners and the salience of specific grammatical structures play in the learning process as a function of age both point in that direction.

In the computer modeling part we show that a decline in learning parallel to what happens with increasing age in second language learners occurs as a function of how connectivity in the neural network is allowed to grow during the learning process. Optimal formation of long-term (implicit/procedural) memory is obtained when the memory capacity is allowed to grow substantially during the learning process; this is shown to be a much more important factor than absolute size of memory. This computational model suggests that once connectivity in the parts of the brain responsible for procedural memory no longer grows fast, learning will suffer increasingly from first language interference. At that point, successful long-term learning presumably becomes more and more dependent on explicit learning, declarative knowledge, and its automatization.

The role of age and continuity in L1 attrition and L2 acquisition

Monika Schmid, *University of Groningen*

This paper will address the question of the long-term effects of exposure to a language for a limited period of time early in life. Some previous findings suggest that early exposure in childhood learners or overhearers can lead to benefits, such as a re-learning advantage, at a later age. There are, however, indications that these benefits can only occur when there is some (albeit minimal) continuation of exposure. This debate has important implications for theoretical interpretations of language learning and the question of whether the learning of an L2 is impeded by the pre-existing knowledge of the L1 ('Impediment Hypothesis') or by maturational constraints (the 'Critical Period' hypothesis). The main difficulty in testing these two hypotheses is the fact that adoption very rarely takes place above age 10. It will be argued here that there is a population where this contrast can be investigated beyond the adoptee age range, namely German Jews who escaped from Nazi Germany. Between 1938 and 1939, 10,000 children between the ages of 2 and 17 were brought to England by charity organisations and placed with English-speaking foster families (Kindertransporte). In the same period of time, an unreported number of children of the same age range escaped in the company of family members. The present study will compare the skills in both L1 and L2 of survivors from both populations in a corpus of autobiographical narrative interviews. Preliminary findings appear to be more in accordance with a Critical Period account than with the Impediment Hypothesis

SATELLITE 2
MORNING SYMPOSIA
AMPHITHEATERS E•F•G•H

10:15 – 12:30

Amphitheater E • Satellite 2

Symposium Session 1 • E

WH-QUESTIONS IN BILINGUAL ACQUISITION

Convener Nelleke Strik, *University of Toronto*

Description:

Wh-questions are an important domain in which to examine syntactic operations in acquisition. Depending on the language, the wh-word can move to an initial position or stay in situ and the inflected verb can move to a position adjacent to the wh-word, giving rise to subject-verb inversion, or remain in its base position. In recent work it has been proposed that children are sensitive to the complexity of the syntactic derivation (Jakubowicz 2005) and that constructions involving fewer movement operations, such as wh-in-situ and non-inversion, are preferred by younger children. This symposium aims to discuss data from bilingual children and to investigate under which conditions cross-linguistic influence takes place when acquiring two languages with different options for wh-movement and inversion. Author-A tests interrogative inversion in Spanish-English children and adults and shows that some non-inversion errors occur due to syntactic transfer from English. Author-B & Author-C examine the effect of computational complexity over the production of errors in wh-questions of English-French children and found that error rates are significantly higher in questions with wh-movement than with wh-in-situ. Author-D considers derivational complexity in cross-linguistic influence and argues that less complex structures are more likely to be transferred in wh-questions of Dutch-French children. Author-E compares data of three language pairs involving one wh-in-situ and one wh-movement language, Cantonese-English, Indonesian-Italian and Korean-English. She proposes a unified account for transfer reconciling language dominance with language-internal factors. These studies will offer a background to discuss cross-linguistic influence and derivational complexity in bilingual acquisition.

The role of syntactic transfer in Spanish-English bilingual children: the case of interrogative inversion
Alejandro Cuza, *Purdue University*

Some researchers have argued that cross-linguistic interaction affects syntax-pragmatic interface structures only. The syntax proper, however, is argued to remain unproblematic and completely acquired (Müller & Hulk 2001; Sorace 2005). The goal of this study is to examine this proposal further. Specifically, I examine the

extent to which Spanish-English bilingual children and young adults have knowledge of subject-verb inversion in Spanish *wh*-questions, a syntactic property devoid of pragmatic extensions. My underlying assumptions are: (1) in contrast with interface proposals, simultaneous bilingual children will have difficulties with subject-verb inversion in Spanish regardless of the absence of pragmatic extensions; (2) difficulties will be more persistent with complex questions (embedded) than with simple questions (matrix), and (3) the combination of syntactic transfer from English and insufficient input will determine the adult syntactic representation of these children. A group of bilingual children (3;0-9;0), young adolescents (13;0-17) and adults (18;0-25;0) participate in the study. Monolingual speakers of comparable age serve as control baseline. Data collection includes a parental language history and social network questionnaire describing the children's input environment. To measure word-order difficulties, participants narrate a fairy tale in English and Spanish and complete a story and question task. Preliminary data show some non-inversion errors, crucially with embedded questions. In discussing the results, I focus on the nature of syntactic transfer and the role of input conditions in L1 bilingual acquisition and L1 attrition phenomena (Argyry & Sorace, 2007; Pérez-Leroux, Cuza & Thomas, to appear; Yip & Matthews, 2009).

The effect of computational complexity on the production of errors in wh-questions used by L2 children learning French and French children with SLI

Philippe Prévost, Laurie Tuller, *University of Tours*

This study investigates the role of computational complexity in language development in two atypical learning contexts, second language (L2) acquisition by children and Specific Language Impairment (SLI). Comparison between these two contexts has been argued to be conducive to the identification of clinical markers of SLI (Paradis et al. 2008). According to Jakubowicz's (2004, 2005) Computational Complexity Hypothesis, children have difficulties with derivational complexity, presumably due to limited working memory capacities, which may lead them to adopt compensatory strategies, such as substitution and omission. Children may therefore make more errors when attempting to produce highly complex structures (see Hamann et al. 2007). This prediction is examined in the production of French *wh*-questions, which involve different degrees of complexity measured in terms of the number of overt *wh*-movements. An elicitation task was administered twice with a one-year interval to 29 British immigrant children learning French and 27 children with SLI, and to typically developing children learning French (aged 4 (n=17) and 6 (n=12)). The children developing atypically were aged 6 to 12 at Year 1. Preliminary results at Year 1 show that there were significantly more errors in *wh*-questions with overt *wh*-movement (e.g. *Qui, tu pousse, t t?* 'Who are you pushing?') than in questions with the *wh*-word *in situ* (e.g. *Tu pousse, t, qui?*), with the children with SLI producing more errors than all other groups. Moreover, one error type, namely subject omission, was found only in the SLI population, a potential clinical marker awaiting further confirmation at Year 2.

Dutch-French wh-questions: a complexity based account for cross-linguistic influence

Nelleke Strik, *University of Toronto*

This study investigates whether derivational complexity (cf. Jakubowicz 2005) can determine cross-linguistic influence in bilingual acquisition. It is proposed that structures involving less derivational steps are more likely to be transferred. Moreover, a new structure coming from Language A will transfer into Language B if it represents a computational step in the derivation of the functional analogue in language B (cf. Strik & Pérez-Leroux submitted). These predictions are examined in *wh*-questions in two bilingual populations: 1) simultaneous Dutch-French children growing up in France (n=16, mean age 6;02), tested in Dutch; and 2) sequential Dutch-French children living in France (n=15, mean age 6;03, mean length of exposure to French 3;07), tested in French.

Results of an elicitation task of root *wh*-questions show that simultaneous bilinguals produced *wh*-in-situ and *wh*-fronting without inversion questions (respectively 10.5% and 11% in argument questions in the younger subgroup), two new structures, that result from transfer from French and that involve less syntactic operations than the target structure in Dutch, *wh*-fronting with inversion. Sequential bilinguals rarely produced this more complex *wh*-fronting with inversion construction in French (4.5% in argument questions), even if this construction is also grammatical in the latter. In both cases the number of syntactic operations guides the process of transfer. Derivational complexity thus cannot only predict developmental steps, but also the transfer of a given structure in bilingual acquisition. In this context, it should be stated not just in terms of the number of operations, but in terms of steps in the syntactic derivation.

Cross-linguistic influence at the level of syntactic features: The case of wh-questions

Lyn Tieu, *University of Connecticut*

Previous studies of the bilingual acquisition of *wh*-questions have yielded mixed results that are difficult to interpret under a single model, whether one wants to attribute transfer to language dominance (Yip and Matthews, 2000) or to language-internal factors such as surface overlap between the two languages (Hulk and Müller 2000). We consider studies of different language pairs involving one *wh*-in-situ and one *wh*-movement language, and propose a unified account that reconciles language dominance with language-internal factors. We argue that transfer requires that: (i) a feature of a lexical item bear ≥ 2 values in the same language; (ii) the same feature has only one value in the other language. When one language has only *wh*-in-situ (i.e. a weak

wh-feature) while the other has both options, the child has the option of selecting the question complementizer with a strong *wh*-feature (triggering *wh*-movement), or a weak *wh*-feature (resulting in *wh-in-situ*). The matter of selecting the right lexical item from the wrong language (i.e. the wrong feature) is related to fluency and language dominance (Cantone 2007); the less fluent, the greater the likelihood of selecting the lexical item with the wrong feature. This system captures the following diverse observations: (i) Cantonese-dominant Cantonese-English bilingual children produced more *wh-in-situ* in their English compared with monolinguals (Yip and Matthews 2007); (ii) the Indonesian-dominant Indonesian-Italian bilingual child Guglielmo produced more *wh-in-situ* in his Italian (Soriente 2007); (iii) Korean-English bilingual children who spoke Korean as a heritage language did not produce *wh-in-situ* at all in their English (Park 2008).

10:15 – 12:30

Amphitheater F • Satellite 2

Symposium Session 1 • F

THE IMPORTANCE OF INFORMATION STRUCTURE FOR EARLY LANGUAGE DEVELOPMENT

Convener Eileen Graf, *Max Planck Institute for Evolutionary Anthropology*

Description:

Regardless of what skill set children bring to language learning, they need access to the ambient language to kick off the learning process. This access is provided through discourse with other speakers. Participating in a discourse requires taking account of the interlocutor's knowledge state during the process of speech production. Information structural devices such as word order, intonation, referring expressions, and Preferred Argument Structure, as well as discourse-features such as givenness and newness, provide the speaker with the means to produce contextually appropriate sentences. This symposium brings together recent studies examining the principles of information structure in early child language and provides evidence that children's use of discourse devices sheds light on their early grammatical development.

Presenting data from both German and English-speaking children, we show that children mark information structure both globally (via word order) and locally (via referring expressions). Also, children use universal devices to mark information status in addition to those used in their ambient language. Our studies provide evidence that children are able to comprehend as well as produce marked sentence structures like German OVS with ease when these structures are contextually appropriate. They exhibit sensitivity to the information status of referents by tuning in to intonational cues and different referring expressions, by adhering to the given-before-new principle, and, in early development, by selectively omitting topical referents. The studies indicate that this sensitivity arises early but becomes more sophisticated with age.

Give him a hat: Givenness and pronominality in early child datives

Nola Stephens, *Pennsylvania State University*

Givenness influences adults' syntactic choices with alternating dative verbs like give, such that given information is generally placed before new information:

THEME-given: Give *THE HAT* to the man.

RECIPIENT-given: Give *THE MAN* the hat.

I show that English-speaking preschoolers similarly prefer given-before-new ordering with the two postverbal arguments of dative verbs. In two studies, I prompted four-year-olds to describe video clips in different discourse conditions: one with a given theme, one with a given recipient, and a control condition where neither argument was given.

Givenness strongly influenced word order. THEMES were more likely to be first in the theme-given condition. This effect was categorical in Study 1 and robust in Study 2 ($p < .001$). Similarly, RECIPIENTS were more likely to be first in the recipient-given condition, though less so (Study 1: $p < .05$; Study 2: ns). The differences between THEMES and RECIPIENTS and between Studies 1 and 2 are largely attributable to referring expressions. Given arguments were often pronominalized, and pronouns were more likely to be ordered first. Importantly, children always ordered themes-pronouns first (*Give IT to the man*), while they sometimes ordered recipient-pronouns last (*Give the hat to HIM*), hence the stronger effect of THEME-givenness. Given information was pronominalized more in Study 1 than Study 2, likely because Study 1 participants heard the given information mentioned *and* saw a picture of it, while Study 2 participants only heard the information. These studies highlight the importance of incorporating information about information status and referring expressions into models of early syntactic development.

Children's understanding of contrastive versus anaphoric reference

Susanne Grassmann, *University of Groningen*

Different linguistic conventions are employed in order to refer to an object that is or is not currently in the joint focus of attention between the speaker and the hearer. We investigated how children interpret referents of pronouns, unstressed nouns, and stressed nouns using an object choice task. The experimenter showed the child two similar-looking objects (e.g. two pens), looked at one of the objects and named it. Then, using either

a pronoun (*Pronoun* condition) or an unstressed noun (*Unstressed Noun* condition), she asked the child to choose the named object. In the *Stressed Noun* condition, she asked for the unnamed object that was not already in the focus of attention (e.g., “ And now – take the PEN.”). Sixty-four 2;6- and 3;0-year-olds participated in the study.

Children at both ages correctly chose the previously named object as the referent of an unstressed noun. Interestingly, only the 3-year-olds correctly chose the previously named object as the referent of a pronoun. An ANOVA revealed that children at both ages differentiated between the referents of stressed versus unstressed nouns, but only the 3-year-olds interpreted pronouns similarly to unstressed nouns and thus as two different means of referring to an object that is established in the current focus of joint attention. The findings parallel previous research on pronoun production, which indicates that only by 3 years of age children understand how pronouns are used appropriately. In addition, the current findings add to the growing evidence that children understand the discourse function of prosodic information early.

The acquisition of word order and information structure in German

Nadja Kühn, *Center for General Linguistics*

Flexible word order in German allows for an SVO and an OVS sequence in main clauses. In general, the marked OVS order is harder to process than the unmarked SVO order, and seems to be acquired later. There are specific contextual factors, which motivate an OVS ordering. We examined German-speaking children's comprehension of unmarked and marked spatial-relational sentences (e.g. The fish is under the frog. vs Under the frog is the fish.). According to the Topic-Comment-Model, the context must always provide the referent of the topic, which is presupposed. The Visual-Spatial-Attention-Theory maintains that the context provide a reference object (*relatum*) relative to which the located object (*locatum*) has to be placed. We crossed both models, yielding marked and unmarked word orders in four conditions.

Two age-groups (3;6 and 4;7) were tested using a picture-placement task. Participants added a movable picture to a fixed one after being instructed according to condition. The results in the marked conditions confirm the *Visual-Spatial-Attention-Theory* for both groups. This shows that even the younger children have no difficulties in comprehending a marked word order when it is contextually appropriate. The results for the unmarked conditions, however, suggest a developmental change: 4;7-year-old children were able to understand the presupposition of an unmarked sentence whereas younger children were not.

Information structure accounts for young children's argument omissions

Eileen Graf¹, Anna Theakston², Elena Lieven^{1,2}, Michael Tomasello¹, ¹*Max Planck Institute for Evolutionary Anthropology*, ²*University of Manchester*

Grammatical subjects typically contain given information whereas objects are mainly new. Thus, information structure may account for the asymmetry in children's early argument omissions, rather than subject- or objecthood. In two studies, we therefore assessed the omission of objects when they assumed information structural characteristics typical of subjects.

Study 1 examined word order, hypothesising that when objects are placed in sentence initial, i.e. topical/given, position, they are more susceptible to omission. 24 3;6 year-old German-speaking children took part in an experiment which elicited both SVO and OVS sentences in which subject and object referents were always given. The results show that, irrespective of subject or object status, initial arguments were omitted significantly more often than were final referents.

Study 2 examined the effects of Preferred Argument Structure. Preferred Argument Structure predicts that indirect objects in ditransitive structures are more susceptible to omission than are direct objects because indirect objects behave like subjects, i.e., they are predominantly given and pronominal. In this study, 24 2;8 year old English-speaking children were asked to imitate double-object and prepositional ditransitives. Overall, the children were found to omit indirect objects more often than direct objects. Indirect object omission rates were similar to subject omission rates. These results also rule out a purely positional account of omission that arguments are only omitted from sentence-initial positions.

Thus, when information structure is taken into account, the subject-object asymmetry is neutralised.

Arguments are omitted due to sentence position and information status

10:15 – 12:30
 Amphitheater G • Satellite 2
 Symposium Session 1 • G

GRAMMAR AND THE LEXICON IN FIRST LANGUAGE ACQUISITION: CROSS-LINGUISTIC PERSPECTIVES ON NOUNS AND VERBS

Convener Dominique Bassano & Maya Hickmann, *CNRS & Université Paris 8*

Discussant Elena Lieven, *MPI-EVA & University of Manchester*

Description:

Grammaticalization is a fundamental process during first language acquisition that involves learning both general and language-specific constraints. The symposium examines these processes in a cross-linguistic perspective with particular attention to the central question of how grammar and the lexicon are interrelated in relation to two core language categories: nouns and verbs. The four contributions discuss a variety of data bases that cover different developmental periods from the emergence of language to later phases. They rely on a variety of research paradigms, including studies with experimentally controlled designs, the linguistic analysis of early spontaneous productions, and recent modelling techniques. The first two contributions focus on noun grammaticalization. Paper 1 compares the acquisition of determiners in two children acquiring French and German. Investigating morphological and lexical factors, it shows the influence of typological and other language-specific properties. Adopting a dynamic systems perspective, Paper 2 compares the development of determiner use in the productions of three children (Dutch, Austrian, French) and in the inputs they receive, showing long-term adaptation processes between child language and child-directed speech. The last two contributions focus on lexicalization patterns in the verb and their implications for varied structures in two data bases: productions about motion events elicited among children (three to ten years) by means of animated stimuli in English, German, French, and Chinese (Paper 3); in spontaneous productions of children learning Korean and English during early acquisition phases (Paper 4). Both papers show the impact of language-specific properties on children's productions from early on

Noun grammaticalization and the acquisition of determiners in French and German: Morphological and lexical factors

Dominique Bassano¹, Katharina Korecky-Kröll², Isabelle Maillochon¹, Wolfgang U. Dressler², ¹CNRS-Université Paris 8, ²Austrian Academy of Science

The acquisition of nominal determiners was examined in several crosslinguistic comparative studies which relied on the typological contrast between certain Romance and Germanic languages to predict an earlier development of determiners for Romance languages. The present contribution tests this prediction by comparing the development of determiners in two children acquiring French and Austrian German. It focuses on morphological (complexity, reliability, salience), and lexical (animacy) factors. In both children, longitudinal spontaneous speech data were collected from the onset of language until age 3;0. Coding of nouns and determiners was performed on monthly production samples.

As expected, determiners emerged earlier in the French child than in the Austrian child. Both showed strong explosion in determiner use, raising the adult level before 2;6, but the Austrian child produced many more errors. These differences can be related to the greater complexity and lesser reliability of determiners in German than in French. Analyses of how determiners develop in each child showed similarities (e.g., while definite articles predominate over indefinite articles overall, indefinite were the earliest to emerge). Within each language, salience could explain early production of particular forms (e.g., German disyllabic forms). Confirming previous results, strong animacy effects were observed in the French child: inanimate were produced with determiner more frequently than animate nouns, which were more frequently bare nouns. As these effects were not found in the Austrian child, they are language-dependent. These findings support the claim that morphological and lexical –typological or idiosyncratic– properties of languages influence the development of determiners.

The dynamics between child language and child directed speech: An application to noun grammaticalization

Marijn Van Dijk, Paul Van Geert, *University of Groningen*

This contribution takes a dynamic systems perspective on adaptation between child language and child directed speech (CDS). The study compares developmental trajectories of three children (learning Dutch, Austrian German and French) with the trajectories of the CDS of their caretakers. The database consisted of samples of longitudinal speech from the children in conversation with their parents, collected from the onset of language until age 3;0. We used a mathematical model (presented in previous publications) that describes how this adaptation depends on the parent's tendency to adapt, the parent's habitual (non-adapted) level of functioning and the difference between the child's and the parent's level. The change in the child level is modeled by means of a logistic growth model that stabilizes at the level of the input.

The analyses of the developmental patterns of determiner use in the three children clearly support our theoretical assumptions. The dynamic models of the children show clear evidence of changes in the input, signalling long-term adaptation processes. However, they also point at important individual differences in the

style of adaptation. The current contribution investigates these individual differences in detail and elaborates on the different aspects of the grammaticalization of nouns (determiners, fillers and correct bare nouns). It also contrasts the findings on noun grammaticalization with the finding on more general linguistic variables, such as MLU and vocabulary.

Lexicalization patterns and event types in the expression of motion across child languages: English, French, German and Chinese

Maya Hickmann¹, Henriette Hendriks², Anne Ochsenbauer³, Helen Engemann², ¹*Université Paris 8 - CNRS*, ²*University of Cambridge*, ³*Ludwign Maximilian Universität*

The expression of motion has been intensively studied over the last two decades in the context of issues regarding linguistic relativity. A major feature of interest concerns which information is lexicalized in the verb vs. expressed by other means in a variety of linguistic structures. This property has been shown to have implications for typological issues as well as for language acquisition. On the basis of our own previous research, our aim will be to determine the influence of both language and event type on lexicalization patterns across several child languages.

The data consist of productions elicited from children (six age groups from 3 to 10 years) and adults in English, French, German and Chinese (168 subjects per language). Subjects described short video clips showing motion events that varied across several dimensions (voluntary vs. caused, types of paths and of manners). The overall findings show clear cross-linguistic differences in children's productions that follow the typical lexicalization patterns of their language (e.g. path vs. manner verbs). However, event types also affect their descriptions in all languages. First, caused motion is more complex than voluntary motion so that children have greater difficulties expressing these events. Second, differences in lexicalization patterns emerge as a function of other event properties, particularly path types, such that boundary crossing seems to have a particular status in relation to other types of events (e.g. vertical motion). Conclusions highlight the joint impact of general and typological constraints on how children acquire spatial language.

Development of motion expressions in Korean children with crosslinguistic comparisons with French and English

Soonja Choi, *San Diego State University*

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The data consist of productions elicited from children (six age groups from 3 to 10 years) and adults in English, French, German and Chinese (168 subjects per language). Subjects described short video clips showing motion events that varied across several dimensions (voluntary vs. caused, types of paths and of manners). The overall findings show clear cross-linguistic differences in children's productions that follow the typical lexicalization patterns of their language (e.g. path vs. manner verbs). However, event types also affect their descriptions in all languages. First, caused motion is more complex than voluntary motion so that children have greater difficulties expressing these events. Second, differences in lexicalization patterns emerge as a function of other event properties, particularly path types, such that boundary crossing seems to have a particular status in relation to other types of events (e.g. vertical motion). Conclusions highlight the joint impact of general and typological constraints on how children acquire spatial language.

10:15 – 12:30

Amphitheater H • Satellite 2

Symposium Session 1 • H

GESTURAL SUPPORT FOR LEARNING IN VERBAL CONTEXTS

Convener Natalie Munro, *The University of Sydney*

Description:

When people talk, they often move their hands. When a parent, teacher, or clinician talks to a child, these hand gestures help the child to process and learn from the spoken message. In this symposium, we present four papers that provide new evidence that deictic and iconic gestures support learning in verbal contexts. Two themes emerge: first, to be most effective gesture should be fine-tuned to the level of the learner. Second, gestural supports for learning seem especially critical when task demand is high. Rohlfing and Grimminger demonstrate that mothers of late-talkers gesture more than mothers of typical talkers and both groups of mothers gesture more in less canonical contexts. Rowe, Silverman, and Mullan find dual-language preschoolers to be more dependent upon gestural support for word learning than monolingual preschoolers. Munro, Baker, McGregor, Docking and Arciuli find that the utility of gesture for word learning, while not always

apparent in the fast-mapping interval, is apparent when retention of newly learned words is measured 3- to 7-days later. Wagner Cook reports that gestured input is not only a useful support for children but also for adult learners and not only for language learning but also for the learning of mathematical concepts presented in verbal contexts. Gesture is especially helpful to learners attempting to solve complicated math problems. Together these four papers lead to a more nuanced understanding of the effect of gesture on learners: effectiveness varies with the learner and the challenge presented by the context and the learning task

Do lexical skills and task influence maternal gestural input?

Katharina Rohlfing, Angela Grimmering, *Bielefeld University*

We evaluated the influence of children's lexical development and level of task demands on the use of gestural behaviors in mothers. We observed gestural behaviors and the accompanying speech of 17 German speaking mothers towards their children with typically language development (TD) and 9 mothers towards their late talkers (LT) in task-oriented dialogues. In these dialogues, mothers instructed their 22 to 25 months-old children to put two objects together; canonical and - as a more difficult task - noncanonical relationships were requested. Analyzing the frequency of gestural behavior, the semantic correspondence between speech and the deictic gestures, the duration of deictic gestures, we found that deictic gestures were dominant in both groups of mothers and were used in order to reinforce speech. However, we found more gestures in LT's mothers than in TD's mothers. Also, LT's mothers rather tended to hold their gestures throughout a complete utterance. With regard to the task demands, all mothers gestured more in noncanonical settings than in canonical ones and this trend was more pronounced in the LT's mothers. Thus, certain aspects of gestural motherese (frequency and duration of gestures but not redundancy) seem to 'operate' on a scale between task difficulty and children's language skills, which is a finding supporting the "facilitative interaction" hypothesis implying that maternal communicative behavior is finetuned to children's learning process.

The role of iconic gestures and pictures in word learning for monolingual and dual-language preschoolers

Meredith Rowe, Rebecca Silverman, Bridget Mullan, *University of Maryland*

Word learning can be facilitated by providing additional semantic information to the language learner in the form of iconic gestures (Capone & McGregor, 2005) or pictures (see Sadoski, 2005 for review). However, recent evidence suggests that the role of nonverbal aids in word learning may differ between monolingual children and Dual Language Learners (DLLs; Silverman & Hines, 2009). DLLs often begin school with smaller vocabularies than their peers; thus it is important to understand which instructional techniques most help these children.

Twenty-six monolingual and 18 DLL preschoolers participated. An experimenter taught each child 6 novel CVC words for familiar items. Two words were taught in each condition: words alone, words paired with an iconic gesture, and words paired with a pictorial representation of the word. Children were tested on production and comprehension. Children's language ability was assessed via teacher ratings. Children performed better on comprehension (M=63%) rather than production (M=46%) tasks. Children with higher language ability ratings performed better than children with lower ratings ($p < .001$). We performed 2 (language status) by 3 (condition) repeated measures ANOVAs for comprehension and production, controlling for language ability. Only language ability was a positive predictor ($p < .05$) of comprehension. For production, there was an interaction between condition and language status ($p < .05$) such that monolinguals outperformed DLLs in the picture condition and DLLs outperformed monolinguals in the gesture condition. Thus, presenting information in two forms is helpful for preschoolers' word learning, but different forms (e.g., gesture vs. picture) may benefit different groups of children.

Iconic gestures support toddlers' retention of word-referent pairings

Natalie Munro¹, Elise Baker¹, Karla McGregor², Kimberley Docking¹, Joanne Arciuli¹, ¹*The University of Sydney*, ²*The University of Iowa*

Children's learning of object labels may be supported when these labels are paired with iconic hand gestures—gestures that capture a physical characteristic or function of the referent. In this study we asked whether such supports are apparent at both fast mapping and retention. We compared recognition of newly taught polysyllabic nonce word-referent pairings under two teaching conditions, with or without iconic shape gesture cues, and at two time points, immediately following fast-mapping (FM) and 3-to-7 days later. Thirty eight typically developing Australian English-speaking toddlers (2;6-3;0 years) participated in 2 counterbalanced play-based teaching conditions involving 4 novel musical instruments and 4 novel sand toys labelled with polysyllabic nonce words and, in one condition, their associated iconic shape gesture cues. FM recognition tests immediately followed teaching; with no additional teaching provided between FM and retention testing. In recognition testing, target objects were presented in an array with two novel objects used during teaching, one familiar object with a phonologically similar name, and one familiar object from the same semantic category as the target. If the participant responded incorrectly, the examiner offered the gesture cue no matter the teaching condition. Weighted scores reflected the number of uncued and cued correct responses.

A 2(cue, no-cue) x 2(FM, retention) repeated measures ANOVA revealed no main effects but there was a significant teaching condition x time interaction such that participants recognized more words associated with the gesture than non-gesture condition at retention only. Iconic shape gestures facilitate consolidation of polysyllabic word – referent pairings.

The role of gesture in learning across development

Susan Wagner Cook, *The University of Iowa*

Hand gesture has been shown to be an important factor in learning, both in children's early language learning as well as in later cognitive development. Although gesture has been implicated in the learning of a wide variety of concepts, most work demonstrating that gesture facilitates learning has involved children. Accordingly, one explanation for the role of gesture in learning is that gesture might be particularly helpful for learners with less-developed language skills, or with less background knowledge. We asked whether children and adults benefit in equivalent ways from seeing gesture during learning. We developed a learning procedure to test the role of gesture in learning of a new mathematical system in both 6th grade children and college students. This procedure was based on previous work demonstrating effects of gesture on learning in 3rd and 4th grade children, and involved similar gestures and concepts. Both groups of participants participated in exactly the same instructional paradigm. Participants received instruction either with or without gesture, and were tested on their learning after instruction. We found beneficial effects of gesture on learning in both age groups. The benefit of gesture was particularly robust on problems that were more difficult than the problems used during the instruction. These results demonstrate that the effect of gesture on learning is not limited to developing language users, or to learners with limited background knowledge. Instead, gesture appears to be an important input for learning across development.

SATELLITE 1
AFTERNOON SYMPOSIA
AMPHITHEATER A•B•C•D

14:30 – 16:45
Amphitheater A • Satellite 1
Symposium Session 2 • A

EARLY STEPS INTO LANGUAGE IN INFANTS BORN PRETERM: PHONETIC PERCEPTION AND COMMUNICATIVE DEVELOPMENT DATA

Convener Laura Bosch, *University of Barcelona*

Description:

Premature birth is associated with poor developmental outcomes in cognitive, sensory-motor and language domains. This symposium focuses on the linguistic development in the first year of life, targeting on two different areas: early communicative development and speech perception abilities, reporting data from samples of preterm populations differing in gestational age, from extremely low to moderate, low-risk infants. Different methodological approaches for the study of these early linguistic abilities are also represented in this symposium. Two of the contributors use developmental scales and parental questionnaires to evaluate cognitive and communicative-linguistic development, while the other two use experimental paradigms to explore phonetic and early phonological development in infancy. While evidence of a negative impact of premature birth on early communicative development is clearly shown, some phonetic and phonological achievements in the first year of life seem to be better preserved, probably because differences in postnatal language experience between preterm and full term infants provide the former with an apparent advantage. The link between these early speech perception abilities and later language development deserves further analysis. Taken together, the four presentations emphasize the importance and the relevance of early assessments in this population at risk for language delays or deficits.

Cognitive and communicative-linguistic developmental trajectories of extremely preterm infants: a longitudinal study in the first year of life

Silvia Savini, Alessandra Sansavini, Annalisa Guarini, Rosina Alessandrini, Giacomo Faldella, *University of Bologna*

The impact of an extremely low gestational age (ELGA) on development has been investigated mainly after two years of life, while early abilities of ELGA preterms have received less attention. We aimed to show how ELGA impacts cognitive and communicative-linguistic developmental outcomes and trajectories in the first year. Seventeen monolingual Italian ELGA preterms (mean GA 25,7 weeks) without major cerebral damage, and 11 monolingual Italian full-term (FT) infants, comparable for biological and social characteristics, were evaluated at 3, 6, 9 and 12 months (corrected age for preterms) by administering the Griffiths Mental Development Scales (GMDS), providing a general developmental quotient (DQ) and five sub-quotients (SQ) (locomotor, personal and social, hearing and language, eye and hand coordination, performance). The Italian long form of the MacArthur-Bates Communicative Development Inventory (MB-CDI), evaluating communicative (gesture and actions) and lexical (word comprehension and word production) competences, was administered at 9 and 12 months to the parents. Findings showed that, compared to the FTs, the ELGAs exhibited significantly lower DQ and SQ scores in the GMDS and significantly lower gestures-actions and lexical comprehension scores in the MB-CDI. A few ELGAs resulted to have mild or moderate impairments according to the GMDS. Our findings highlight that early cognitive and communicative-linguistic abilities are impacted by ELGA with poorer developmental outcomes, evidence of impairment in some infants and different developmental trajectories with respect to FTs. The relevance of repeated assessments through both developmental scales and parental questionnaires was shown

First language and communication development of preterm children

Miguel Pérez-Pereira¹, Pilar Fernández¹, Carmen Díaz¹, Mariela Resches¹, María Luisa Gómez-Taibo², Manuel Peralbo², ¹*University of Santiago de Compostela*, ²*University of Coruña*

The aims of the study were: 1) to compare first linguistic and communicative development of preterm children to that of full term children, to investigate 2) possible relationships between biological antecedents and language development outcomes and 3) possible relationships between family and children's characteristics and children's language development.

The present study was carried out with 150 preterm children, with gestational age under 37 weeks, and a control group of 49 full term children. Participants are studied at various time points of their development: when they are 15 days old, at 10 months, 22 months and 30 months of age (corrected age for premature children). In this presentation, data coming from the first 10 months of life (points 1 and 2) are shown. The NBAS was applied to the children when they were 15 days old, as well as a long interview to the mothers. The Galician version of the CDI inventories was applied when the children were 10 months of age, among other instruments.

Differences in first gestures, and overall gestures and actions scores at 10 months of age were found in relation to birth weight and gestational age. Linear regression analyses indicate an effect of APGAR scores and a few NBAS modules on comprehension of phrases, word understanding, first communicative gestures, and actions and gestures scores at 10 months of age. Language differences between preterm and full term children were not found at this period in development, probably because of the infants' incipient linguistic development

Language experience and early phonetic discrimination in infants born preterm

Laura Bosch¹, Jorgina Solé¹, Martí Iriondo², Thais Agut², Francesc Botet³, ¹University of Barcelona, ²Hospital Sant Joan de Déu, Barcelona, ³Maternitat-Hospital Clínic, Barcelona

Changes in phonetic discrimination are observed in the first year of life as a consequence of language experience. A transition from language-general to language-specific vowel discrimination emerges by 6 to 8 months of age. Data from an ongoing project exploring early ability and developmental changes in the discrimination of native and non-native vowel contrasts in very preterm infants are presented. Discrimination of both contrasts was expected at 4 months of age in preterm and full term infants, equivalent in maturational age (corrected for gestation in pre-terms). However, if language experience is the relevant factor, then, a decline in the ability to discriminate non-native vowel contrasts might already be present in pre-terms.

Twenty pre-terms (≤ 32 gestation weeks; ≤ 1500 g birth weight, with no congenital, physical or severe neurological anomalies) and their controls were tested on /do/-/du/ and /do/-/do/ contrasts (native and non-native, respectively). A paradigm based on the presentation of pairs of stimuli on alternating and non-alternating trials was used.

Group differences were found only in the non-native contrast condition. Preterm infants showed similar attention time in alternating and non-alternating trials in the non-native condition ($p < 0.90$), while clearly discriminating in the native condition ($p < 0.005$). Full term infants were equally able to discriminate the native and non-native contrasts ($p < 0.001$ in both conditions). The behaviour of the preterm group suggests that perceptual reorganization processes are not delayed in this at risk population. Preliminary data from both groups tested at 8 months of age support this finding.

Phonological acquisition in healthy preterm infants is not delayed

Nayeli González-Gómez, Thierry Nazzi, Université Paris Descartes - CNRS

Previous work suggests that preterm infants are at much higher risk for cognitive and language delays (Ortiz-Mantilla, 2008). Accordingly, perception studies showed that the developmental timing of preterm infants is indexed by maturational rather than civil age (Herold et al., 2008). However, for prosody, civil age is not equal to listening age as prosody is heard prenatally (Lecanuet et al., 1999); thus, premature infants lose most of this prenatal experience. In contrast, phonetic information is perceived only after birth, and civil and listening ages are the same in both preterm and term infants, which could lead to a different developmental pattern. In this perspective, and based on findings showing the emergence of a Labial-Coronal preference between 7 and 10 months in term infants (Nazzi et al., 2009), we tested the emergence of the LC bias in infants born at ≤ 32 weeks.

Eighteen healthy preterm French-learning 10-month-olds were tested (= 7 months of maturational age given 3-month prematurity). They showed significantly longer orientation times to the Labial-Coronal than the Coronal-Labial sequences ($p < .004$). Comparison to the term infants revealed that preterm 10-month-olds did not react differently than term 10-month-olds ($p = .84$) but differed from term 7-month-olds ($p = .04$). The results suggest that preterm developmental timing for phonetic information is based on listening age (thus on experience with input) rather than maturational age. The findings raise questions regarding the interpretation of previous results for prosody in terms of maturational constraints, and the possibility that different constraints apply to the acquisition of different phonological subcomponents.

14:30 – 16:45

Amphitheater B • Satellite 1

Symposium Session 2 • B

THE RELATIONSHIP BETWEEN THE ACQUISITION OF NARRATIVES AND OTHER SKILLS AS SHOWN IN DIVERSE POPULATIONS

Convener Anne Baker, *University of Amsterdam*

Description:

The proposed symposium brings together research on young children's narratives and their relationship with other skills. The five studies included address the question of this relationship across different age groups of monolingual and bilingual children learning various languages, including Dutch, English, Hmong, Somali, and Spanish. Studying bilingual children offers the possibility of considering narrative development in two languages within the one child. Two of our studies highlight the critical role played by parents in the development of narrative skills, as in elaborations and participating in the telling of narratives. They indicate a

predictive relationship between maternal scaffolding and children's academic and non-academic school readiness as well as the influential role children's early narrative behaviors have on subsequent parental scaffolding. The three remaining studies examine monolingual and bilingual children's independent narrations and the significant relationships with future literacy skills, including vocabulary and reading achievement, both within and across languages. They also consider the instructional contexts that best support the development of narration as a critical skill in young children.

Non-present talk in early interaction as a precursor of narrative ability age 7

Akke de Blauw, Anne Baker, Judith Rispen, *University of Amsterdam*

Learning to use non-present talk (NPT) in early parent-child interaction is important for later narrative ability. The de-contextualized features of NPT have been found to be necessary in order to be able to report real or fictional events later at school. Developmental details of how children learn to use NPT and what role parents play in this acquisition process are however missing. This paper focuses on the development of NPT-interactions between age 1;9 and 3;9 in relation to narrative ability at age 7;0. Three monolingual, Dutch-speaking children in two middle class families were followed every three months from age 0 to age 7. For this paper 14 videotaped sessions between ages 1;9 and 3;9 were analyzed on the use and development of NPT-interactions and the children's growing capacity to participate.

All three children performed well and not significantly differently from each other on narrative ability at age 7. For all three, the use of NPT in early parent-child interaction at home in all categories and in the children's language production drastically increased between two and four years, as would be predicted on the basis of the expected decrease in context embeddedness and the gradual increase in de-contextualization. However, all three children show quite individual, different pathways in the acquisition of temporality and tense marking, a necessary component of NPT. A relationship between these individual pathways and parental scaffolding strategies was found: the quantity of the child's early production had an impact on the quality of parental feedback.

The Relationship between Maternal Narrative Scaffolding and Children's School Readiness

Gigliana Melzi, Adina Schick, *New York University*

The extent to which parents provide or request new information (i.e., elaboration) during narrative interactions is predictive of children's vocabulary, print knowledge, and subsequent narrative skills. Recent work with Spanish-speaking parents has found empirical evidence for a second dimension – narrative participation. By comparison to elaboration which focuses on narrative structure and content, narrative participation encourages children to adopt different conversational roles during narrative tasks. Thus, children learn that sharing a story involves more than just knowing how the pieces fit together; it also involves knowing how to manage the social interaction. However, the importance of narrative participation for children's developmental outcomes is unknown. The present study investigated the relationship between maternal narrative participation and children's school readiness skills. Participants were 120 Latino mother-child dyads attending a Spanish-English bilingual preschool for low-income children. Naturalistic mother-child narratives were collected in the homes of the participants early in the preschool year and coded for degree of elaboration and participation. At the end of the school year, children's academic (i.e., emergent literacy) and non-academic (i.e., approaches to learning) school readiness skills were assessed. Results corroborated previous work showing a predictive relationship between maternal elaboration and various emergent literacy skills, and showed that narrative participation is critical in predicting non-academic school readiness skills, such as persistence and attitudes toward learning. Results thus highlight the importance of both narrative elaboration and participation as predictive dimensions for preschool children's school-readiness outcomes. Findings are discussed in relation to narrative practices across cultures and implications for family intervention programs.

Narrative and Vocabulary Skills of Sequential Bilingual Children

Pui Fong Kan, Danielle Kemp, *University of Colorado at Boulder*

The purpose of this study is to examine the relationship between the narrative and vocabulary skills of typically-developing sequential bilingual children. Participants were 16 children (mean age = 4;7; SD = 0;8) speaking Hmong (L1) as their Home language and learning English (L2) as a second language from preschool on. All tasks were administered in both Hmong and in English in different sessions. Children's expressive and receptive vocabulary skills were measured in both languages using comparable vocabulary measures. Their narrative skills were tested using a story-retelling task. Narratives were coded for three categories: *Appendages* (e.g., introducer, ender), *orientations* (e.g., names, relations), and *evaluations* (modifiers, internal states).

Results on the vocabulary tasks showed that children performed better in Hmong than in English [$F(1,15) = 28.39, p < 0.001$]. The narrative analysis also showed a significant language effect [$F(2,11) = 9.24, p < 0.01$]. *Orientations* were more common in English whereas *evaluations* were more frequent in Hmong. No effects of age or L2 experience were found. Correlation analysis showed that children's English vocabulary skills were positively correlated with the *evaluations* in the narratives (naming: $r = 0.7, p < 0.01$, picture identification: $r = 0.84, p < 0.001$). The results indicated that children who had greater vocabulary skills in L2 also produced more evaluations in the story in L2. The overall findings contribute to our understanding of the links between

vocabulary and narrative skills in sequential bilingual children. Clinically, the data can guide narrative assessment and intervention for these children.

Low-income preschoolers' narrative abilities and how to best promote them

Ageliki Nicopoulou, Hande Ilgaz, Aline de Sa, *Lehigh University*

This study examined English-speaking low-income preschoolers' narrative abilities. While there are few studies examining preschoolers' narrative abilities, they tend to be restricted to middle-class children. In addition, preschoolers' spontaneous stories are rarely examined. Our goal was to document the narrative abilities of these preschoolers, but also to establish whether we can enhance these abilities if we give children the opportunity to tell stories in a context meaningful to them.

The stories were elicited using a simple activity in which children freely composed stories, dictated them to their teacher, and then later acted them out, together with peers, for the entire class. A total of 70 4-year-olds participated in this study. The activity was introduced in the classrooms early in the school year and took place twice per week for the entire year. We analyzed the first story told as well as differences between the first and last story placing children into three categories: those who told less than 5, more than 5, or more than 10 stories in total. Stories were analyzed for language and narrative structure as well as overall narrative quality.

Low-income preschoolers' narrative abilities in the first story they told were rather limited since most of them told minimal stories introducing a number of isolated characters doing a limited number of actions. As children told more stories, progressive significant improvements were found on almost all dimensions for which the stories were analyzed. For those who told more than 10 stories, narrative connectivity also improved significantly

14:30 – 16:45

Amphitheater C • Satellite 1

Symposium Session 2 • C

ADVANCES IN THE STUDY OF INPUT EFFECTS IN BILINGUAL DEVELOPMENT

Convener Theres Grüter, *Stanford University*

Discussant Martha Crago, *Dalhousie University*

Description:

Quantity and quality of language exposure are important factors in monolingual and bilingual language development. For bilingual children, relative amount of exposure to each language correlates with relative vocabulary size (Pearson et al., 1997), yet little is known about correlations to (i) grammatical development and (ii) processing speed. Novel findings on both will be presented. In addition, we will critically examine relative amount of exposure as a meaningful predictor of various aspects of bilingual language development. The first three papers present significant relations between relative amount of exposure and rate of acquisition of grammatical morphology (Paper 1), relative processing efficiency (Paper 2), and vocabulary size, grammatical complexity, and timing of the achievement of combinatorial speech (Paper 3), illustrating the importance of relative amount of exposure as a factor in bilingual development. However, limitations of relative amount of exposure as a predictor emerge in Papers 2 and 3, which report inconsistent correlations with absolute processing speed (Paper 2), and demonstrate that qualitative aspects of the input account for significant additional variance (Paper 3). Such limitations are not surprising if we consider the enormous variability in the absolute amount of input children receive (Hart & Risley, 1995), variability that De Houwer (2009) argued one should also expect in the input to bilinguals. Paper 4 presents an empirical investigation of the actual amount of input received by bilingual versus monolingual children, supporting De Houwer's (2009) argument and illustrating that both absolute and relative amounts of exposure need to be considered in future research.

The effect on amount of bilingual exposure on morphosyntactic development in simultaneous bilinguals

Elin Thordardottir, *McGill University*

This study examines the effect of bilingual exposure on grammatical development. Participants were 84 children age 4;6 to 5;0 (mean 58.31 months, SD 3.9) acquiring French and English simultaneously (from before age 3 years). Four groups were formed based on detailed parent report: Monolingual French (F), monolingual English (E), more French (FF), equal French and English (EF) and more English (EE). Spontaneous language samples in each language were analyzed for correct and incorrect use of grammatical morphology. No significant differences were found between children having received all, half, or more of their exposure in a given language in MLU, variety or accuracy of grammatical morphology in that language. The two groups having received less exposure to one language differed significantly from the other groups in that language. In English, the FF group used the past tense less than the other groups (but as accurately), and inflectional accuracy was significantly lower for 3rd person marking and use of the copula (thus demonstrating

the characteristic English optional infinitive stage). In French, the EE group had significantly low accuracy of use of gender markers, and children in this group made less varied use of verb tenses and moods (subjunctive and conditional). With subgroups matched on overall amount of exposure but differing in the age on onset (before 6 months vs. after 20 months), no significant differences were found in the accuracy of use of these grammatical morphemes. The results suggest that amount of input affects the rate of acquisition of grammatical morphology.

The relation between language exposure and processing efficiency in bilingual toddlers

Nereyda Hurtado, Theres Grüter, Virginia A. Marchman, Anne Fernald, *Stanford University*

Relative amount of exposure to two languages is known to correlate with the relative number of words bilingual children produce in each language (Pearson et al., 1997). Little is known, however, about how dual language input relates to the speed with which bilingual children process known words in each language in real time. This paper presents a study of 42 Spanish-English bilingual 2-year-olds, whose lexical processing efficiency in each language was assessed using the looking-while-listening (LWL) procedure, where children view pictures and their eye-movements are recorded while they listen to speech naming one of the pictures (Fernald et al., 2008). This record yields precise measures of the time course of language comprehension, including reaction time (RT) to initiate a shift in eye gaze toward the matching picture. Children's relative language exposure was assessed in a detailed language background interview, and parents completed English- and Spanish-language versions of the MacArthur-Bates CDI as a measure of productive vocabulary. Results replicate earlier findings showing a significant correlation between relative exposure and relative vocabulary size ($r = .51, p = .001$). Although correlations between relative exposure and absolute RT were inconsistent (Spanish: $r = .06, ns$; English: $r = .38, p = .01$), this study provides the first suggestion of a relation between relative exposure and relative processing speed ($r = -.28, p = .07$). These findings suggest a relation between relative language experience and relative processing efficiency, yet also highlight the limitations of relative exposure measures in predicting absolute outcome variables.

Effects of the Quantity and Quality of Dual Language Exposure on Early Bilingual Development

Erika Hoff¹, Cynthia Core², Silvia Place¹, ¹*Florida Atlantic University*, ²*The George Washington University*

It is clear that bilingual development is highly variable. To identify influences on bilingual outcomes, the present study investigated the relation of properties of children's dual language exposure to their bilingual development. For 47 Spanish-English simultaneous bilinguals, estimates of relative exposure to each language were obtained in caregiver interview and estimates of development in each language were obtained using the MacArthur-Bates inventories at 22, 25, and 30 months. The relative amount of language exposure was a significant predictor of vocabulary size, of the timing of the achievement of combinatorial speech, and of the grammatical complexity of speech in both languages. For a subsample of 29 children, dual language exposure was also measured using a language diary method in which caregivers recorded details of the children's language exposure for each 30 minute block of 7 different days. Findings replicated the effects of the relative amount of language exposure and also revealed unique effects of properties of that exposure: the number of different speakers from whom the children heard English and the proportion of English exposure provided by native speakers were positive predictors of English skills. Children who heard English from multiple speakers and from native English speakers were more advanced in their English skills, after effects of amount of English exposure were controlled. Properties of Spanish exposure varied less and did not explain variance in Spanish skills. The quantity and quality of English exposure together accounted for 68% of the variance in vocabulary and 55% of the variance in grammatical development.

Maternal input to bilingual and monolingual children

Annick De Houwer¹, Marc H. Bornstein², ¹*University of Erfurt*, ²*National Institute of Child Health and Human Development*

It is often assumed that bilingual children have only half the input in a language that monolingual children have. This assumption is often used as a basis for various methodological decisions and theoretical interpretations in studies involving bilingual children. This study is the first to empirically examine the actual amount of language input received by young bilingual vs. monolingual children. It focuses on the maternal input to a group of bilingual (N=31) and matched monolingual (N=30) children. The mothers in the bilingual families addressed the children in either French or Dutch; the mothers in the monolingual families spoke only Dutch to the children.

The analyses are based on a combination of weekly language use logs (child ages 5 to 20 months) and video recordings of mother-child interaction (ages 13 and 20 months). There was considerable interindividual variation amongst mothers in how much time they spent with their children and in how much they talked with them, regardless of whether mothers were part of a bilingual family or not. There was no difference between the mothers in the bilingual families and those in the monolingual families. A number of bilingual children heard more Dutch from their mothers than children in monolingual families did.

At least as far as maternal input is concerned, then, this study found no empirical basis for the idea that by default, bilingual children have half the input in a particular language compared to monolingual children. This has important repercussions for the study of bilingual children's language development.

14:30 – 16:45
 Amphitheater D • Satellite 1
 Symposium Session 2 • D

DEVELOPING PHONOLOGICAL AND MORPHOLOGICAL REPRESENTATIONS UNDER CONDITIONS OF VARIABLE INPUT

Convener Katherine Demuth, *Macquarie University*
Discussants Katherine Demuth and Mark Johnson, *Macquarie University*

Description:

Critical to the issue of how and when learners develop phonological and morphological representations is how much of what types of input are needed to construct a grammar. This symposium explores this issue by examining quantitative input data from several lesser-studied languages. *Jones, Meakins & Muawiyath* examine maternal vowel input in Gurindji Kriol. Employing distributional and acoustic analysis, they show that the relationship between phonemic and phonetic categories differs, raising questions about how many vowel categories are actually learned, and when. Working on the variety of Australian English spoken in the same area, *Buchan* explores the variable deletion of word-initial /h/ and word-final /v/ in child-directed speech. Preliminary analysis finds that mothers initially use careful speech, with deletion rates increasing over time, facilitating the learning of the socio-phonetic variability. *Stemberger* examines the variable realization of stops as fricatives in Valley Zapotec, especially in word medial and final positions. Using elicited production tasks, he finds that this type of variation is learned quite early. In contrast, *Miller & Schmitt* find that the variable lenition of 2nd person singular /-s/ in Chilean and Mexican Spanish leads to comprehension problems in the part of learners. This may be because lenition occurs at extremely high rates, raising important questions about both the context and relative frequency of variable forms on the learning process. These issues are taken up in the discussion by *Demuth & Johnson*, who take a more formal, probabilistic approach to modeling learning under conditions of variability.

Learning from vowel variation in maternal speech in Gurindji Kriol

Caroline Jones¹, Felicity Meakins², Shujau Muawiyath¹, ¹*University of Wollongong*, ²*University of Queensland*

Research with bilingual infants has found evidence of U-shaped development for vowels that differ in token frequency and are close together in the vowel space. Infants learning Gurindji Kriol, a mixed language of northern Australia, are exposed to a language in which the historical mix of two lexicons has yielded considerable frequency disparities between vowels and within-word vowel variation. In this study, a sample of maternal speech in Gurindji Kriol recorded by Meakins (2003-2006) was transcribed phonetically and analyzed for frequency of vowel phone types and extent of vowel variation. Cluster analyses were performed on the same sample in F1-F2 space, to explore what vowel categories infants exposed to Gurindji Kriol might learn. Although the linguistic analysis posits five vowel phonemes, the cluster analysis suggests that an infant might initially set up three vowel categories, and with further exposure, perhaps four then five vowel categories. If infants learn distributionally, the results imply that an adult vowel system may develop slowly when the input contains extensive vowel variation and frequency disparities between categories.

Phonological variation within lexical forms in maternal speech in Gurindji Kriol and regional Australian English: a longitudinal study

Heather Buchan, *University of Wollongong*

Phonological variation within lexical forms, such as vernacular variants in maternal speech, may help children learn alternate phonological forms in their first language as well as the social information indexed by this variation. Recent research shows that mothers increase use of vernacular variants as children get older. For the present study samples of naturalistic maternal speech were collected from four monolingual English-speaking mothers in Katherine, a regional town in northern Australia. Approximately 8 hours of audiovisual recordings were made at each of three time-points 6 months apart, with the children aged 1;7 to 1;9 at the first stage. Mothers were selected as a comparison group to existing samples of maternal speech by Aboriginal women in the same region. Recordings were transcribed phonetically and frequency counts performed in Phon. Analyses of word-initial and –final fricatives at the first two time points show mothers used a higher proportion of vernacular variants when children were older: word-initial [h] deletion increased from 17% to 24%, and word-final [v] deletion increased from 11% to 14%. Results show that indexical variation is present in input to children and changes in frequency over time. Mothers may accommodate children's need to learn alternate phonological forms differentially as children age.

Learning to be variable in Valley Zapotec

Joseph Paul Stemberger, *University of British Columbia*

In Valley Zapotec lenis “stops” /b d g/ vary between stop and fricative articulations, with variable voicing (e.g. [b b̥ β β̥ φ]). Stops are relatively more frequent word-initially, and fricatives medially and finally. This variation

can be analyzed as lexical (with multiple “underlying forms” for all words) or as phonological (e.g. with underspecified lexical representations, and insertion of [±continuant] and [±voiced]). This raises the question of how children deal with such variability, where adults accept all variants as “correct”. For example, stopping of low-amplitude fricatives (as in English /v ð/ to [b d]) would favor the stop variants. Words and sentences were elicited from 51 monolingual children aged 1;3-6;0, using object-naming, picture-naming, video-clip description, etc. Child utterances were transcribed using perception-based phonetic transcription aided by the waveform (which allows clear differentiation of stops from fricatives, and of voicing). Children produce all variants quite early, with multiple variants in a particular word, favoring fricatives medially and finally. These results are compatible with some variants of lexical and phonological analyses, but rule out other variants of both. Factors that facilitate the early acquisition of this variability are discussed.

Acoustic properties of /s/ lenition in Chilean Spanish: consequences for acquisition of morphology
Karen Miller¹, Cristina Schmitt², ¹Pennsylvania State University, ²Michigan State University

As is well documented in the literature, post-vocalic /s/ undergoes lenition in some dialects of Spanish (e.g., Cepeda 1995, Fox 2006, Torreira 2006), being realized as [h] or even ø. This creates ambiguity for the learner, delaying the acquisition of morphological plural (Miller 2007; Miller and Schmitt 2009). In this paper we ask whether lenition also affects comprehension of second person singular -s. The first study examined the frequency of lenition in Chilean working-class child-directed speech. This was virtually identical to the rates of omission of plural morpheme (~50%). The second study conducted a comprehension experiment with 15 Chilean working-class children (3;6-5;11, Mean 4;2) and 13 Mexican children (3;7-5;11 Mean 4;7). Children were presented with toys and null subject sentences (*Pepe quiere que salte/saltes/salten*) and asked to act out what they heard. The results showed poor comprehension in both languages. The final study examined the acoustic correlates of second person singular /-s/ vs. plural /-s/ lenition by comparing coders' perception of aspiration in Chilean child-directed speech using VoiceSauce (Keating & Vicenik 2009). Preliminary findings suggest that the different comprehension results may be due either to the different prosodic contexts in which these morphemes occur and/or frequency and other aspects of the grammar

SATELLITE 2
AFTERNOON SYMPOSIA
AMPHITHEATERS E•F•G•H

14:30 – 16:45
Amphitheater E • Satellite 2
Symposium Session 2 • E

FACTORS INFLUENCING RETENTION OF NEWLY LEARNED WORDS

Convener Katharina Rohlfing, *Bielefeld University*
Discussant Karla McGregor, *University of Iowa*

Description:

Historically, fast mapping, or the initial linking of a word to its referent, was considered remarkably robust. Children were thought to fast map many new words each day without effort after only one or two exposures to the words in a meaningful context. More recent research emphasizes the fragility of this new memory trace that renders it susceptible to interference and forgetting. Little is known about the factors that lead to successful retention. In this interdisciplinary symposium, we present new data on characteristics of the learner (prior knowledge) and the learning environment (attentional task demands, discourse context) that contribute to retention. In a fourth paper, we present a computational model for incremental word meaning acquisition that is inspired by biological memory processes. This model places the issue of retention into a broader account of word learning. Finally, we will discuss the factors influencing the memorial mechanisms of word learning and how they can be considered in the computational models.

Slow down: High attentional demands hinder children's word learning via fast mapping

Jessica Horst¹, Karla McGregor², ¹University of Sussex, ²University of Iowa

Decades of research demonstrate that children are exceptionally skilled at fast mapping. However, how well children can retain previously fast-mapped words is less well understood. Recent research suggests that children's ability to learn words via fast mapping is strongly related to the attentional demands of the task. In the present study, we explored if lowering the attentional demands of the fast mapping task facilitates retention. We manipulated attentional demands by repeating the familiar competitors across fast mapping trials.

Three-year-old children's fast mapping and retention was tested using a touchscreen computer running ePrime. On fast mapping trials, children saw three object pictures (2 familiar, 1 novel) and were asked to either

touch a familiar or novel object. For children in the *low demand* condition, competitors were always the same for each novel object (e.g., the *zorch* always occurred with the dog and block). For children in the *high demand* condition, competitors were never the same for any novel object (e.g., the *zorch* occurred with the dog and block, then with the bird and cup, then with the car and ball). On retention trials, all children saw only novel object pictures and were asked to touch previously fast-mapped object pictures. Overall, children in both conditions performed above chance on the fast mapping trials. However, only children in the *low demand* condition retained the novel names. Thus, these data suggest that children's ability to learn novel names is strongly influenced by the competition and attentional demands of the initial fast mapping context.

Familiarity of objects and domain knowledge in retention of newly fast-mapped words

Sarah Kucker, Larissa Samuelson, *University of Iowa*

Recent work has demonstrated that while children are very good at the initial pairing of a word and referent, they are unable to retain the mapping after a five-minute break (Horst & Samuelson, 2008). The current work investigates how knowledge about the general domain in which learning is taking place and how familiarity with specific items aids in children's retention in fast-mapping tasks. The first study is motivated by a dynamic neural field model suggesting that when learning words in a domain with minimal structure from prior experience, such as non-solids, new mappings have less competition with prior representations, and thus, retention should be higher. We test this prediction with 20 24-month-old children. Children were presented with two familiar and one novel substance and asked to "get the roke". After a short break, retention was tested. Children were very good at referent selection ($p < .001$) and unlike fast-mapping tasks with solid objects (Horst & Samuelson, 2008), they succeeded at retaining the newly fast-mapped word ($p < .05$). The second study tested 40 24-month-old children in a fast-mapping paradigm with solid items, but preceded the referent selection trials with a brief familiarization period with either the novel words or objects. Here, children were again very good at referent selection ($p < .01$), but only demonstrated retention when familiarized with the novel object ($p < .05$), not the novel word. Taken together, these results demonstrate how children's prior knowledge interacts with the current task input to create robust word learning from an initial pairing of a word and object.

A story about a word: Discursive influences on fast mapping and retention of newly learned words

Kerstin Nachtigäller, Katharina Rohlfing, *Bielefeld University*

Does a discursive presentation influence the acquisition of a new word? Inspired by research from the area of memory development suggesting that a mother's event-talk influences her child's memory of the event (Boland et al., 2003), we conducted a training study. We therefore trained 40 German-speaking children between 20 and 24 months in their understanding of the spatial preposition UNTER [UNDER], about which the children have some nascent knowledge. In our design, the target word was presented within a 'story' to the experimental group and within 'semantically unsubstantial speech' to the control group. The story comprises conversational behavior that was meant to be a semantic cue as it expressed contiguity and causality within a particular event, which was likely to be familiar to the child. Our hypothesis was that stories would put the target word into a discursive context, and thus facilitate retention and, ultimately, the establishment of a semantic network. We tested children's understanding by asking them to perform an UNDER-relation immediately before and after the training as well as following a one-day delay. We analyzed the extent to which this discursive strategy led to successful comprehension and how it contributed to children's retention. The fact that all children enhanced their performance of the word UNDER immediately after the training and one day later indicates an improved retention of the new word in both groups. For children being trained with the stories, we noticed the best benefit for those whose language skills were reported to be more elaborated.

A Computational account on fast and slow mapping during word learning

Claudius Gläser, *Honda Research Institute Europe*

Children's acquisition of new words is characterized by a segregation into two stages: An initial fast mapping of words to specific contexts as well as a subsequent slow mapping serving the decontextualization of word meanings. This view is in-line with findings from neuroscience, which suggest that word learning is mediated by the interaction of two complementary but tightly coupled learning systems. These systems are specifically tailored to the contrary requirements of fast and slow mapping, respectively. To investigate word learning computationally, we developed a biologically inspired framework based on complementary learning systems theory. Keys to our model are coupled processes running at different timescales: Firstly, an on-demand rapid memorization of word-referent pairs and, secondly, a slow statistical generalization among the different referents of a word. Whereas the former serves the initial memorization of new experiences, the latter actively optimizes internal word representations in order to assimilate new knowledge. A continuous application of both processes consequently implements a gradual memory consolidation, which let the internal representations become more efficient, more robust, and more likely to be retained.

The model has been applied in a simulated visual scene description task where words describing the relations between geometric objects have been taught. This includes relations in size, color, and position. From our results we conclude that initially context-dependent word meanings can be efficiently used to transfer gathered

knowledge to novel situations. Even though a subsequent decontextualization further improves generalization, its main advantage may lie in a significant reduction in the semantic network's complexity

14:30 – 16:45
Amphitheater F • Satellite 2
Symposium Session 2 • F

NEW GENERATIVIST APPROACHES TO MORPHOSYNTACTIC DEVELOPMENT

Convener Matthew Rispoli, *University of Illinois at Urbana-Champaign*

Description:

The symposium presents new findings concerning morphosyntactic development that confirm basic tenets of generative approaches, but also challenge and extend them. The main challenge is to make theoretically compatible two paradoxical findings: Early abstract linguistic knowledge and a lengthy developmental period. Tense systems are a primary example. Legate & Yang present explicit computational models employing probabilistic learning mechanisms adapted to the problem of tense. Hadley & Rispoli present evidence that such learning occurs at 21 mo., if not sooner. Early input variation influences developmental rate. The effects of learning, while not instantaneous, are discernable in their naturalistic longitudinal study and in Valian's comprehension task. Robust representation of morphosyntactically distributed tense marking is present considerably before the 3rd birthday. Both teams report sequential development that cannot be explained by input frequency alone, and incorporate comprehension / production asymmetry to help explain the protracted course of development.

The temporal extent of development becomes especially prominent when considering bilingualism. Valian presents data that children acquiring English as an L2 are sensitive to its tense distinction at 4 & 5, but performance is not equal to 4-yr old monolinguals. Montrul reviews incomplete mastery of first language morphosyntax among bilinguals, asking: when do grammatical representations become stable enough to last the lifespan? Abstract knowledge necessary for morphosyntactic development is present before age 2. This knowledge guides learning. Learning entails intricate, non-trivial mechanisms that operate in an inherently gradual manner.

Learning tense with morphology

Julie Legate, Charles Yang, *University of Pennsylvania*

The Root Infinitive (RI) phenomenon has occupied a central place in the generative study of language acquisition. Yet there are several aspects of RI that have not received adequate theoretical consideration. First, RI is *optional*, which suggests that RI cannot be due to a categorical discontinuity in the grammar. Second, cross-linguistic distribution of RI is *gradient* across languages, which suggests that RI cannot be due to performance or maturational constraints, which would presumably affect all populations equally. Finally, the distribution of RI is grounded in the *verbal morphology* of the target language: the propensity and duration of RI across languages is strongly correlated with the morphological "complexity" of the verbal system, which hints at the crucial—and quantitative—role of experience-based morphological learning. Our approach to RI draws on the Variational Learning framework of Yang (2002) where the linguistic hypotheses compete to match the input in a probabilistic process. In the present case, the RI phenomenon is accounted for by a combination of a grammar (such as Chinese) that does not mark tense and one, the target, that does: the acquisition of tense is facilitated by the amount of verbal inflection that provides unambiguous evidence for tense marking. We present evidence from several languages on the RI spectrum to support this approach. We also make the case for the computational work of Chan (2008), so far the only truly unsupervised learning model that provides a quantitative connection between the morphosyntax of the input to and output of language development.

Predicting tense and agreement productivity before three

Pamela Hadley, Matthew Rispoli, *University of Illinois at Urbana-Champaign*

Children acquire English tense and agreement gradually, following a predictable sequence with an average onset age of approximately 24 months (Rispoli, Hadley & Holt, 2009; Rispoli, Hadley, Holt & Tripp, 2010). Before onset, children use input to learn their language marks tense (Legate & Yang, 2007). Recently, Hadley, Rispoli, Fitzgerald and Bahnsen, (2010) demonstrated that parent input informativeness at 21 months and child sex predicted children's initial growth in tense productivity, and input informativeness and child 21-month vocabulary size explained unique variance in 30-month productivity levels. According to the Gradual Morphosyntactic Learning (GML) hypothesis, 2-year-olds must rely more on grammatical encoding as their predominant language production route in order to generate diverse sentences and integrate tense morphemes productively (Rispoli & Hadley, 2010). This study explores whether growth in verb lexicon diversity reflects the shift towards grammatical encoding. Data from a longitudinal study of 40 children will be used to replicate and extend the findings of Hadley et al. (2010). The relationship between verb lexicon growth (i.e., 21-month intercept, linear growth from 21-27

months) and 30-month sentence diversity are examined. Then, the relative contribution of three factors on children's 30-month tense productivity scores are evaluated: (a) input informativeness at 21 months, (b) child sex, (c) verb lexicon growth. The findings bear on the plausibility and veracity of Variational Learning (Legate & Yang, 2007) and GML (Rispoli & Hadley, 2010), in a program of research that investigates the interaction of endogenous and exogenous factors on morphosyntactic development.

Bilingual children's representation of Tense

Virginia Valian, *Hunter College, NY*

Children's representation of tense as a grammatical category appears considerably earlier than does their consistent production of tensed elements. Using a comprehension task, Valian (2006) found that even 2-year-olds could distinguish present and past of copula *be* and the auxiliaries *will* and *did*; 3-year-olds distinguished present and past in auxiliary *be* as well; 4-year-olds were at ceiling on all contrasts. The experimenter demonstrated a scenario with two sets of props and asked children, e.g., "Show me the one that was happy" after changing one bear's smiling face to a sad face.

In bilinguals and second language learners, representation of tense is also an issue, particularly if the first language does not mark tense morphologically. We developed a new computerized version with video clips. The same clip was reversed from left to right half the time and posed a question in the present or past tense half the time. Bilingual Chinese- and Spanish-speaking children touched the computer screen to indicate their choice. Children were roughly matched on SPELT score (Chinese SPELT score = 62%, age = 5;5, Spanish = 69%, age = 4;2). Both groups of children made all present-past distinctions. Although neither group was at ceiling, unlike 4-year-old monolinguals, both groups outperformed monolingual 3-year-olds. The conflict between aspect and tense in auxiliary *be*, a problem for monolinguals, was not a problem for the bilinguals. We suggest that children's errors with tense are more at the output level than the representational level.

Incomplete acquisition: What, How, When

Silvina Montrul, *University of Illinois at Urbana-Champaign*

Generative theory seeks to understand the native speakers' linguistic knowledge; how it is acquired and used. Two widely held generativist assumptions are that children raised in a monolingual community acquire their language completely, and that their mature linguistic competence remains stable throughout the lifespan (Crain & Lillo-Martin 1999; Chomsky, 1981). These assumptions are not necessarily valid in bilingualism. Much research has focused on simultaneous development of early syntax (Genesee, 1989, 2000; Genesee & Paradis, 1996, 1997; Meisel, 2001; Hulk & Müller, 2000), or on differences in proficiency between adult L2 learners and mature native speakers (Birdsong, 1999; Lardiere, 2006). Less attention has been given to; (1) bilingual children who develop neither language fully, and (2) children who learn their second language successfully, while losing ability in their first language subsequent to early syntactic development. An individual's grammar is incomplete when it fails to reach the age-appropriate levels of proficiency attained by monolinguals or fluent bilinguals of similar age, cognitive development, and social group (Montrul, 2008). Incomplete mastery is common in adult L2 acquisition (Bley-Vroman 1989, Schachter, 1990; Sorace, 1993), but also exists in children reared in a dual language environment, especially when exposure to one language is reduced. This is common among ethnic minority language speakers, also called *heritage speakers* (Cummins 2000, 2005; Valdés, 2000).

I present evidence from child and adult bilinguals who show delayed or arrested development of their first language. I argue that proper understanding of incomplete acquisition rests on four key issues; (1) what do monolinguals know when they acquire their native grammar? (2) how much of this knowledge depends on input? (3) how does development continue beyond age 4? (4) when is a native language fully developed and stable?

14:30 – 16:45
 Amphitheater G • Satellite 2
 Symposium Session 2 • G

LINKS BETWEEN LANGUAGE AND SOCIAL-COGNITIVE DEVELOPMENT: INSIGHTS FROM DEAFNESS

Convener Gary Morgan, *City University London*
Discussant Michael Siegal, *Sheffield University*

Description:

The problem under investigation is how does language development relate to social-cognitive skills e.g. Theory of Mind? Some research suggests language is a precursor to ToM while other recent work argues that implicit ToM is less language mediated. Evidence can come from studies of children who experience signed or spoken language with varying degrees of richness. Children born deaf typically develop social-cognitive skills with delays, compared with hearing peers, which are mostly attributed to their poor access to spoken language. Recently cochlear implants, as well as, parental signed language classes seem to be reducing this delay. Paper 1 presents results on language and social-emotional tasks in signing deaf children diagnosed with autism. How does a social-cognitive impairment manifest when access to communication is via the visual modality? This paper provides evidence that autism selectively affects processing of emotional but not linguistic facial cues in sign language. Paper 2 investigates for the first time delayed implicit ToM reasoning in deaf 24 month olds through eye-tracking methods and a study of conversational input from hearing mothers with their deaf infants. Mental state language in conversation differed significantly between mothers of deaf and hearing infants. Paper 3 reviews a large scale study of hearing pre-schoolers and a longitudinal study of orally educated deaf children finding compliment clauses as a pre-requisite for explicit ToM development. Finally paper 4 examines ToM skills in deaf children with cochlear implants and goes on to investigate the influence of language skills on executive functions.

The processing of emotional and linguistic facial expressions in British Sign Language (BSL) by deaf children with Autism Spectrum Disorder

Tanya Denmark, John Swettenham, *University College London*

Hearing children with ASD are reported to lack interest in others' faces and subsequently they manifest difficulties understanding and using facial expressions compared to typically developing controls. Deaf children, however often show advantages with processing tasks involving the face due to the increased role of the face when communicating in speech or using linguistic facial expressions in BSL. In this study, deaf children aged 5-11 years with ASD and typically developing age and language matched deaf controls were compared on a number of comprehension and production measures looking at the use of the face in BSL. These included elicitation of a BSL narrative, a sentence repetition test and a signed sentence to emotion word matching task. In addition three linguistic facial expression structures were investigated: questions, negation and adverbials. The linguistic facial expression production and comprehension measures consisted of picture descriptions, signed sentence to picture matching tasks and a question-answer game. Results indicate that deaf children with ASD performed comparably to deaf controls at comprehending and producing facial expressions across many of the tasks, thus they did not show an impairment with faces overall. But they showed specific differences with the comprehension and production of emotional facial expressions and the comprehension and production of linguistic structures on the face. Deaf children therefore use the face to process the necessary cues for understanding the social-cognitive components of signed language communication but Autism results in an impairment of the specific signals used to understand emotional information.

The Importance of access to language: Evidence from intention attribution and ToM reasoning in deaf infants

Gary Morgan⁴, Marek Meristo¹, Alessandra Geraci², Luca Surian², Laura Iozzi³, Erland Hjelmquist¹, Michael Siegal⁵, ¹*Göteborg University*, ²*University of Trento*, ³*University of Trieste*, ⁴*City University London*, ⁵*Sheffield University*

Recent research has shown that infants as young as 13 months display evidence of theory-of-mind abilities in nonverbal violation-of-expectation tasks. However, the preconditions for FB-attribution in infants have not yet been documented. This study investigated the role of language experience in children's ability to track the false belief of a cartoon character in computerized ToM tasks using eye-tracking methods.

In Experiment 1, we compared 16- to 26-months-old Swedish infants who were either hearing or deaf with hearing parents. The children viewed an animated movie showing a cat (Tom) chasing a mouse (Jerry) where there is a true and false belief situation. The results show that hearing children, but not deaf children, accurately tracked the search behavior of a character with a false belief. Experiment 2 involved a comparison of the mental state language used in conversations with deaf and hearing infants by hearing mothers in the UK. The parents were given 10 pictures portraying emotionally charged or mentalistic situations and were asked to look at the pictures together with their child. Parents' communication with their children was analyzed in respect to mental state categories. The results showed that mothers of deaf infants used far less cognitive

mental state language than mothers of hearing infants. These findings support the position that access to at least a minimum of mental state talk contributes decisively to the expression of ToM reasoning.

Language and theory of mind in typically developing and oral deaf children

Peter de Villiers¹, Kathryn Hobbs², ¹Smith College, ²Harvard University

Language seems to play a causal role in children's development of an explicit ToM, but researchers find conflicting results about the relative roles of syntax, semantics, or pragmatics in false belief reasoning. However existing studies lack the statistical power to tease apart contributions of different aspects of language and have usually used a single index of ToM development. This presentation reports on two studies that avoid those limitations: 1) a large-sample (n=550) longitudinal study of typically developing preschoolers and 2) a cross-sectional study (n=45) of orally-taught deaf children with varying degrees of language delay, where the processes of language acquisition and ToM development are stretched out in time. The studies assessed the children's vocabulary, general syntax, and complement clause comprehension; and measured mastery of several aspects of ToM in both highly verbal and low-verbal tests of understanding of deception, emotion, knowledge and false belief. Regression and correlational analyses revealed significant *independent* contributions of vocabulary, general syntax, and complement comprehension to explicit FB reasoning in both verbal and low verbal tests, but no effect of language on more implicit behavioral measures of ToM (deception). Contingency analyses showed that processing of complement clauses was a prerequisite for later mastery of explicit FB reasoning in both TD and deaf children. We argue that large-scale longitudinal studies and studies of language-delayed children together provide the necessary power for determining the different contributions of language acquisition to ToM.

Theory of mind and language in children with cochlear implants

Kimberly Peters, Ethan Rimmel, *Western Washington University*

Our research investigates whether and how language experience affects theory of mind development (understanding of people's behaviour by reference to mental states such as beliefs, desires, and emotions). Specifically, we examine theory of mind and language, and the relationship between them, in populations of children with different exposures to language, such as deaf children with cochlear implants and typically developing hearing children. In our first study, we found that the performance of deaf children with cochlear implants who use spoken language on standard measures of theory of mind and language was almost equivalent to that of typically developing hearing children and better than that of non-implanted signing deaf children of hearing parents in previous research. These results suggest that cochlear implantation improves deaf children's access to and acquisition of spoken language, including references to mental states, which thereby benefits their theory of mind development. We then examined the relationships between theory of mind, language, executive function and social competence in deaf children with cochlear implants, hard of hearing children and typically developing hearing children. Our results showed that both language and executive function abilities contribute to ToM understanding.

14:30 – 16:45

Amphitheater H • Satellite 2

Symposium Session 2 • H

FROM VERB INPUT TO GRAMMATICAL REPRESENTATION

Convener Ana T. Pérez-Leroux, *University of Toronto*

Discussant Mihaela Pirvulescu, *University of Toronto*

Description:

Language acquisition happens in the context of a fine-grained interaction between language structure and use. The proposed symposium brings together new perspectives and data on verb input, aiming to refine our understanding of when, why and how input is used by children. The goal is to examine the association between learning tasks, specific contexts and experience, and developmental outcomes in child grammar. The first contribution considers how children acquire the argument structure of verbs in null argument languages, where the quantity and quality of experience needed for verb learning is highly restricted. They find that Japanese mothers shift rates of argument realization at critical points in development. The second contribution explores the syntactic bootstrapping hypothesis in theory of mind development, which grants a central role to exposure to sentential complements. This study controls lexical learning of existing and novel epistemic verbs while manipulating the contexts to which these verbs are associated. The third contribution focuses on structural properties of the input itself. She hypothesizes that cross-linguistic advantages in children's sensitivity to the ungrammaticality of missing objects are due to prepositional polysemy. As predicted, English-speaking children repaired more sentences with unambiguous than ambiguous prepositions. The last contribution examines how children use clitic sentences as input when facing the task of learning the transitivity properties of verbs. These studies will serve as background to discussion on what are

the precise properties of experience needed for acquisition to succeed, how exactly this is provided by the input and how children use it.

A role for prepositions in children's acquisition of verb argument structure

Letitia Naigles, *University of Connecticut*

Children's acquisition of verb argument structure is influenced by lexical, grammatical, statistical, and discourse properties of the way(s) specific verbs are used in specific languages. Recent research has also found that French 5-year-olds repair ungrammatical sentences (*Le chien prend vers le bateau/*The dog takes towards the boat) more consistently than English-learning peers. The current study tests the hypothesis that this language effect is attributable to verb-external properties, such as the lack of polysemy in French preposition interpretation.

Three groups of 5-year-old English speakers enacted sentences with transitive verbs but missing direct objects. All groups heard the verbs in the NV frame (*The zebra brings). The Locative/Directional group heard the verbs also in NVPN frames with locative and directional prepositions (*The zebra brings on/towards the ramp), the Locative/Ambiguous group heard the verbs in NVPN frames with locative and ambiguous prepositions (i.e., supporting either locative or directional interpretations (*The zebra brings on/next to the ramp), and the Ambiguous/Directional group heard the verbs in NVPN frames with directional and ambiguous prepositions. The children's enactments were coded for whether they added the missing direct object. All children repaired significantly more sentences in the NV frame than in any of the NVPN frames (ps < .01). Moreover, children repaired significantly more sentences with locative prepositions than those with directional or ambiguous prepositions (ps < .05); the latter two sentence types did not differ. These findings demonstrate that children's developing understanding of verb argument structure is influenced by verb-external properties of the sentence.

Learning to "think" out loud: the role of verb input on the development of children's epistemic representations

Valerie San Juan, *University of Toronto*

Previous research has demonstrated that children's theory of mind development is influenced by their exposure to both syntactic (i.e., sentential complement syntax) and social cues (de Villiers & de Villiers, 2000; Lohmann & Tomasello, 2003). What remains unclear is *how* linguistic input assists children with the representation of epistemic states. The current study addresses this question by assigning 90 children, aged 3.0 – 4.0 to one of three training conditions. The critical manipulation is the type of linguistic cue presented in conjunction with two types of epistemic contexts: true belief or false belief. Children are presented with either (a) a sentence that describes a protagonist's actions but makes no reference to his/her epistemic state (e.g., "Sam is going to put it with the apples."), (b) a sentence that contains a familiar epistemic verb (e.g., "Sam thinks that it is an apple.") but does not vary across epistemic contexts, or (c) a sentence that either contains a familiar epistemic verb in contexts of true belief (e.g., "Sam thinks that it is a pen") or a novel epistemic verb in contexts of false belief (e.g., "Sam gorps that it is an apple"). Ongoing results indicate that children trained with epistemic verbs perform more accurately on explicit measures of epistemic understanding. These findings suggest the importance of lexical and syntactic structures in the identification and representation of epistemic contexts.

Parental input strategy and acquisition of verb argument structures in Japanese

Yuhko Kayama¹, Yuriko Oshima-Takane², ¹*University of Manitoba*, ²*McGill University*

Research investigating the acquisition of null argument languages found a massive argument ellipsis in caregivers' input (Mandarin Chinese: Lee & Naigles, 2005; Hindi: Narasimhan et al., 2005; Japanese: Guerriero et al., 2006). Despite frequent argument omissions in input, children seem not to make transitivity errors. This study investigates whether Japanese mothers provide input which may help their children to acquire Japanese verb argument structures.

One-hour free-play sessions of two mother-child pairs were video-recorded when the children were 10, 21, 32, and 37 months old. The mother's and the child's spontaneous use of intransitive and transitive verb arguments was coded for syntactic roles (subject/object), information statuses (new/given), and referential forms (null/pronominal/lexical).

The results showed that both mothers used given arguments 90-92% of the time throughout the observation periods, indicating that they mostly talked about given information with their children when using intransitive and transitive verbs. Mothers used null arguments a majority of the time (69-79%) when the children did not yet produce any words (10 months). However, mothers' null argument rates for given information casted in the object position of transitive verbs dropped significantly after the children began to talk (33-44%). They used more lexical forms instead. Furthermore, the child whose mother used lexical objects more frequently and earlier (21 months) produced overt verb argument constructions earlier (32 months) than the other child (37 months). These findings suggest that mothers' use of lexical objects for given information may be a strategy to help children acquire Japanese verb argument structures.

Input and direct object clitic realization in French childrenAna Pérez-Leroux, Mihaela Pirvulescu, Yves Roberge, Nelleke Strik, *University of Toronto*

Previous work reveals that children make overgeneralizations of verbal argument structure while at the same time closely modeling the syntactic frames in which the verbs appear in the input: with or without a direct object. If this is the case, what kind of learning do they extract from a verb appearing with a pronominal clitic? Our study investigates patterns of input compliance for French, a language with pronominal object clitics. According to most theoretical analyses, a pronominal clitic construction involves a null object in the argument position. The following structures are available: verb+DP, verb+null, clitic+verb+null. If children closely comply with the syntactic frames of the input, we predict that : a) children will treat differently the input verb+DP vs. clitic+verb+null object; b) higher omission rates will appear in the input verb+null vs. clitic+verb+null.

An experiment involving three novel and three existing verbs was carried out with 48 francophone children (mean age 4;4). The children were distributed based on the input conditions to which they were exposed, according to whether the verb appeared with: a) clitic, b) DP, c) clitic and nul, d) DP and null. Results show that a) children closely model the input: clitic responses are given only when the clitic is present in the input; null object responses were the least represented in the DP only condition; b) null objects are significantly more frequent in the clitic than in the DP condition, supporting the analysis that the pronominal clitic constructions involve a null object in the argument position.

SATELLITE 1
MORNING SYMPOSIA
AMPHITHEATERS A•B•C•D

10:15 – 12:30

Amphitheater A • Satellite 1

Symposium Session 3 • A

FROM SOUND TO MEANING: NEW INSIGHTS INTO THE ROLE OF SOUND SYMBOLISM IN LANGUAGE ACQUISITION

Convener Morten Christiansen, *Cornell University*

Description:

Since Saussure, the mapping between the sound of a word and its meaning has been considered to be largely arbitrary. Although past research has demonstrated that some systematic sound-meaning correspondences do exist, few studies have investigated whether such sound symbolism may play a role in language acquisition. The papers in this symposium present new work on sound symbolism, examining how systematic relations between sound and meaning within and across languages can affect the acquisition of language. The first paper investigates the influence of consonants and vowels on sound-shape matching in toddlers. The results indicate that naturally occurring correspondences between vowels and object shape can influence children's vocabulary learning. The second paper tests whether adult learners and children can guess the meaning of foreign dimensional adjectives (e.g., fast, big). The results suggest that learners can infer the meaning of the words based solely on their phonological properties. Further supporting the existence of such cross-linguistic sound-symbolic relations, the third paper shows that English-speaking 3-year-olds are able to use sound symbolic relations in Japanese to infer the meaning of novel verbs. The final paper places the findings of the previous papers in the broader context of language learning, reporting artificial language learning results suggesting that systematic form-meaning mappings may help learners quickly home in on the appropriate semantic neighborhood for a word, whereas arbitrary form-meaning mappings may be important for learning specific word meanings. Together, the symposium papers thus highlight the importance of taking sound-meaning correspondences into account in research on language acquisition.

Sound symbolism: the mapping of sound to shape in english-learning children

Daphne Maurer, Ferrinne Spector, *McMaster University*

Learning language involves the mastery of arbitrary connections between objects and combinations of sounds. However, some common mappings appear not to be completely arbitrary but to make use of cross-modal sound symbolism readily understood by adults and language-learning children. In this paper, we investigated the influence of the consonant versus vowel sound on sound-shape matching in toddlers. In Experiment 1 (30-36 months, n = 40) there were four contrasting pairs of nonsense words differing in stop versus approximant consonants (e.g., bibi vs. lili) and four pairs of rounded versus pointed shapes. Toddlers matched consonant sounds to shape randomly (p = ns), as did adults (n=10). In Experiment 2 (n=20), there were four contrasting pairs of nonsense words differing in vowel roundness, which, unlike previous studies, contained only reduplicated syllables (e.g., kiki vs. koko) rather than confounding vowel roundness with variability (e.g., kiki vs. bouba). Toddlers consistently matched rounded vowels to rounded shapes and non-rounded vowels to jagged shapes (p < .001). The results confirm that there are naturally biased correspondences between vowel sound and objects' shape that may influence the child's learning of vocabulary but failed to reveal similar influences for consonant sound.

Cross-linguistic sound symbolism in language learning

Laura Namy, Christina Tzeng, Brandi Biscoe Kenner, Lynne Nygaard, *Emory University*

An enduring assumption about spoken language is that the relationship between the sound structure of a word and its meaning is arbitrary. However, non-arbitrary correspondences between sound and meaning, dubbed *sound symbolism*, have also been found in natural language. Recent research suggests that adults and children are sensitive to sound symbolism, for example, reliably mapping words with rounded vowels to round objects and words with non-rounded vowels to pointed forms. Our current research examines both adults' and children's ability to infer the meaning of novel words based on the sound structure of spoken language. In our adult studies, speakers of one language are asked to guess the meaning of a dimensional adjective (e.g., *fast*, *big*) spoken in another language, based solely on the phonological properties of the word. We find that adults can reliably guess meaning in this task, providing evidence for *cross-linguistic* sound symbolism. We are also currently investigating young children's sensitivity to the sound symbolic properties of words outside their native language. Two, four- and six-year-olds view two pictures depicting antonyms (e.g., a big ball and a small ball) and listen to a frog puppet produce a label in her special "frog language". They then select the picture that they think the frog is requesting. An early ability to infer word meaning from sound properties of words would suggest that sensitivity to cross-linguistic sound symbolism is not solely a function of native language experience, but rather may serve as one early constraint on word learning and language acquisition.

Universal sound symbolism facilitates verb learning and generalization in three-year oldsSotaro Kita¹, Mutsumi Imai², Katerina Kantartzis¹, ¹University of Birmingham, ²Keio University

Some words are sound symbolic in that they involve a non-arbitrary relationship between sound and meaning. We tested whether 3-year-old children are sensitive to cross-linguistically valid sound-symbolic matches in the domain of action and this sound symbolism facilitates verb learning and generalization. We constructed a set of novel sound symbolic verbs, based on sound symbolism in existing Japanese sound symbolic words. The sounds of the novel words were judged to match certain actions better than others by adult Japanese- and English-speakers in a pretest. These sound-symbolic verbs, together with other novel non-sound-symbolic verbs, were used in a verb learning and generalization task with 3-year old Japanese and English-speaking children. In line with previous literature, both groups of 3-year olds could not generalize the meaning of novel non-sound-symbolic verbs on the basis of the sameness of action. However, both groups of 3-year olds could correctly generalize the meaning of novel sound-symbolic verbs. It is especially striking that sound symbolism taken from Japanese words facilitated performance of English-speaking children. These results suggest that iconic scaffolding by means of universal sound symbolism can play an important role in early verb learning.

A trade-off between arbitrary and systematic form-meaning mappings in language learningMorten Christiansen¹, Stanka Fitneva², Padraic Monaghan¹, ¹Cornell University, ²Queen's University, ³Lancaster University

Recent research has demonstrated that systematic mappings between word forms and their meanings can facilitate language learning (e.g., in the form of sound symbolism). Yet, paradoxically from a learning viewpoint, most words have an arbitrary form-meaning mapping. We hypothesized that this paradox may reflect a trade-off between two different language learning functions: arbitrariness facilitates learning specific word meanings and systematicity facilitates learning to group words into categories. We tested this hypothesis using the "human simulation" approach to language acquisition, asking adults to learn an artificial language in which the phonological features of words (e.g., the distribution of front and back vowels) were either correlated (systematic condition) or uncorrelated (arbitrary condition) with the referent category (action or object). Performance was scored based on selection of the correct referent (meaning individuation) and selection of a referent of the same type (category learning). On both measures, learners performed better in the systematic condition. In a second study, we maintained the systematic and arbitrary conditions but added two context words that each reliably marked a referent category. Again, participants in the systematic condition performed better on the category learning task. However, participants in the arbitrary condition over time became better at identifying the exact referent of the words. Thus, consistent with our trade-off hypothesis, systematicity in form-meaning mappings may assist in quickly determining the appropriate semantic neighborhood (or category) for a word whereas, in the context of additional distributional information, arbitrariness in form-meaning mappings may make it easier to determine the exact referent.

10:15 – 12:30

Amphitheater B • Satellite 1

Symposium Session 3 • B**LANGUAGE AND MOTOR LINKS IN TYPICAL AND ATYPICAL DEVELOPMENT****Convener** Katie Alcock, *Lancaster University***Description:**

Much evidence links manual, communicative gesture to language development. However, the link between other types of motor abilities and language development is less clear. While gross motor skills do not seem to have a close relationship with language development, in recent years evidence has been mounting that fine motor control may be linked to language development and disability.

The papers presented here go further and include some examination of motor abilities in the same modality as that of the language in question. Paper 1 examines both oral motor abilities and manual gesture abilities in English-learning children aged 21 months and then again at 36 months. Oral motor abilities are independently related to language abilities, and are more closely related to expressive language than manual gesture is. Paper 2 finds that adult naïve signers make the same types of motor errors as children acquiring sign. Paper 3 finds that motor and babble development are closely, but not perfectly, linked in high-risk siblings of children with autism. Finally paper 4 examines links between oral motor, language, and speech abilities in children with Down Syndrome, finding that oral motor abilities can explain variance in speech and language beyond that explained by nonverbal cognitive abilities. The relationship between motor and language abilities is complex, but there may be some limits set on language production when same-modality motor abilities are at their upper bounds.

Oral and gestural motor abilities and early language - Talking with the mouthKatie Alcock, Kirsty Krawczyk, Simon Connor, *Lancaster University*

Recent work links ontogenesis and phylogenesis of language and manual control, and long-standing evidence links communicative gesture to early language and delay. However, most children learn oral, not manual language. Some children with language-learning difficulties also have oral motor control problems. We compare relationships between early manual gesture, language abilities, and oral motor control, controlling for cognitive ability, in typically developing children at 21 and 36 months.

21-month vocabulary production and comprehension were related to oral motor abilities, even after controlling for cognitive abilities. Vocabulary comprehension was related to memory for gesture sequences, but was not significant after controlling for cognitive abilities. 36-month concurrent relationships were found between oral motor control, meaningless gesture imitation, and expressive and receptive language. However, when performance at 21-months was controlled for, 36-month expressive language was only related to 36-month oral motor abilities, not prior language or oral motor abilities, nor gesture abilities. 36-month receptive language, however, was predicted by 21-month comprehension, and was related to 36-month meaningless gesture imitation, after controlling for cognitive and oral motor abilities.

The articulatory component of tests of both oral motor abilities and language likely means these are measuring closely overlapping abilities. However, meaningless gesture imitation probably draws on visuo-spatial and/or executive function abilities, so is related to language comprehension. The 21-month cognitive assessment does not have a strong visuospatial component. Further testing on these abilities and their relationship to meaningless gesture is necessary. Early oral and manual gesture may also be useful for predicting later language delay.

Motoric and cognitive influences on sign language production in adult hearing learnersGerardo Ortega¹, Gary Morgan², Bencie Woll¹, ¹*University College, London*, ²*City University London*

Previous research has documented systematic articulation differences in young children's first sign language signs compared with the adult sign language input, including handshape substitution, movement proximalisation and deletion of hand internal components. Explanations for these differences range from the implementation of visual phonological processes, cognitive limitations and motoric immaturity in the child learner. One way of disentangling these possible explanations is to compare signing articulation between children acquiring sign as a first language and adults who are learning sign language as a second language but have mature cognitive and motoric development. We present results on signing accuracy in a group of adults using a sign repetition methodology and compare performance to child data. We found that adults find infrequent and motorically complex handshape the most difficult part of the sign to repeat and produce movement and location errors akin to those reported for child signers such as omissions and proximalisations. Secondly we tested the impact of sign iconicity (how visually related is the sign's form to its real world referent) on repetition accuracy. While there is no iconicity effect in young child signers, we found that there are significant negative influences of iconicity on sign accuracy in the adults. We discuss some possible reasons for these iconicity differences based on the availability of an adult gesture repertoire which interferes with sign language learning.

Relating vocal and motor development in infant siblings of children with autismEve LeBarton, Jana Iverson, *University of Pittsburgh*

This presentation focuses on relations between motor and language development in a group of infants who have an older sibling with an autism spectrum disorder (ASD). These infants are at heightened risk for ASD and for motor and language delays (High-Risk infants; HR). We investigate relations between two early developmental milestones: supported sitting onset (a motor milestone) and babble onset (a language milestone related to later speech) in examining how motor and language abilities relate in infant development. The anatomical consequences of being able to sit provide new opportunities for infants to develop aspects of vocal control required for babble. Thus, onset of sitting may play a role in the development of babbling by influencing opportunities for vocal development. We examined motor and language development from 5 to 36 months in a sample of HR infants using a combination of observational and parent report measures. There was a significant positive relation between sitting onset and babble onset ($r = .369$, $p < .025$, $n = 37$). Importantly, however, the relation is not perfect and variability is particularly evident within the average range. We propose several factors that may underlie these individual differences in how closely motor and language milestones relate. Although motor development may not be a necessary or sufficient driving force for language, it may still play a role in language development. Further, there may be specificity to the motor and language relation such that particular motor and language skills may be related at specific points in developmental time.

Oral motor control, speech and language in Down SyndromeAdam Goody, Katie Alcock, *Lancaster University*

Links between oral motor control and language development have been reported in the literature, both in typically developing populations, and in children and adults who present with both motor and language impairments. However, the relationship between these abilities is unclear, and unanswered questions focus

on the causal relationship between these abilities, and whether or not speech development is a mediating factor. Our study seeks to examine the association between oral motor control, speech development, and language development in a population of children with Down Syndrome as well as typically developing controls. 40 children with Down syndrome (ages 6-10) were matched with one language-age matched control group and one chronological-age matched control group. Measures include an assessment of oral motor movements, speech, and expressive and receptive language measures. The study also controls for hearing loss, non-verbal IQ, and phonological short term memory. In addition to language impairment, children with Down Syndrome are impaired in oral motor control, compared with typically developing age-matched controls. Lower scores on the oral motor control measures are correlated with lower language scores in both groups, even after non-verbal IQ has been controlled for. Forthcoming longitudinal followup of these groups will attempt to determine causal relationships between oral motor control, speech, and language development across three time points.

10:15 – 12:30
Amphitheater C • Satellite 1
Symposium Session 3 • C

LANGUAGE IN CHILDREN WITH A COCHLEAR IMPLANT: CROSSLINGUISTIC AND MULTI-DOMAIN COMPARISONS

Convener Steven Gillis, *University of Antwerp*
Discussant Dorit Ravid, *Tel Aviv University*

Description:

Congenitally hearing-impaired children with a cochlear deficit nowadays almost routinely receive a cochlear implant (CI) in a growing number of countries around the globe. A growing body of research is concerned with their linguistic functioning: how well do they process speech and language and how does their spoken language develop? Recent findings indicate that early implantation proves beneficial for children with a cochlear deficit. If implanted in (approximately) the first two years of life they tend to catch up their initial delay in spoken language development to a certain extent. However most research specifically focused on children acquiring one particular language, or on a particular linguistic domain (phonology, syntax ...). This symposium is meant to broaden current knowledge by presenting research involving (1) cross-linguistic comparisons of language development in CI children in comparison with typically developing children, and (2) analyses of CI children's language in various linguistic domains.

The main results to be reported can be summarized as follows: CI children appear to catch up with their typically developing peers, however they do so in some, but not necessarily in all linguistic domains linguistic domains, and cases of general language delay are also reported. Moreover, cross-linguistic differences are apparent, with Hebrew- but not Dutch-speaking CI children reaching age-appropriate inflectional diversity, despite similar patterns of lexical development in Hebrew and Dutch; and with CI children with a Hebrew background showing sensitivity for the predominant lexical stress pattern, unlike their peers with an English background.

Early lexical development in Hebrew- and Dutch-speaking children with cochlear implants compared with their normally hearing peers

Orly Herzberg¹, Dorit Ravid¹, Steven Gillis², ¹*Tel Aviv University*, ²*University of Antwerp*

In this paper we assess the lexical development of hearing impaired children with a cochlear implant (CI) in comparison to typically developing (TD) children. The children have either Hebrew or Dutch as linguistic background. The CI children were implanted before their second birthday. The study is conceived longitudinally, spanning the third year of life, yielding monthly observational data of approximately one hour. The main research question was: does the lexicon develop in similar ways in the four study groups? In other words, is lexical development comparable in TD and CI children? And is lexical development comparable in children acquiring Hebrew and Dutch? In order to investigate these complex questions, a common frame of reference was established. Lexical items were classified according to a hierarchy with the dichotomy between communicative vs. lexical words at the top level. Increasingly finer distinctions were made down to the level of individual parts of speech.

The data sets of the 3 CI and 3 TD children in each language, were compared on the basis of matched chronological age, hearing age (number of months of robust hearing) and general linguistic age (as assessed by MLU). In both language it appears that, when matched by chronological age, CI children lag behind quantitatively (number of different items) as well as qualitatively (fewer content words, more juvenile communicative items). Matched by hearing age and by MLU, CI children have closed the gap with the TD children in both languages, exhibiting a quantitatively richer and a qualitatively more diversified lexicon.

Effects of auditory and linguistic experience on infants' sensitivity to lexical stress

Derek M. Houston¹, Osnat Segal², Liat Kishon-Rabin², ¹*Indiana University*, ²*Tel Aviv University*

Investigators have hypothesized that infants become attuned to the stress pattern of words in their native language and that this facilitates infants' ability to segment words from fluent speech. However, research in this area has been limited to languages in which words typically follow either a trochaic stress pattern (e.g., Dutch, English) or contain weak lexical stress (e.g., French). There have been no studies that compared sensitivity to lexical stress in infants exposed to a trochaic-based language versus those exposed to an iambic-based language (e.g., Hebrew). Moreover, there have been no studies addressing the role of early access to auditory input on sensitivity to lexical stress. We address these two issues by testing discrimination of a strong/weak [do'-ti] versus a weak/strong [do-ti'] stress pattern in English-learning and Hebrew-learning infants who either have normal hearing or were congenitally deaf and received cochlear implants. Both normal hearing and cochlear implanted Hebrew-learning infants demonstrated better discrimination when the stress pattern changed from strong/weak to weak/strong than vice versa, suggesting sensitivity to the predominant stress pattern of Hebrew. English-learning infants did not demonstrate an asymmetric pattern of discrimination, suggesting that language experience plays a role in sensitivity to lexical stress. We are currently testing the possibility that the results were due to the native language of the speaker who produced the stimuli (Hebrew) by testing infants with stimuli produced by a native English speaker. We will discuss these results and their implications for the role of lexical stress in infant speech segmentation.

The impact of typological differences on the morphosyntactic development of children with a cochlear implant

Steven Gillis¹, Orly Herzberg², Dorit Ravid², Bracha Nir³, Joris Gillis⁴, Sven De Mayer¹, ¹University of Antwerp, ²Tel Aviv University, ³Haifa University, ⁴University of Hasselt, Belgium

We assess the development of morphosyntactic complexity in the spontaneous language development of congenitally deaf children with a cochlear implant. More specifically we focus on the inflectional diversity of the spontaneous speech of children who received their implant in their second year of life.

How well do these children develop in comparison to typically developing hearing children (NH)? Evidence from the acquisition of inflectional morphology in various languages is quite mixed: some studies report that CI children succeed in acquiring a substantial part of the system, while others show difficulties and delay in inflectional diversity.

In this paper we report findings of a crosslinguistic, longitudinal study of Hebrew- and Dutch-speaking children's acquisition of verb inflection. The two languages are typologically quite different, but they are studied using a single validated measure of morphological diversity, viz. Mean Size of Paradigm (MSP, Xanthos & Gillis 2010). This enables us to investigate longitudinally the typological impact on the acquisition of NH and CI children. Extensive resampling techniques (bootstrapping) are used in order to safeguard methodological soundness of the composition of the linguistic materials in both languages at different ages.

Results show that there is indeed an effect of typology on CI children's acquisition. Hebrew-speaking children with a CI have caught up after 2.5 years of implant use. Dutch-speaking children do not show this pattern: a follow-up study of the Dutch-speaking cohort reveals that even six years of age they have a significant delay.

Vocabulary and grammar development in French-speaking children who received a cochlear implant at an early age

Louise Duchesne¹, Ann Sutton², François Bergeron³, ¹Université du Québec à Trois-Rivières, ²Université d'Ottawa, ³Université Laval

Children with cochlear implants (CIs) experience delayed exposure to language compared with normally hearing children. Previous research has suggested that specific language components (vocabulary, morphology, and syntax) are likely to be vulnerable when language exposure is delayed. Few studies to date have examined each of these language components separately in a sample of children who received a CI before the age of 30 months.

42 French-speaking children who received a CI between the age of 8 and 28 months were tested with standardized measures of receptive and expressive vocabulary and receptive grammar. Scores obtained by the children with CIs were compared to the norms established for hearing children of the same age. A qualitative analysis of early expressive vocabulary of the younger children ($n = 11$) was conducted. As a group, children with CIs exhibited language levels within normal limits for most standardized language measures. Examination of individual patterns revealed profiles of performance, ranging from all components within normal limits to general language delay. Lexical abilities were generally comparable to typical development; receptive morphosyntactic abilities remain impaired in many children.

The use of a cochlear implant can have a "normalizing" effect on language when provided around age 2. However, improved access to auditory input alone does not allow children to attain language levels within normal limits in all components. Findings suggest that morphosyntactic abilities might be particularly vulnerable when exposure to language is delayed. However, determining the exact nature of the morphosyntactic difficulties is a question for future research.

10:15 – 12:30
 Amphitheater D • Satellite 1
 Symposium Session 3 • D

MEMORY MECHANISMS AND LANGUAGE IN CHILDREN WITH AND WITHOUT SPECIFIC LANGUAGE IMPAIRMENT

Convener Edith Bavin, *La Trobe University*
Discussant James Montgomery, *Ohio University*

Description

Children with Specific Language Impairment (SLI) demonstrate language scores below chronological age matched peers but normal-range nonverbal intelligence. However, extensive research shows that children with SLI have cognitive impairments which impact language development and performance. In particular, memory limitations have been identified. Much of the research on memory has been conducted in the verbal working memory domain, with particular focus on phonological short-term memory (STM). However, SLI research has expanded its scope to examine visuo-spatial STM and various attentional control mechanisms. Children with SLI demonstrate deficits across many of these memory mechanisms.

The symposium extends research findings on working memory (including storage and attentional control mechanisms), in children with SLI, contributing in-depth information on specific associations between these factors and language across the preschool and early school years. Paper 1 focuses on two new tests for testing memory in preschool age children, aged 2-4 years. One assesses non word repetition and the other visual STM. Associations between vocabulary and scores on the STM tasks are reported. Paper 2 focuses on phonological STM and word learning with 8 year-olds using a paired-associate learning task with familiar and novel words. Paper 3 reports on the associations amongst lexical and phonological awareness tasks, a dual processing memory task and attention in 6-13 year olds. Paper 4 considers the contribution of working memory and inhibition in relation to language comprehension with children aged 8-14 years, and the relative contribution of syntactic complexity to children's performance.

Verbal and Visual-spatial Short-term Memory in Preschool Children

Stephanie Stokes, Thomas Klee, *University of Canterbury*

Problem: The interaction between vocabulary and verbal STM abilities has received considerable focus over the last three decades, with competing theories presenting opposing views of the developmental direction of influence. Support for theories would be facilitated by testing STM skills in very young children. In addition, poor performance on a verbal STM task may be diagnostically indicative of language impairment in children. Therefore a verbal STM task may be a useful screen for language impairment before 4 years of age. Until recently a verbal STM task was not available for this age group. In addition, while a visual STM deficit is not a component of the profile of children with language impairment, the relationship between visual and verbal STM in preschool children is not well understood. This research outlines two recently developed verbal and visual STM tests and their association with language abilities in children aged 2-4.

Methods: Participants were 267 2-4 year old English-speaking children. Two new tests for 2-3-year old children, the Test of Early Nonword Repetition (TENR) and a visual STM test (The Visual Patterns Fish Test; ViP), and receptive and expressive vocabulary tests were administered to subgroups of children.

Results: The TENR was significantly correlated with vocabulary size in 2-year-old ($r = 0.56$) and 3-and 4-year-old ($r = .77$) children, and in a screen environment it produced good diagnostic accuracy figures (LR+ = 14.88; LR- = 0.13). The ViP was not significantly correlated with language ability or NWR once age was accounted for.

Word Learning in School Age Children with Language and/or Working Memory Impairments

Lisa Archibald, Marc Joanisse, *University of Western Ontario*

Purpose: Poor vocabulary knowledge is common in children with Specific Language Impairment (SLI). Learning of the phonological form of a word is supported by phonological short-term memory, often found to be impaired in SLI. The present study examined linguistic and memory influences on word learning by comparing the performance of children with language and/or working memory impairments on a paired-associate learning task.

Methods: Groups of 8-year-old children previously identified with language impairment only (LI), working memory impairment only (WMI), language and working memory impairment (L&WMI), or typical development (TD) completed a task requiring them to repeat each name of four aliens in turn and then label each alien in an array until two arrays were completed without error or a maximum of 10 arrays had been presented. This task was completed under two conditions providing either familiar (e.g., Michael) or novel (e.g., Sommel) names for the aliens.

Results: Comparisons grouping children with/without language impairment revealed a significant group effect moderated by a group-by-condition interaction. Children with LI scored disproportionately lower in the novel word learning condition. Comparisons grouping children with/without working memory impairment revealed a significant effect of group with no interaction indicating that the children with working memory impairment were not differentially disadvantaged by the novel names.

Conclusions: Children with language and/or working memory impairment learn words more slowly, however only those with language impairment have disproportionate difficulty learning novel phonological forms.

The Impact of Lexical Processes on Verbal Working Memory in Children with and without SLI

Elina Mainela-Arnold¹, Julia Evans², Jeffrey Coady³, Carol Miller⁴, Maya Misra⁴, Gerard Poll⁴, Ji Sook Park⁴,
¹University of Toronto, ²San Diego State University, ³University of Colorado, ⁴Pennsylvania State University

Purpose: Two studies investigated factors affecting word recall on sentence span (SP) tasks in children with and without language impairments. The first investigated the effects of lexical processes, and the second investigated the effects of attention and phonological awareness.

Methods: In both studies, the participants (aged 6;4-13;8, 32 in Study 1, 40 in Study 2) completed an SP task. Children listen to lists of sentences and later recalled the last words of the sentences. In Study 1, children also completed two lexical tasks, a gating task and a word definition task. In Study 2, children completed two phonological awareness tasks, Blending Words and Elision tasks. Blending Words requires children to combine sounds into words. Elision requires children to segment words into sounds. Parents rated children's behaviors for inattention and hyperactivity.

Results: In study 1, lexical predictors were significant unique predictors of recall on a SP task, together accounting for 35% of the variance in SP. In Study 2, phonological awareness accounted for 20% unique variance in SP. Elision reached significance, but Blending Words did not. Inattention and Hyperactivity were not significant predictors.

Conclusions: Over half of the variance in SP is not related to functions traditionally associated with working memory. (1) phonological decoding or the metalinguistic ability to segment language, (2) activating words in lexicon, and (3) activating of stored semantic representations also play a significant role. Working memory and linguistic representation may be architecturally inseparable (MacDonald and Christiansen, 2002). This challenges working memory theories of language impairments.

The Impact of Working Memory, Inhibition and Attention Switching on Language Comprehension in 10-13 year old Children

Klara Marton^{1,2}, Loraine Obler², Mira Goral^{2,3}, Luca Campanelli², Naomi Eichorn², Jungmee Yoon², ¹Brooklyn College, ²The graduate Center of CUNY, ³Lehman College, CUNY

Problem: Language comprehension interacts with various cognitive functions. Our studies extend previous research by examining the individual contributions of working memory (WM) and inhibition to language comprehension in children with specific language impairment (SLI). Two distinguished hypotheses drive our research: the directed inhibition account, (Bjorklund & Harnishfeger, 1990) and the graded working memory hypothesis (Cepeda & Munakata, 2007). Our goal was to examine (1) whether WM and inhibition constitute separate functions that contribute in different degrees to performance on language comprehension tasks, and (2) whether the relative contribution of WM and inhibition to language comprehension is a function of syntactic complexity.

Methods: Participants were 8-14-year old children with and without SLI. Our experiments included an online information-processing task with subtests targeting WM, inhibition, attention switching, and verbal strategy use. Language performance was assessed using an embedded-sentence comprehension task with coordinate, subject-relative, and object-relative sentences.

Results: WM and inhibition, though correlated, contribute in different degrees to performance on language tasks, and their relative contribution to language comprehension is a function of the syntactic complexity of sentences. Regression analysis showed that WM predicts comprehension of simple sentences, while inhibition skills predict processing of syntactically complex sentences to a greater extent. Children with SLI performed slower and less accurately than the controls, and they showed different performance patterns.

Conclusion: Children rely on different cognitive control processes during language comprehension of syntactically varied sentences. The atypical patterns in children with SLI reflect differences in the level of integration of multiple control functions.

SATELLITE 2
MORNING SYMPOSIA
AMPHITHEATERS E•F•G•H

10:15 – 12:30
Amphitheater E • Satellite 2
Symposium Session 3 • E

NEURAL CORRELATES OF LEXICAL SEGMENTATION IN INFANCY: CROSSLINGUISTIC ERP AND NIRS DATA

Convener Claudia Männel, *MPI for Human Cognitive and Brain Sciences*

Description:

In natural language learning, successful structuring of the auditory speech stream is fundamental to subsequent higher-level language processing. Behavioral research has successfully described the beginnings of early word segmentation using overt measures as provided by the headturn preference procedure (Jusczyk, 1999). Only recently, neuroscientific research has started to investigate the underlying neurophysiological mechanisms of lexical segmentation (Kooijman, 2007).

This symposium aims at presenting new evidence of lexical segmentation and recognition in infancy from a crosslinguistic perspective, derived from event-related brain potential (ERP) recordings and near-infrared spectroscopy (NIRS).

Paper 1 extends previous ERP findings on lexical segmentation in Dutch (Kooijman, 2007). These studies relate ERP indicators of infants' lexical segmentation to children's later language skills, suggesting a predictive value of particular ERP components. Paper 2 explores the ERP correlates of infants' lexical segmentation in French, a language with different rhythmic properties than, for example, English. These studies suggest both syllable-based and whole word segmentation in French. Paper 3 addresses the role of prosody in German infants' lexical segmentation and recognition. ERP components indicate infants' reliance on prosodic accent at the beginning of lexical segmentation. Paper 4 presents behavioral data on the manipulation of stress during word familiarization and recognition, and NIRS data on the differential influences of acoustical salience and familiarity in word processing. Collectively, these papers highlight the complementary use of neuroscientific measures in deciphering infants' developing ability to discover words in the auditory speech stream

Spontaneous speech segmentation ability in Dutch infants as a marker for language development

Caroline Junge¹, Anne Cutler³, Peter Hagoort², ¹*Max Planck Institute for Psycholinguistics*, ²*Radboud University*, ³*University of Western Sydney*

When infants learn words, their brains become tuned to listening to their native language. Word learning requires infants to identify the concept as well as the corresponding word. Since infants mainly hear multi-word utterances, the ability to segment words from speech is hence crucial for vocabulary acquisition (Newman et al., 2006).

Kooijman (2007) used ERPs to measure on-line word segmentation ability. After a familiarization phase of ten tokens of an isolated word, 10-month-olds showed a left negativity for familiarized words relative to unfamiliar words within sentences, but 7-month-olds showed a right-frontal positivity.

The two present studies extend this use of ERPs by manipulating the familiarization phase. The first study looked at whether 10-month-olds can recognize words in isolation previously presented once in continuous speech. The second study used a familiarization and test phase of only novel utterances. In both studies, we again observed a left-frontal negativity around 400ms. For both studies, this was related to later language skills: to vocabulary size at 12 and 24 months; and to performance in a preferential-looking study for known words at 16 months, respectively. The third study further explored the relationship between ERPs for familiarity and future language profiles by following the 7-month-olds from Kooijman (2007) at three years of age. Infants with an ERP effect similar to the 10-month-olds had higher language quotients than those with the overall group pattern. Hence, with a variety of measures, we see that a left-frontal negative ERP effect of word segmentation predicts later language development.

Electrophysiological evidence of lexical and syllabic segmentation by French-learning infants

Louise Goyet, Thierry Nazzi, *CNRS-Université Paris Descartes*

Previous behavioral research found a delay in word segmentation onset for French (Nazzi et al., 2006) compared to English (Jusczyk et al., 1999), and the reliance on a different prosodic/rhythmic unit: the syllable. To determine whether the delay found for French is linked to procedural difficulties, we used ERPs (Kooijman et al., 2005) to re-evaluate both the delay (Experiment 1) and the syllable-based segmentation issues (Experiment 2).

In Experiment 1, French-learning 12-month-olds were familiarized with repetitions of a bisyllabic word, and tested with sentences containing either that target word or a "control" word. For the test phase, mean ERPs

were calculated in various time-windows for target and control words for both the first and second syllables. For the initial syllable, a significant effect of familiarity was found for the 350-500 ms window, while no effects were found for the final syllable. These results suggest that infants either perform whole word segmentation or that segmentation of the second syllable is masked by the reaction to the first syllable. In order to reassess syllabic segmentation, in Experiment 2, French-learning 12-month-olds were familiarized with the isolated final syllables of the target word and tested as in Experiment 1. For the final syllable, a significant interaction between familiarity and quadrants was found for the 350-500 ms window, while no effects were found for the initial syllable. Overall, these ERP data show evidence of whole word segmentation while also confirming syllable-based segmentation

Accentuation facilitates early word recognition: ERP studies in 6- and 12-month-old German infants

Claudia Männel, Angela D. Friederici, *Max Planck Institute for Human Cognitive and Brain Sciences*

Previous behavioral and electrophysiological studies have shown that infants start to detect sentence-embedded infrequent words between 7 and 10 months of age when previously familiarized with these words in isolation (e.g., Jusczyk, Houston, & Newsome, 1999; Kooijman, 2007). In the current electrophysiological study, we investigated infants' word segmentation and subsequent recognition in a more natural input situation by presenting whole sentences during familiarization and individual words at the test phase. Since parents naturally accentuate new words when teaching infants (Bernstein Ratner, 1996), we explored the impact of prosody on infants' segmentation abilities by using speech with or without accent on the words to be familiarized.

Event-related brain potentials at the test phase showed that even 6-month-olds recognize previously presented words, but only when words were accentuated during familiarization. This difference was apparent in more positive-going ERP responses to previously accentuated familiarized words starting at around 500 ms post-word onset. In comparison, 12-month-olds showed recognition independent of prosodic realization. Results revealed more negative ERP responses to all familiarized words than unfamiliarized ones at around 400-700 ms post-word onset. The differing ERP responses across age groups not only suggest different segmentation abilities but also different underlying mechanisms.

It follows that under specific familiarization conditions, infants show segmentation and recognition of infrequent words at an earlier age than has been previously reported. The current data thus emphasize the crucial role of prosody in infants' early ability to extract words from continuous speech.

influences of acoustic salience and familiarity in and out of fluent speech: Behavioral and NIRS studies with English-learning infants

Heather Bortfeld, *University of Connecticut & Haskins Laboratories*

In our studies, we examined how mothers naturally stress words across multiple mentions in speech to their infants and how this marking influences infants' recognition of words in fluent speech.

We first collected samples of mothers' infant-directed speech using a technique that induced multiple repetitions of target words. Acoustic analyses revealed that mothers systematically alternated between emphatic and nonemphatic stress when talking to their infants.

Using a behavioral technique, the headturn preference procedure, we then tested 7.5-month-old infants on their ability to detect familiarized words in fluent speech. Across four experiments, stress of target words (emphatic and nonemphatic) was systematically varied across familiarization and recognition phases. Results indicated that, although infants generally prefer listening to words produced with emphatic stress, recognition was enhanced when the degree of emphatic stress at familiarization matched the degree of emphatic stress at recognition.

We then used near-infrared spectroscopy to test another group of 7.5-month-old infants. Specifically, we compared patterns of hemodynamic activity in infants presented with isolated words that were acoustically salient or not (e.g., produced with either emphatic or unemphatic stress) that were either familiar or unfamiliar. We predicted that acoustically salient words would produce hemodynamic changes consistent with allocation of attention, but that this response would be mediated by word familiarity. Our results indicate that infants' cortical processing is differentially influenced by the acoustic salience of a word and its familiarity. We are currently examining whether similar patterns of cortical activity are observed when the words are embedded in fluent speech.

10:15 – 12:30
 Amphitheater F • Satellite 2
 Symposium Session 3 • F

TALKING TO CHILDREN IN THE 21ST CENTURY

Convener Elaine Reese, *University of Otago*
Discussant Catherine Snow, *Harvard University*

Description:

Over 30 years ago, Catherine Snow and Charles Ferguson published their seminal volume, *Talking to Children: Language Input and Acquisition*. The generative power of this work is apparent in that 21st century researchers are still actively addressing its central question: "How does adult input matter for children's language development?" The four papers in this symposium all address this central question but in different ways and with diverse populations. The first paper investigates the acquisition of English by young bilingual (Spanish) and monolingual learners. What is the pivotal role of language input from early childcare experiences in language gains and losses? In the second paper, young Pacific Island children in New Zealand learn their first language through the lexical diversity that both mothers and fathers provide. At 15 months, mothers' lexical diversity is more important, but by 21 months, fathers' lexical diversity is also critical for children's language learning. In the third paper, monolingual Spanish preschoolers in Chile acquire narrative forms when mothers structure conversations about past events in an elaborative style, but mothers' responsiveness to their children's perspectives in the conversation is also important for narrative skill. In the fourth paper, primarily monolingual New Zealand Maori preschoolers tell higher-quality narratives when their mothers highlight internal states in conversations with children about past events. These findings echo Snow and Ferguson's conclusions about the importance of adult input for children's language development, but go beyond those findings to begin to map these links across languages and cultures

Influences on trajectories of english and spanish development in preschoolers from bilingual homes

Erika Hoff, Rosario Rumiche, *Florida Atlantic University*

We have followed a sample of children acquiring English and Spanish and a comparison group of children acquiring only English from the age of 22 months to 48 months. The goal is to describe trajectories of bilingual development and explain individual differences in those trajectories. Our findings from studying these children up to 30 months have shown that when total language knowledge is considered, the bilingually-developing children equaled or surpassed the monolingual children. In single language comparisons, however, the bilingual children lagged behind the monolingual children.

The present analyses extend this investigation to 48 months and compare the monolingual and bilingual children in terms of measures of their productive English vocabulary using the *MacArthur-Bates Communicative Development Inventory* at 30 months and the *Expressive One Word Picture Vocabulary Test* at 48 months. Caregiver-report measures of the children's English and Spanish exposure were also obtained at both time points.

The central findings were that the early gap between the monolingual and bilingually-developing children in English language skills appeared to be closing at 48 months and that it was closing because the children's language exposure was becoming more English dominant. The primary cause of increased exposure to English was children's entry to preschool or child care. Analyses in progress will also describe changes in the children's Spanish language skills during this time period. The findings have implications for understanding early trajectories of bilingual development and for understanding the environmental forces that shape children's language development in bilingual communities.

Child-directed speech and child language development in pacific island families living in New Zealand

Mele Taumoepeau, Elaine Reese, *University of Otago*

The volume and complexity of child-directed speech (CDS) is directly related to the development of vocabulary in children. There is a dearth of research, however, on the links between child-directed speech and child language development in non-European cultures. The main objective of this study was to identify how the conversational practices between caregivers and their very young children in Pacific Island families living in New Zealand are predictive of their children's language development. We longitudinally assessed 45 families who identified with a Pacific Island culture. Two principal caregivers participated in conversations with their child during wordless picture book and free-play tasks. Children and their caregivers were tested at 15, 20, 26 and 33 months. Children's language was assessed using the adapted versions of the MCDI and the RDLS. Results suggest that at 15 months there was a direct relation between the mothers' CDS, defined as the number of unique word roots, and children's comprehension at 21 months ($r = .41$, $p < .05$, controlling for child comprehension at 15 months). Mothers (but not fathers) who rated high in Pacific orientation tended to use fewer word roots at 15 months, $t(43) = 3.105$, $p = .003$. Fathers' CDS at 21 months was correlated with children's language at 26 months both in play and book reading tasks. We will continue to explore stylistic differences in talk between mothers and fathers and patterns of talk that are unique to this ethnic sample. We expect cultural differences in input to lead to different pathways in the development of child language.

“Te Acordai?” How Chilean parents support preschoolers’ personal narrativesDiana Leyva, Monica Rodriguez, Magdalena Infante, Monica Berrocal, *Harvard University*

Personal narratives play a central role in children’s language, literacy and socio-emotional development. The degree to which mothers support their children’s narrative conversations vary among cultures and is related to child-rearing values and socialization goals. This study investigated the unique contributions of two aspects of Latino parents’ talk supporting children’s personal narratives: elaboration and regard for child’s perspective (RCP). In prior research, these aspects have been combined into elicitation styles or contributions of only one aspect have been examined. Sixty low-income Chilean parents talked about a positive and a negative past event with their preschool children. Elaboration was scored as number of open-ended questions introducing new information into the conversation. RCP was based on a 5-point scale assessing parents’ willingness to maintain children’s perspective in the conversation. Children’s narrative quality was coded for number of new pieces of information about the past event. Vocabulary was assessed using the Woodcock-Muñoz picture-vocabulary test. Parents who were more elaborative were also higher in RCP in both conversations. Both elaborations and RCP were positively related to children’s narrative quality. Children with larger vocabularies produced better narratives. Maternal elaboration explained 35% of unique variance in narrative quality, whereas RCP explained 8%, controlling for maternal education and child age and vocabulary. Two aspects of naturally occurring parental talk play a role in the development of personal narratives in Latino children. Literacy programs for Latino families in and outside the U.S. could exploit personal narratives as a means to support children’s language and literacy skills.

Parent-child emotion talk and children’s narrative development in New Zealand Māori familiesTia Neha, Elaine Reese, *University of Otago*

When parents and children discuss past experiences, children are being exposed to a narrative form. In studies with European cultures, parents who construct past event narratives in a rich and evaluative way have children with better narrative skills. Narrative skill is in turn crucial for children’s later reading comprehension. New Zealand Māori children are at risk for developing difficulties in reading achievement. Yet narrative skill may be a relative strength for Māori children due to the rich oral narrative traditions of the culture. We are following over 50 Māori preschoolers and their whanau (family) in the transition to school. Most of the children are monolingual English speakers, but families vary in their use of traditional cultural narrative practices. We asked parents and children to discuss a negative past event (an instance in which the child misbehaved) in order to assess the parents’ use of internal state language. Including internal state language is one way to highlight important events in a narrative, and internal state language is one aspect of high-quality narratives that predicts reading comprehension. Mothers who used more internal state language in their conversations had children who told higher-quality stories in a storybook retell task with a researcher. Mothers’ internal state language also predicted children’s expressive vocabulary. Children’s expressive vocabulary and narrative skill were independent at the first timepoint. In ongoing analyses, we will explore these links in the transition to school. We will also test the extent to which families’ cultural narrative practices moderate this link.

10:15 – 12:30

Amphitheater G • Satellite 2

Symposium Session 3 • G

(DIS)CONTINUITY BETWEEN GESTURE AND LANGUAGE? REFERRING TO YOU AND ME IN FRENCH AND IN FRENCH SIGN LANGUAGE**Convener** Aliyah Morgenstern, *Université Sorbonne Nouvelle***Discussant** Virginia Volterra, *CNR, Italy***Description:**

Personal reference is expressed through nominal expressions and pronouns in French and French Sign Language (LSF) alike. However, signs for pronouns in LSF take the same form as pointing gestures present in children’s communication system since the age of about 11 months (Bates et al. 1977, Clark 1978). Continuity between pointing gestures and language is questioned by Bellugi and Klima (1981) and Petitto (1986), based on their observations of discontinuity and pronominal inversions in deaf signing children. According to them, children’s pre-linguistic gestures are different from signs despite the same hand-shape and may correspond to two distinct categories of pointing gestures: some indexical and some symbolic (Tomasello 2003). In this symposium, we explore the issue of (dis)continuity between gestures and words/signs. We analyze data from three longitudinal follow-ups of two French speaking children, a deaf signing child (LSF) and a bilingual hearing child (French and LSF) aged one to three, filmed at home with their parents once a month. All the recordings were coded using CLAN and ELAN. The researchers conducted fine-grained analyses of all the pointing gestures/signs, pronouns and nominal expressions used by the children and the parents to refer to themselves and their interlocutor and coded their semantic and pragmatic functions in context.

A very precise description of reference to self and interlocutor in the three girls' productions, as well as comparisons across children, will be made in three presentations, followed by a general discussion with the audience lead by our discussants placing pointing gestures and words/signs on a continuum.

Talking about you and me: the development of self- and interlocutor-reference in two mother-child French-speaking dyads

Stéphanie Caet, *Université Sorbonne Nouvelle*

Self-reference and the use of several selfwords (first name, baby, *me*, *my*, *I*) has stimulated significant interest among scholars investigating children's verbal representations of the self (Cooley, 1908), their input computation (Bates, 1990) or their use of particular forms for specific communicative needs or "functions" (Budwig, 1995; Morgenstern, 2006). The current contribution adopts a usage-based, functionalist approach to 1) compare the development of form-function pairings in self- and interlocutor-reference and 2) analyse both child and child-directed speech and question their interdependence.

Analyses of spontaneous data from two French-monolingual girls between 1;0 and 3;6, recorded during free interactions with their mothers first pinpoint dyadic idiosyncrasies: only one dyad uses the third person for self- and interlocutor-reference, mainly in contexts triggering membership categorisation. Further detailed semantic-pragmatic analyses reveal that in adults' speech, each form fulfils a specific function whereas in children's speech, self-reference is constantly reorganised. In subject position in particular. Few forms (null forms, filler syllables) first express few functions (agentivity, desire). Then additional forms (*je*; *c'est moi qui/moi je*) respectively express several functions (narration, desire, possession, agentivity; opposition, comparison, capacity). Finally, adult-like forms are used with adult-like functions (*c'est moi qui* for opposition, *moi je* for role distribution, *je* in all other contexts). Forms and functions for interlocutor-reference on the contrary, quickly resembles the adult-like system.

On their way to acquire language, children grasp existing forms to actively reconstruct their functions. Their productions thus reflect both specificities of the surrounding input and their own linguistic and cognitive analyses.

Personal reference in a deaf signing child

Fanny Limousin¹, Aliyah Morgenstern², ¹*Université Paris 8*, ²*Université Sorbonne Nouvelle*

This presentation is based on the study of 22 samples of spontaneous interactional productions of Illana, who is acquiring French and French Sign Language (LSF) in a natural setting. The corpus of Illana is a nice 'missing link' between the studies on hearing monolingual French children and deaf signing children since it gives us the opportunity to explore the role and the status of personal reference in the early stages of language acquisition in a (hearing) child acquiring LSF and French simultaneously. Our description of Illana's pointing gestures include their production and the way they are combined in LSF or substituted by the vocal first or second person reference in French.

All of Illana's videos are transcribed in CHAT format using the CLAN software (MacWhinney 2000) then coded with the software ELAN. Our aim is to study to what extent the use of personal reference by monolingual French, monolingual LSF and bilingual French/LSF children share or do not share quantitative and qualitative characteristics. The annotation is based on a coding grid addressing the issue of personal reference. Our analyses of self-reference and reference to the interlocutor reveal an intermediate profile. From a quantitative perspective, Illana gets less 'grammatical pointing' in her input than deaf signing children do and she can use vocal deictic items instead of pointing gestures. From a qualitative perspective, Illana develops the same kind of 'complex' pointing as deaf signing children when she interacts with her father (Cormier 2010), and uses the same vocal forms with the same specific functions (Budwig 1995) as hearing French children when she interacts with her mother.

First and second person reference in a hearing bilingual child (LSF-French): an intermediate profile?

Marion Blondel, *CNRS*

Pointing gestures emerge around 11 months in typically developing children. Do deaf signing children go from a gestural to a linguistic system? Are pointing gestures used by deaf children in a signing environment different from the signs for pronouns in Sign Language? Can we differentiate their pointing activity from that of hearing children raised in an oral environment? To tackle these issues, we present a longitudinal study of the use of pointing in personal reference by a deaf signing (LSF) little girl that we compare to a hearing French-speaking child from one to three. We extracted and categorized all the expressions used for personal reference, with a particular focus on first and second person pointing gestures/signs as opposed to "null forms" to analyze their values in context.

The analyses reveal three important features:

1) The deaf child uses much more pointing overall than the hearing child. She produces many pointing towards her interlocutor/herself where the hearing child produces few/none. On the other hand, the hearing French-speaking child increasingly produces verbal personal references.

2) Our analyses do not enable us to differentiate “gestures” from signs and to observe any discontinuity. Pointing is however more and more combined to other signs, facial expressions and gaze in complex linguistic productions.

3) Pointing in LSF and strong pronouns in French are used where opposition or contrast marking is sought; null forms in LSF and clitics in French are used when children express projects or desires.

Hearing children’s use of pointing gestures: from pre-linguistic buds to the blossoming of communication skills

Aliyah Morgenstern¹, Dominique Boutet², Stéphanie Caet¹, ¹Université Sorbonne Nouvelle, ²CNRS-Université d’Ivry

Among the conventional gestures which appear early in children’s development, pointing is observed between 9 and 12 months, shortly before first words. For Clark (1978), the first vocal demonstratives used by children follow pointing as children shift rather fluidly from pre-linguistic to linguistic communication in a sequence of stages from pointing to deictics and lexical words. According to this perspective, pointing corresponds to a transition in the course of acquisition and facilitates access to combinations and early syntax (Bates et al. 1977). However, gestural communication does not totally disappear with the emergence of vocal productions (Marcos 1998). Furthermore, it is still largely used by adults themselves in combination with vocal productions (Guidetti 1998).

This paper explores the evolution and fate of pointing gestures in two longitudinal follow-ups of French speaking children between 11 months and 4 years old and their care-takers. Our analyses of the data show that vocal and gestural modalities are associated and complement each other from the very onset of pointing. We categorized all pointing gestures of the children and the adults in order to analyze their functions from their “pre-linguistic” to their co-verbal uses. The two children use more pointing gestures when their MLU is below 2,5, but they still produce an important number of pointing gestures at four when their MLU is above 5 with particular functions similar to those used by the adults and some creative specific uses. Pointing gestures are therefore still functional and continue to enhance the blossoming of their communication skills.

10:15 – 12:30

Amphitheater H • Satellite 2

Symposium Session 3 • H

USING LENA TO STUDY TYPICAL LANGUAGE DEVELOPMENT: PROMISES AND CHALLENGES

Convener Melanie Soderstrom, *University of Manitoba*

Description:

The LENA (Language ENvironment Analysis) system has recently attracted increasing interest among researchers of language acquisition as a tool to study the language environment of typically developing infants and children. It is a powerful recording device and software suite with broad implications for simplifying and automatizing the task of studying language environments. The LENA system provides a number of automatic estimates (e.g. adult word count, child vocalizations, conversational turns, amount of television), as well as tools for more detailed analyses of various measures of the quality and quantity of speech input.

However, there are a number of drawbacks to LENA. The system uses estimates of word counts based on algorithms drawn from basic acoustic features mediated by comparisons with human transcribers. Many of these measures have not been vetted by the peer-review process. In addition, it is easy to misunderstand the nature of particular outputs/estimates, and how they were obtained. It is important in using the system or interpreting data obtained from LENA to understand how the system works, as well as its strengths and limitations.

The four presenters in this symposium will each describe a study in which they used the LENA system to examine the language environment of typically developing infants/children. In addition to describing the implications of their research findings, each presenter will include some discussion of advantages and pitfalls they encountered with the system itself. This discussion should be of use to other researchers considering using the LENA system for their own research.

Comparing and contrasting the daycare and home environments using LENA

Melanie Soderstrom, Dana Bernier, *University of Manitoba*

Increasing numbers of children are spending much of their awake time outside the home, in child care centers or home daycares (Bushnik, 2006). Although there is a great deal of research on the effects of daycare on early development (e.g. the NICHD ECCRN), to date the examination of language environments in daycares has focused only on very broad measures of environmental “quality”. The current study uses the LENA system to systematically compare the language environments of infants/children under 3 years in daycare and home settings across a broad spectrum of measures, including quantity of adult input, other-child input, overlapping speech, general decibel levels, amount of television, etc.

We collected samples of a minimum 8 hours from stay-at-home mothers, home daycares, and child care centre infant and toddler rooms. Our preliminary findings indicate that while daycare environments have a higher dB level ($p = .01$) and more overlapping speech ($p < .001$) than the home, this is offset by more speech and fewer silent periods ($p < .001$). Daycare environments also have a significantly larger percentage of “other child” (peer/sibling) language ($p < .001$). Overall, daycare children are exposed to noisier, but also richer sources of language input, including higher percentages of overheard speech. Children’s own vocalizations ($p = .06$) and numbers of conversational turns ($p < .05$) were reduced in the noisy daycare setting. These findings raise the empirical question: To what extent are children able to learn language under noisy conditions and from indirect input?

Temporal dynamics of adult-child vocal interaction as measured by automated analysis of naturalistic day-long recordings

Anne Warlaumont, D. Kimbrough Oller, Rick Dale, *University of Memphis*

Vocal interaction and responsiveness between children and their caregivers is thought to be critical to children’s language, social, and cognitive development. We investigate the temporal dynamics of child-adult interaction in 12-hour naturalistic recordings from the LENA normative and autism databases. We performed two types of vocal interaction timing analyses. One is a simple traditional approach focusing on the time it takes adults to respond to vocalizations by the child and vice versa. The second analysis, made possible by the vast amount of data in each recording, is a newer approach using diagonal cross-recurrence profiles to measure child and adult leading and following at a range of timescales ranging from 0-30 s. Both approaches are implemented with automated computer programs that take LENA’s automatically detected speaker labels as input. The two approaches reveal similar trends of statistical significance (mixed effects multiple regressions) wherein children do more leading as they get older and when mother education levels are higher and wherein typically developing children do more leading than children with autism spectrum disorders (p -values in many cases $< .001$ and *Betas* as high as .398). These results indicate that there are reliable patterns of vocalization initiation and response timing, evident in the natural everyday occurrences of child-caregiver interaction, which change with age and are affected by SES and by autism spectrum disorder. In future work we plan to investigate the relationship between these dyadic dynamics and the acoustic and perceptual properties of child vocalizations.

How infants' daily experiences with language support the development of language processing skills and vocabulary

Adriana Weisleder, Anne Fernald, *Stanford University*

Many studies have shown that the quantity and quality of child-directed speech vary substantially with socio-economic status, and that differences in amount, diversity, and complexity of caregiver talk are linked to children’s vocabulary development. Yet most studies of early language input have relied on short samples of caregiver speech obtained in home- or lab-observations, which may fail to capture important aspects of the language children hear in daily interactions. Here, we use the LENATM automated speech analysis system to record the language environments of 18-month-old infants during a “typical day” in the home, and ask whether amount of exposure to child-directed and overheard speech is related to the development of language processing skills and vocabulary in Latino children from low SES backgrounds. We recorded the language environments of 24 Spanish-learning 18-month-olds over a 12-hour day, as they interacted with family members at home. These recordings provided longer and more representative samples of infants’ daily experiences with language. At 18 months we assessed children’s efficiency in online recognition of familiar words and vocabulary. Consistent with earlier findings, amount of child-directed speech was significantly related to children’s vocabularies ($r = .52$, $p < .05$) and accuracy in spoken word recognition ($r = .43$, $p < .05$). However, amount of overheard speech was not related to language outcomes ($r = .13$, $p > .2$). Moreover, talk experienced in child-engaging contexts, but not in caretaking activities, appeared to drive gains in processing skills ($r = .41$, $p < .05$). These results suggest that talk directed to the child in an engaging way is important for building vocabulary and speech processing efficiency.

Naturalistic social communication and speech development in monolingual and bilingual infants

Nairán Ramirez-Esparza, Adrián García-Sierra, Elina Sanchez, Patricia Kuhl, *University of Washington*

Previous studies done in laboratories have shown that the way parents speak to their babies correlates with speech development. However, few studies examine how natural social behaviors in the home relate to speech development. We used the digital recorder LENA to examine these behaviors in both monolingual ($N = 28$) and Spanish-English bilinguals ($N = 26$). Eleven to 14-month-old infants wore the system for 4 days each. Infants’ sample files were coded according to the Social-Communication-Coding inventory, which includes categories such as “babbling” (e.g., canonical versus variegated babbling), “social interactions” (e.g., baby was with one other person or with a group of people), “how adults are talking” (e.g., motherese vs. adult talk), and “activities” (e.g., adult is reading and or teaching). The results showed that babbling strongly relates to relevant social categories. For example, the percentage of time the infants spend with one other person relates positively to babbling for both the monolingual ($r = .59$, $p < .01$) and the bilingual infants ($r = .48$, $p < .05$), but negatively if the infants are with a group of people ($r = -.57$, $p < .01$ and $r = -.61$, $p < .001$, respectively). Also, the

percentage of time motherese is used relates positively to babbling for both monolingual ($r=.57, p<.01$), and bilingual infants ($r=.54, p<.01$). Interestingly, the amount of time the parents spend teaching and reading to their infants relates to complex babbling only in the monolinguals ($r=.63, p<.001$, and $r=.47, p<.05$, respectively). This investigation sheds light about how natural social communication influences speech development in both monolingual and bilingual infants.

SATELLITE 1
SPECIAL SYMPOSIUM
AMPHITHEATER B12:30 – 14:30
Amphitheater B • Satellite 1
Special Symposium**CLAN AND PHON: SOFTWARE- ASSISTED RESEARCH WITHIN CHILDES/PHONBANK****Conveners** Yvan Rose¹, Brian MacWhinney², ¹*Memorial University*, ²*Carnegie Mellon University***Description:**

During this special session, we will first present the most central functions supported by CLAN and Phon, two software programs developed within the CHILDES and PhonBank projects for the study of child language. We will highlight how these two applications can be used to analyze unique data sets from lexical, morpho-syntactic and phonological-phonetic perspectives. We will then provide practical demonstrations of how to use CLAN and Phon at each of the most central steps in the transcription, annotation and compilation of child language data. As part of our demonstration, we will show how data coded within one of these applications (e.g. CLAN) can be converted for use into the other (e.g. Phon) using the conversion programs Chatter and phon2xml. We also address data migration from and to other important tools in the field such as Praat and ELAN. As part of this discussion, we will provide information about the types of issues that must be considered to facilitate data migration across application, with special emphasis on data migrations between CLAN and Phon. Finally, we will take advantage of this special session to highlight the importance of data sharing and address how some issues hindering data contributions (e.g. ethical considerations) can be solved within the context of the CHILDES project.

SATELLITE 1
AFTERNOON SYMPOSIA
AMPHITHEATERS A•B•C•D14:30 – 16:45
Amphitheater A • Satellite 1
Symposium Session 4 • A**MORPHOLOGICAL PROCESSES IN DELAYED-READERS OF FRENCH: AN ALTERNATIVE ROUTE TO WORD PROCESSING****Conveners:** Rachel Berthiaume & Daniel Daigle, *Université de Montréal***Description:**

Learning to read and write is a very cognitively demanding task for a child. One of the first processes to be mastered in alphabetic languages relates to the mapping of graphemes to corresponding phonemes. This is particularly difficult for some children because of the presence of dyslexia or because of a lack of phonological awareness. These children will often be considered delayed compared to normal-developing children (NDC) and will need to learn other processes in order to overcome their difficulties. One of those processes concerns morphological units of words. Morphological units are of particular interest since, in a language like French, more than 80% of words are morphologically complex. Also, these units are processed as early as in first grade in NDC, and are related to meaning components of the language which are, a priori, accessible even by reading disabled children (RDC). The main goal of this symposium is to address this problematic by reporting studies that investigated morphological processing in RDC learning French. Four studies will be presented. They focus on dyslexic children and examine the question in RDC. Through a variety of tasks (i.e. plausibility judgment, base extraction, derived-word production, pseudo-word production) and various types of analyses, the authors show that morphological processing is part of word processing in RDC, even if it can't be considered in terms of compensatory processing for a lack of efficiency in phonological processing.

How can one compensate for early reading difficulties? Morphological strategies in university students with a history of reading difficultiesHélène S. Deacon, X. Tong, R. Parrila, *Dalhousie University*

Sensitivity to morphology, or the smallest meaningful units in words, has been posited to be a compensatory strategy by which children with reading difficulties achieve efficient reading and understanding of texts. This hypothesis was tested with students with a history of reading difficulties who are participating in post-secondary education. All participants were asked to read morphologically complex and matched morphologically simple words in three categories: inflected, derived and compound. We compared the influence of morphological structure on the reading of two groups of university students: those with and those

without a history of reading difficulties. The two groups were matched on their word reading ability. We found that, across both groups of participants, morphological structure influenced the reading of derived words, but not of the other two word types. The two groups did differ on phonological awareness, with the individuals with a history of reading difficulties performing more poorly than those without. The remarkable similarity in morphological reading strategies in the two groups paired with differences in phonological awareness suggests that morphological sensitivity might serve as a compensatory strategy in individuals with a history of reading difficulties. We discuss these results in terms of theories of reading development.

Written verbal morphology and dyslexic children

Joëlle Varin, Noémia Ruberto, Rachel Berthiaume, Anne Plisson, Daniel Daigle, *Université de Montréal*

Most dyslexic children (DC) encounter great difficulties in writing (Troia, 2006; Zesiger, 1995). Indeed, they have orthographical problems, especially because the writing system, as in the case of French, is phonologically based (Valdois & Martinet, 1999). Orthographic rules related to verbal morphology constitute a specific and persistent difficulty for most children, DC in particular (Fayol & Jaffré, 2008). In this presentation, we will report results obtained from the analysis of 26 young DC's written productions. DC's productions were compared to those of 26 age-matched students (AC) and to those of 29 reading-matched younger peers (RC). All verbs were analyzed to distinguish lexical from grammatical errors. Results show that DC make less errors than AC and RC. However, DC's errors indicate a specific difficulty in respecting French phonology, compared to AC and RC. These results are discussed in terms of orthographical strategies used by participants and the potential benefit of explicit instruction of orthographic rules related to verbal morphology.

How does morphological awareness relate to reading in dyslexic French readers?

Séverine Casalis, *Université Charles-de-Gaulle Lille 3*

The aim of the present study was to examine to what extent reading performance is associated with morphological awareness in dyslexia. For this purpose, morphological awareness and phonological awareness have been assessed using various tasks. Dyslexic subjects (mean age=12 years old) were matched to subjects of the same chronological age (CA) and subjects of the same reading age (RA). Various reading measures, including single word reading, text reading and reading comprehension were used. Data clearly indicate that morphological awareness is correlated to reading measures (text reading, comprehension, and pseudowords decoding) in the dyslexic group. These results indicate that dyslexic readers may rely on morphemic information when reading.

Morphological knowledge and reading: the case of deaf students

Rachel Berthiaume¹, Daniel Daigle¹, Elisabeth Demont², ¹*Université de Montréal*, ²*Université Louis Pasteur*

Many deaf students encounter great difficulty in learning to read (Gallaudet Research Institute, 2004). Phonological processing is mainly pointed out as the source of their reading deficit (Musselman, 2000). Recent studies have shown that morphological processing also play an important role in reading (Carlisle, 2003; Fowler *et al.*, 2003; Mahony *et al.*, 2000). Very few studies investigated morphological processing in deaf readers (Gaustad *et al.*, 2002; Daigle *et al.*, 2006). The objectives of this study are to 1) investigate deaf readers' knowledge of morphology in written French and 2) verify whether this knowledge is related to their performance in reading. Deaf subjects (n=21) aged 9 to 12 were matched to hearing subjects of the same chronological age (CA) and of the same reading age (RA). We used a lexical probability task, a segmentation task and a look-a-like judgment task. Results from ANOVAs indicate that deaf subjects get lower scores than CA, but are comparable to RA. Morphological sensitivity is correlated to reading only in the deaf readers group and in the RA group, not in the CA group. These results constitute the basis for further research on the role of morphological structure in deaf children's reading development and may lead to more adapted literacy teaching practices.

14:30 – 16:45

Amphitheater B • Satellite 1

Symposium Session 4 • B

THE FORMATION AND RESTRICTION OF LINGUISTIC GENERALIZATIONS

Convener Ben Ambridge, *University of Liverpool*

Description:

The defining characteristic of human language is speakers' ability to produce an infinite variety of novel utterances whilst avoiding those that other speakers would consider ungrammatical. Thus there can scarcely be a more central question in language acquisition research than that of how this ability is acquired; the question addressed in this symposium. In the first paper, MacWhinney presents a computational Bayesian

account of how children acquire the abstract constructions that allow for the production of novel utterances by generalizing across memorized strings, drawing on corpus data from six languages

The second and third papers present empirical studies that address the issue of how learners appropriately restrict their generalizations to avoid the production of ungrammatical utterances. Boyd and Goldberg provide evidence for the *pre-emption* hypothesis that learners infer that certain strings (e.g., **the asleep boy*) are ungrammatical on the basis of encountering an alternative form that expresses the same meaning (e.g., *the boy that's asleep*).

Ambridge, Pine & Rowland use grammaticality judgment data involving (over)generalizations of the dative (**She said me something nice*), locative (**She filled paper into the box*) and *un-*prefixation constructions (*unscrew/*unsqueeze*) to argue that a probabilistic semantics-based account of the formation of these generalizations can also explain how they are appropriately restricted.

Finally, Alashi and Stevenson present a probabilistic computational model of the formation and restriction of argument structure generalizations that exhibits the effects observed in the empirical studies above (e.g., of pre-emption, verb semantics and entrenchment) and displays the overgeneralization-then-retreat pattern seen in children.

The development of levels of construction generality

Brian MacWhinney, *Carnegie Mellon University*

This paper explores evidence indicating that syntactic development involves movement through a set of four levels of increasing generalization away from the lexicon: rote amalgams, item-based patterns, feature-based patterns, and generalized constructions. While formulating patterns at the more general levels, children continue to rely on the more specific constructions, when they represent exceptions to the general patterns. This paper explores differences between the sequence of generalizations across languages (English, Spanish, Chinese, French, German, Hebrew) using CHILDES data, as analyzed by POST, GRASP, and COOCCUR. Data from Competition Model experiments will also be cited. Target constructions include: questions, datives, transitivity marking, adverbial phrases, and nominal modifiers. For each construction, we will consider whether item-based and feature-based patterns can be best formulated in terms of concurrence patterns, semantic patterns, or both. Next, I will present a method for deriving higher-level generalizations computationally. Rather than focusing exclusively on induction from adult input sentences, I will show how learning can be grounded on patterns produced by the child. This method uses the child's productions as a key to tracing patterns in the adult input, thereby processing only the parts of the input specifically relevant to the child's growing syntactic patterns. The growing pool of item-based constructions then serves as the basis for the extraction of feature-based patterns, and then generalized constructions. I will further show how the details of this process can be formalized in HPSG and in terms of Hierarchical Bayesian networks

Learning what not to say: categorization and statistical pre-emption

Jeremy K. Boyd, Adele E. Goldberg, *Princeton University*

This set of experiments sheds light on the vexed question of how speakers learn what *not* to say. For example, *a*-adjectives, which begin with schwa and can be morphologically segmented into *a-* plus a semantically-related stem (e.g., *a-sleep*), disprefer appearing pre-nominally (*??the asleep boy*). In three experiments, adult participants were asked to describe scenes in which one of two animals moved to a star, resulting in the production of either a pre-nominal or relative-clause use of the target adjective.

1. Pre-nominal: The **sleepy/??asleep/?adax** fox moved to the star.
2. Relative Clause: The fox that's **sleepy/asleep/adax** moved to the star.

(Ratings based on Experiment 1).

Experiment 1 established that novel *a*-adjectives (e.g., *adax*) significantly disprefer pre-nominal use, relative to non-*a* adjectives (e.g., *chammy*). Thus, participants tentatively assimilate never-before-seen *a*-adjectives to the category of familiar *a*-adjectives. Experiment 2 found that witnessing a novel *a*-adjective in a preemptive (relative clause) context just three times dramatically decreased pre-nominal uses so that *all* novel *a*-adjectives behaved indistinguishably from familiar *a*-adjectives in avoiding pre-nominal distributions. Experiment 3 showed that learners rationally disregard *pseudo*-preemptive input. That is, speakers did not display an increased avoidance of pre-nominal uses when exposed to contexts like (3), presumably because they rationally attributed *adax*'s appearance in the relative clause to the complex adjective (cf. 4), rather than to *adax*.

3. The hamster, **adax and proud of itself**, moved to the star.
4. ***The proud of itself** hamster moved to the star.

Findings from ongoing studies with children will also be discussed.

The formation and restriction of linguistic generalizations

Afra Alishahi, *Suzanne Stevenson, Saarland University*

We present a probabilistic usage-based model of verb argument structure acquisition that can successfully learn abstract knowledge of language from instances of verb usage. The model provides concrete explanation for the observed generalization patterns in child language acquisition. General constructions of language are represented as probabilistic associations between syntactic and semantic features of a verb usage; these

associations generalize over the syntactic patterns and the fine-grained semantics of both the verb and its arguments. The probabilistic nature of argument structure constructions in the model enables it to capture both statistical effects in language learning, and adaptability in language use. The acquisition and usage of constructions is modelled as detecting similar usages and grouping them together in a Bayesian clustering and prediction framework. We show through computational simulation that the behaviour of the model mirrors that of young children in some relevant aspects. The model goes through the same learning stages as children do: the conservative use of the more frequent usages for each individual verb at the beginning, followed by a phase when general patterns are grasped and applied overtly, which leads to occasional overgeneralization errors. Such errors cease to be made over time as the model processes more input

Testing a probabilistic semantic account of the formation and restriction of linguistic generalizations: A grammaticality judgment study

Ben Ambridge, Julian M. Pine, Caroline F. Rowland¹, *University of Liverpool*

How do speakers know which of their potential novel utterances (e.g., **The joke laughed the man*) are ungrammatical? Proposals such as entrenchment (e.g., Braine & Brooks, 1995), pre-emption (e.g., Boyd & Goldberg, 2011) and the semantic-verb-class hypothesis (e.g., Pinker, 1989) have all enjoyed success in some domains. There is a need, however, for an overarching theory of the formation and restriction of linguistic generalizations that yields all of these effects, and additionally explains why only certain creative utterances are deemed ungrammatical by adult speakers.

Building on the framework outlined by MacWhinney (2011), we present an account under which learners acquire constructions whose slots (e.g., [VERB]) exhibit probabilistic semantic and/or phonological properties. Overgeneralization errors occur when children extend items into slots with which they are less than optimally compatible (for adults), and cease as children refine their knowledge of the fine-grained semantic/phonological properties of individual items and slots.

We present three experimental studies, involving (over)generalizations of the dative (**She said me something nice*), locative (**She filled paper into the box*) and *un*-prefixation constructions (*unscrew*/**unsqueeze*). In each case, adult participants rated the extent to which each verb exhibits semantic/phonological properties relevant to the [VERB] slot in the construction. Participants at ages 5-6, 9-10 and adults rated the acceptability of well-formed utterances and overgeneralization errors with each verb.

For every construction and every age-group, the semantic/phonological feature ratings predicted additional variance in participants' acceptability judgments beyond that explained by entrenchment, pre-emption and semantic verb classes, hence providing support for the account.

14:30 – 16:45

Amphitheater C • Satellite 1

Symposium Session 4 • C

CLOSE MATCHING OF ADULT INPUT AND CHILD OUTPUT IN MORPHO-SYNTACTIC DEVELOPMENT

Convener &

Discussant Patricia Brooks, *City University of New York*

Description:

This symposium addresses the relationship between child language and child-directed speech at the earliest stages of morpho-syntactic development (MLU < 2.0) in children learning English, German, Lithuanian and Russian. Previous research has focused on the child's acquisition of lexically specific templates (e.g., 'WH-word do you think S-GAP') (Dabrowska, Rowland & Theakston, 2009; Rowland, Pine, Lieven, & Theakston, 2003), and has documented a high degree of overlap in the occurrence of specific word combinations in child and child-directed speech. We ask whether a similarly high correlation between the child output and the adult input would also be observed for more abstract syntactic relations (e.g., Subject-Verb, Verb-Direct Object) and features of a morphological paradigm (e.g., the distribution of nouns across declensions). The first three papers in the symposium document a close match between the morpho-syntactic features of child and child-directed speech in three languages (English, German, and Lithuanian) despite the drastically different vocabulary sizes of children and adults. Thus, the core grammatical relations and morphological patterns of a language are evident in child speech from Stage 1. The papers also explore cases where the child's language systematically diverges from the input (e.g., in the positioning of the noun(s) relative to the verb in the sentence), and consider possible explanations for this divergence. The final paper in the symposium explores various statistical accounts of how children extract patterns from child-directed speech, and tests these accounts using Russian data. The papers are discussed in the context of mainstream linguistic theory and constructivist approaches to child language

Convergence of Output to Input in Stage I Syntax of English-speaking Children
Anat Ninio, Hebrew University of Jerusalem

In this project, we explored the relation between characteristics of the linguistic input and English speaking children's productive language during Brown's Stage I grammar. The investigation focused on the three core grammatical relations Subject-Verb, Verb-Object and Verb-Indirect object. We built a large corpus of parental sentences addressed to young children and a second corpus of child sentences, based on the English language observations transcribed and stored in the CHILDES archive. A total of 506 parents and 421 children contributed multiword sentences to the systematically constructed pooled corpora. The mean age of the children was a little over two years and 3 months. First, we mapped the number of different verbs used by parents and children in core grammar. It was found that children's verb repertoire is much smaller than parents'. Even if we control for sample size, the children use 40% less verbs than parents in core grammatical relations. Nevertheless, the child dialect is almost exactly identical to the parental register in the distribution of the three grammatical relations in the clausal core. We traced the convergence of child proportions to parental proportions over the age period investigated and found that the three grammatical relations were introduced to children's speech gradually, with local over-use and subsequent correction. We conclude that already by Stage I, children are similar to parents in the global features of their core syntax. Apparently, the similarity is the result of similar local decisions and not a deliberate matching of parental proportions by children.

Systematic matching of noun morphology in Lithuanian parent-child conversation
Ineta Dabašinskiene¹, Patricia Brooks², ¹Vytautas Magnus University, ²City University of New York

This work is based on data collected from two Lithuanian children—a girl (Monika) recorded at ages 1;8–2;7 (MLU range 1.3–2.2), and a boy (Elvijaus) recorded at ages 1;6–2;6 (MLU range 1.2–3.2). We compared the children's production of noun morphology to their mothers' focusing on their production of nouns of different declension types, and their use of the diminutive derivation. We examined the children's use of diminutives because these word forms are ubiquitous in Lithuanian child-directed speech; it is also the first derivation used productively by Lithuanian children (Savickienė, 2003) (e.g., *kepurė* 'cap' has diminutive forms *kepur-ytė*, *kepur-aitė*, *kepur-ėlė*, *kepur-iukė*). Despite differences in the numbers of noun tokens for children and mothers, the children closely matched their mothers with respect to the distribution of nouns across declensions. From the start, children appear to construct a morphological paradigm with the same global structure as the input. With respect to their use of diminutives, both children produced few at the onset of the study while their mothers produced about 40% of nouns in diminutive form. As Monika increased her use of diminutives over sessions, her mother continued to increase usage up to 50% of nouns. In contrast, Elvijaus's mother gradually decreased her use of diminutives to match that of her son (at 20% of nouns). In both cases, we see strong evidence of the mother adapting her use of language to that of her child.

Parent-Child Matching of Sentence Structure in Early German Acquisition
Ozlem Yuksel-Sokmen, Patricia Brooks, City University of New York

We used CHILDES data (MacWhinney, 2000) to examine the relationship between parent and child sentence structure in German acquisition. We analyzed a longitudinal German sample (the Caroline corpus [von Stutterheim]) comprising 78 transcripts at child ages of 1;11.02 (MLU 1.81) to 2;04.28 (MLU 2.36). We examined all full sentences (excluding fragments) and coded for the presence of a subject (S), direct object (O) or indirect object (I). For our initial analyses, only main clauses were analyzed. In addition to coding for the occurrence of S, O, or I, we coded the position of the noun relative to the verb. Our main finding was that, from the earliest recording, the child closely matched her mother on the proportions of sentences containing S, O, or I, but did not match her with respect to the positioning of noun(s) in the sentence. Whereas the child used the word order SV more often than VS (~3 to 1), the mother showed the reverse tendency, preferring VS to SV (~2 to 1). Whereas the child produced OV more often than VO (~2.5 to 1), the mother used both word orders with equal frequency. We propose that the divergent use of word order in the parent and child reflects different frequencies of speech acts across speakers, e.g., the more frequent use of imperatives in the adult's speech. The child's tendency to produce S, O, and I at frequencies proportionally identical to her mother seems to reflect similar semantic content in parent and child talk.

Exploring the match between quantitative characteristics of adult input and child output for Russian inflectional morphology

Vera Kempe, University of Abertay

Children's productive use of syntactic constructions is determined by *type frequency*, i.e. the frequency with which invariant elements (e.g. 'a piece of') combine with variable elements (e.g. 'bread', 'butter', 'string'), and *entropy*, i.e. the degree of uncertainty of the variable element (Matthews & Bannard, 2010). For example, in the 'a piece of X' construction, children will be more likely to use a novel word as the variable slot if they have heard different words in the construction a similar number of times, rather than with one word (e.g., 'a piece of bread') most of the time and other words ('butter' or 'string') only rarely. While the role of type frequency in morphology acquisition is well established (Bybee, 1995), the role of entropy has not yet been explored. When children acquire complex declension paradigms like the Russian one, does entropy of word-stems, as well as

type frequency, determine productive usage of a case-marking suffix? The present study explores productive usage of case-marking suffixes in Russian 2-year olds, focusing on co-occurrence patterns of words and case-markers in the input. Russian caretaker-child conversations from the CHILDES database were coded for co-occurrences of word stems and case-markers; measures of type frequency, entropy and semantic density were calculated. Multiple regression analyses were used to predict general and productive use of case-marking suffixes in the children's output. The findings will be discussed in terms of how statistical learning can explain the match between input and output characteristics in the development of both syntax and morphology.

14:30 – 16:45

Amphitheater D • Satellite 1
Symposium Session 4 • D

THE POWER OF ELICITED IMITATION: NEW INSIGHTS FROM TYPICALLY DEVELOPING CHILDREN, SOCIALLY DISADVANTAGED CHILDREN AND CHILDREN WITH SLI

Convener Shula Chiat, *City University London*
Discussant Belinda Seeff-Gabriel, *City University London*

Description:

In elicited imitation or repetition tasks, children are presented with selected nonverbal or verbal stimuli and asked to copy these. Their responses, however, reflect more than just mimicry. The extent to which they imitate the model and the nature of their imitation are acutely sensitive to properties of the stimuli, revealing the influence of children's processing and knowledge on their immediate recall. Imitation, then, is not merely a mirror of the model; it mirrors what the child's mind does with the model, with implications for the mechanisms by which children process and acquire language. In this symposium, we present a series of studies that systematically manipulate characteristics of stimuli in verbal (words/nonwords, and sentences/pseudosentences) and nonverbal (postures, gestures and actions on objects) imitation tasks. The purpose is to investigate the effects of phonology, lexicon, morphosyntax and sociocognition on children's imitation, and relations between these. Participants include typically developing children, socially deprived children, children with SLI, and unintelligible children across the age range 2;0-6;0 years, drawn from Czech-, English- and German-speaking populations. Collectively, our findings demonstrate the power of elicited imitation tasks as both a research and a clinical tool, enabling us to probe skills that underpin language development and that may be responsible for shortfalls in children's language. Outcomes of our different studies highlight the ways in which deficits in underlying skills affect the developmental trajectory through which children discover the form-meaning mappings of their language, and can account for deficits in language and verbal memory observed in some children.

The power of immediate verbal recall: Evidence from typically developing English- and Czech-speaking children

Kamila Poliřenská, *City University London*

The aim of the current study was to evaluate to the extent to which long-term memory linguistic representations (syntactic, semantic, prosodic and lexical) affect immediate verbal repetition performance in children. This was addressed in an experiment investigating the effects of these linguistic factors on children's short-term memory (STM) span. The experiment was conducted in two typologically different languages, English and Czech, which are notably distinguished by morphosyntax: while English relies largely on word order and function words, Czech has a rich morphology and free word order. One hundred typically developing children (50 Czech-speaking; 50 English-speaking) aged 4-5 years participated in the study. The set of stimuli in both languages consisted of sequences of verbal items which systematically manipulated syntax, semantics, prosody and lexicality, ranging from lists of nonwords at one end of the spectrum, to well-formed sentences at the other. In each condition, participants were asked to repeat blocks of successively longer stimuli until they reached their maximum span in that condition. The pattern of results was similar for Czech and English. Every linguistic factor had a significant effect on STM span. However, while presence of nonwords and violation of syntax dramatically reduced memory span, semantic implausibility and removal of sentence prosody played a marginal role. These data demonstrate that verbal repetition is a sensitive method for assessing language knowledge and skills and provide support for the claim that verbal STM is linguistically structured, drawing on long-term memory representations.

The power of sentence imitation as a tool for diagnosing morphosyntactic difficulties in young children: Evidence from diverse groups

Penny Roy, Shula Chiat, Belinda Seeff-Gabriel, *City University London*

Sentence imitation is gaining increasing attention as an assessment tool and possible clinical marker for SLI. Given the findings reported in the previous paper, we predict that sentence imitation will be particularly sensitive to and informative about children's morphosyntax and may distinguish language deficits from other problems that impact on children's expressive language. We have developed a sentence imitation test for

preschool children which scores their responses in terms of number of content words, function words and inflections repeated correctly. In this paper, we draw together results from a series of studies investigating performance in

- (i) children aged 4-5 years who had been referred to clinical services at 2-3 years (n=187)
- (ii) children aged 4-6 years with severe speech difficulties which make it difficult to assess expressive morphosyntax (n=28)
- (iii) children aged 3;6-4;11 from socially disadvantaged communities which are known to show disproportionately high levels of language impairment (n=217).

We focus on function word scores as key indicators of basic morphosyntax. Results reveal:

- (i) deficits in clinically referred children which are strongly correlated with performance on expressive language tests
- (ii) intact performance in some children with severe speech disorders
- (iii) a disproportionate level of poor performance in socially disadvantaged children aged 3;6-3;11, but a normal distribution in those aged 4;6-4;11.

We conclude that sentence imitation offers a sensitive tool for assessing morphosyntax which can reveal morphosyntactic skills in children with severe speech difficulties and may help to distinguish language delay due to social disadvantage from persistent difficulties indicative of SLI.

The power of nonverbal imitation: An investigation of profiles of imitation and language in young German-speaking typically developing and language delayed children

Andrea Dohmen, City University London, London

Research on SLI has focussed on deficits in the acquisition of forms and structures of language; accordingly, the focus of research on imitation has been verbal, with nonword and sentence repetition seen as key sources of evidence. But problems with language can also arise from deficits in sociocognitive abilities which are important for the discovery of meaning. Nonverbal imitation provides a window onto sociocognitive abilities, and interestingly, has been found to relate to language abilities in typically developing (TD) children and children with Autism Spectrum Disorders. However, there has been little exploration of relations between *nonverbal* imitation skills and language in children with SLI. The aims of this study are to compare groups of TD and language delayed (LD) children on their *nonverbal and verbal imitation* performance, and to investigate relations between profiles of imitation and language in the LD group. Participants were German-speaking TD (n=60) and LD (n=40) children aged 2-3½ years. A novel battery of imitation tasks measured their willingness and ability to copy a range of *nonverbal* (postures, gestures, actions on objects) as well as *verbal* (words, nonwords, sentences) imitation acts. Additionally, the LD group were assessed on standard language measures. As expected, the LD group performed poorly on all verbal tasks. In contrast, their scores on some – but importantly not all – nonverbal tasks were below the scores of the TD group and showed greater variance. Associations between children's profiles of nonverbal imitation and language are informative about different sources of language delay and impairment.

The power of imitation to capture developmental change: Imitation of nonwords over time mirrors developing phonological knowledge in SLI

Cristina McKean, Carolyn Letts, David Howard, University of Newcastle upon Tyne

Children with Specific Language Impairment (SLI) have difficulties repeating nonwords. Debate continues as to whether this represents a capacity or phonological processing deficit. One crucial issue has been absent from this debate: *developmental change*. In this paper it is argued that studies which capture *developmental change in imitation* have the power to provide new insights regarding the nature of SLI. We tracked *developmental change* in the abilities of Typically Developing (TD) children (N=38, CA = 3;00–5;06) and those with SLI (N=13, CA = 3;00–6;06 and 4;06–8;00) to repeat nonwords with High Phonotactic Probability (PP) and Low PP. Our expectation was that the influence of PP on imitation performance across age would differ between the two groups, reflecting differences in the emergence of phonological knowledge.

Cross-sectional developmental trajectories of change in nonword repetition abilities were compared with respect to age and vocabulary knowledge. Unlike TD children, those with SLI did not evince a narrowing gap in the influence of PP across development and reached a plateau in the development of their nonword repetition abilities.

These results point to a slowed emergence of phoneme level representations in SLI creating an atypical lexical processing architecture which plateaus and does not reach maximal levels of efficiency. This pattern may represent entrenchment within a self-organising network due to a missed critical period. The application of a developmental perspective to the study of SLI is advocated to reveal new insights regarding the ontogeny of this disorder.

SATELLITE 2
AFTERNOON SYMPOSIA
AMPHITHEATERS E•F•G•H

14:30 – 16:45
Amphitheater E • Satellite 2
Symposium Session 4 • E

CROSS-LINGUISTIC TOOL KIT OF BASIC LANGUAGE MEASURES

Convener Susanne Miyata, *Aichi Shukutoku University, Nagoya, Aichi*

Description:

Over the last few decades a broad range of language development measures has been developed. Computerization has speeded up the process of development and standardization of new measures. A growing number of research communities all over the world have started to research language acquisition, to collect child language data, and to develop new language measures. This activity responds to an urgent need of measures for clinical, educational, and research use. At present, even languages with large populations are not sufficiently equipped with language measures. In order to facilitate the development and adaptation of language measures we promote the idea of a tool kit of a small number of basic language measures covering the main areas of language development. The measures included in this tool kit should a) work on a standardized platform. CHILDES provides such a platform including standards for transcription and programs for flexible statistical analysis, as well as complex language specific tools like MOR (morphological parsing), GRASP (syntactical dependency analysis), and PHON (phonological analysis). Other-language versions of the same tool should b) be similar enough to allow comparison across languages. The tool kit should be supplemented by c) a detailed documentation of the linguistic and technical problems encountered during the process of tool development. This type of information facilitates the future adaptation to other languages, and helps to enhance the quality standard necessary for valid language measures. In this symposium we want to discuss these three points with examples from Chinese, English, Japanese, and Hebrew.

The development of parallel language measures: The example of Japanese DSSJ

Susanne Miyata¹, Brian MacWhinney², ¹*Aichi Shukutoku University*, ²*Carnegie Mellon University*

When developing an parallel version of a grammar assessment tool for a language-typologically different language, a number of basic adjustments become necessary. This paper focuses on the development of DSSJ, the Japanese version of DSS. Most grammatical areas of the English DSS do not easily correlate to Japanese, and the developmental course differs considerably for many items. For example, Japanese personal pronouns, which are infrequent and bear strong socio-linguistic connotations, are acquired much later than their English pronouns. Another example is the differentiation of pre-sentences and complete sentences which is not applicable in an elliptic language like Japanese.

To overcome these problems, we analyzed CHILDES-formatted longitudinal data of 8 children aged 1 to 5. We selected 105 items, appearing in the same order for all eight children, to represent five stages of development in ten grammatical areas. We confirmed the validity of DSSJ with cross-sectional data from 84 children between 2;8 and 5;2, confirming a high correlation to MLU.

Based on our experiences with Japanese versions of MOR, GRASP, MLU and DSS, we propose a cross-linguistic basic tool kit of commonly used assessment tools and their parallel versions in other languages. A coordinating space in the framework of CHILDES could provide easy access to the actual tools, detailed instructions, and complete documentations of the process of their development and standardization. This type of information is currently in danger of being lost, but it is invaluable for the development of future parallel versions, especially for language-typologically close languages.

A morphologically-analyzed CHILDES corpus of Hebrew

Aviad Albert¹, Brian MacWhinney², Bracha Nir³, Shuly Wintner³, ¹*Tel Aviv University*, ²*Carnegie Mellon University*, ³*University of Haifa*

The CHILDES database has been instrumental in providing resources for numerous psycholinguistic studies. Our paper presents enhancement and re-analysis of two existing Hebrew corpora: the Berman longitudinal corpus (transcriptions of four children between 1;06-3;05), and the Ravid longitudinal corpus (recording two siblings between 0;09-6;11). These constitute the largest online-accessible Hebrew child-caretaker corpus, with 110,819 utterances (425,471 word-tokens, 19,224 word-types).

Data were re-transcribed according to a newly devised set of CHAT-compatible conventions. Our transcription maintains word-level phonology by representing vowels (which are absent from Hebrew script) and encoding stress, while observing one-to-one correspondence with orthography. This allows for a-priori disambiguation and for automated conversion to written Hebrew.

We developed an improved MORphological analyzer for these transcripts. The lexicon includes over 7,000 entries. Coupled with the MOR rules, these yield over 100,000 inflected forms, covering 90% of word-tokens (76% of word-types). Tagging not only includes word-form association with information on citation form, part-

of-speech category, and relevant morphological features (e.g., number, gender, pattern), but is tailored to provide for the needs of current research, for example the calculation of MLU for a relatively synthetic language. Analyzed data include 1,900 ambiguous word-forms (116,561 tokens). To resolve ambiguities, we will train a part-of-speech tagger using automatic tools provided by CLAN (POST). We are currently preparing training material for this task. Disambiguated data will serve as a basis for developing a statistical syntactic parser similar to the one available for the English CHILDES data; we are currently developing a syntactic annotation scheme for Hebrew grammatical relations.

Transcription for computational analysis

Brian MacWhinney, *Carnegie Mellon University*

The practical assessment of child language development depends on the availability of easily computed measures of the growth of phonological, lexical, and morphosyntactic abilities. When such measures are computed from transcripts of naturalistic interactions, ecological validity is maximized, but the actual computation of these measures can become tedious. To speed up and systematize this analysis, we can rely on new facilities for automatic analysis of corpora using CHILDES programs for automatic lexical and morphosyntactic analysis and the Phon program for semi-automatic phonological analysis. However, this approach requires thorough adherence to a constant set of transcription methods and the construction of computational linguistic parsers and taggers. In this paper, I summarize how this consistency can be achieved and how reliable taggers can be built, based on experiences in developing these for 8 languages.

Developing grammatical analysis tools for “the language without a grammar” – Mandarin Chinese

Twila Tardif¹, Ching-Ching Lu¹, Brian MacWhinney¹, ¹*University of Michigan*, ²*National Hsinchu University of Education*, ³*Carnegie Mellon University*

Mandarin Chinese has been notoriously described as a language “without grammar” by early linguists and psycholinguists alike. While few would agree that Mandarin has no grammar, its frequent use of ellipsis for subjects, objects, aspect markers, and most parts of speech as well as its flexibility in parts of speech from “frozen” to “free” forms in its lexical compounding system has presented many challenges to grammatical and lexical analysts alike. Nonetheless, through development of a corpus-based lexicon and part of speech marking with native-speaking coders, we have been able to develop a MOR program for Chinese that allows for roughly >95% accuracy assigning part of speech in a spoken corpus of 10 Mandarin-speaking families with young toddlers and tested with automated coding of over 300 transcripts of 3- and 4-year-old children’s narratives of the “Frog Story” – one of the most challenging types of corpora for grammatical and part of speech coding. This paper presents on the development of this system, as well as additional steps in refining the training and tagging systems in Mandarin and the development of GRASP, a syntactical tagger describing dependency relations based on the part of speech information produced by MOR.

14:30 – 16:45

Amphitheater F • Satellite 2

Symposium Session 4 • F

MODELLING LANGUAGE LEARNING USING CORPUS ANALYTIC METHODS: CURRENT SUCCESSES AND FUTURE DIRECTIONS

Convener &

Discussant Elena Lieven, *MPI-EVA & University of Manchester*

Description:

The development of large corpora of naturalistic speech has given rise to computational methods that can make an important contribution to identifying the processes involved in learning language. Quantitative analyses of corpora based on different learning models give a much clearer picture of the information available in naturalistic speech and what types of learning biases are necessary to access it. We concentrate on two central issues in language learning. First, the interaction of learning biases with the input (e.g. an utterance-final bias and/or biases resulting from the typology of the language). Second, the units on which language learning is built (e.g. syllables, words and/or lexically-specific strings).

The papers between them cover four languages (English, Chinese, Korean and K’iche Mayan). They build on already successful work and extend it in new directions. The paper on typologically-based learning biases in statistical learning tasks adds another language, Chinese, to those already studied (Korean and English), and compares the performance of learners to that of a computational model. The study using the MOSAIC computational learner extends MOSAIC from learning with words as the unit, to learning with words represented as strings of stressed and unstressed syllables and tests this on an agglutinative language. In the light of the presentations, the discussant will assess the current state of the field and identify directions for future research.

Syllabifying MOSAICDaniel Freudenthal¹, Julian Pine¹, Fernand Gobet², ¹University of Liverpool, ²Brunel University

MOSAIC is a computational model that has successfully simulated key cross-linguistic phenomena in language acquisition. Important strengths of MOSAIC include the fact that it produces as output corpora of utterances of increasing MLU that can be directly compared to children's speech, and the ability to accept input from different languages, making it possible to determine how different learning mechanisms can interact with the distributional properties of the input to shape children's early multi-word speech. The main mechanism responsible for MOSAIC's successful simulation of the child data is an utterance-final bias in learning. Because MOSAIC uses words as the basic unit, the model is unable to simulate patterns of word-internal (syllable) omission. This talk describes a new version of MOSAIC that learns utterances with words represented as strings of stressed and unstressed syllables. The model builds up its representation of words by probabilistically representing syllables in words. MOSAIC's mechanism for building up word representations has been developed on the basis of data from K'iche Mayan. K'iche is a highly agglutinative language where verbs consist of a root plus a number of prefixes and suffixes. Data from K'iche suggest that children build up their representation of verbs in a way that is remarkably similar to the way MOSAIC learns utterances: by starting at the right edge of the word and working its way to the left. This talk will focus on the K'iche data and their simulation in MOSAIC, as well as necessary adaptations to account for languages with differing stress patterns.

What does language usage tell us about grammar?

Charles Yang, Julie Legate, University of Pennsylvania

A connectionist model of the acquisition of English and Korean spatial language

Franklin Chang, University of Liverpool

Spatial language poses a challenge for models of language development, because it involves learning a language-specific mapping between visual information and word/structure choices. For example, support relations in English are encoded with a pre-nominal element (e.g., "on the cube"), while the equivalent relation in Korean would be a post-nominal element (e.g., "cube wi ye"). Furthermore in contrast to English speakers, a Korean speaker would need to determine whether the support relation was tight and if it was tight, they could use a verb form that encoded this tightness. To acquire this knowledge, syntax acquisition must interact tightly with spatial information. To explore how this might take place, a connectionist model of language acquisition (Chang, Dell, & Bock, 2006; Chang, 2009) was adapted to learn English and Korean spatial language. The model was trained on message sentence pairs taken from a 3D box world where various abstract shapes appear in various spatial relations (e.g., support, containment) or could perform various actions (e.g., moving, jumping, pushing, throwing). Each scene was labeled with an English and Korean description of the action (e.g. "the cone pushed the cube") and various visual metrics were extracted from the 3D video (e.g., distance between objects, motion toward objects). One model was trained on the English mapping and the other on the Korean mapping and the models used the visual metrics to acquire the language-specific mapping. The models were tested on their ability to explain several differences between English and Korean in the acquisition of spatial knowledge (Choi & Bowerman, 1991; Johnston & Slobin, 1979)

14:30 – 16:45

Amphitheater G • Satellite 2

Symposium Session 4 • G

LANGUAGE AND LITERACY DEVELOPMENT IN BILINGUAL CONTEXTS: EVIDENCE FOR CROSS-LINGUISTIC TRANSFER**Convener** Mila Schwartz, *Oranim College of Education, & Haifa University***Discussant** Esther Geva, *Ontario Institute for Studies in Education***Description:**

Indices of literacy development emerge early, long before children attend school. Emergent literacy involves skills such as various aspects of oral language (phonological and morpho-syntactic awareness, vocabulary), knowledge about print, and sub-lexical reading skills. Although much research has investigated the language and literacy acquisition of bilingual children, unanswered questions remain regarding different conceptualization of transfer to typologically diverse language-dyads. What is the actual mechanism of transfer and how does it work when two languages have different linguistic and/or orthographic structures? How does L1 complexity affect phonemic awareness and the development of morpho-syntactic structures in L2 and vice versa? Can L1/L2 morphological awareness predict L1/L2 vocabulary and reading comprehension? What is the effect of duration of exposure to early bilingual experience on emergent literacy skills acquisition in L1/ L2 and on cross-linguistic interactions? Do L1 emergent literacy skills contribute to maintenance of the lexical and morpho-syntactic structures of L1 and acquisition and use of these structures in L2? To what extent does

emergent literacy acquisition in a transparent L1 orthography facilitate literacy acquisition in a non-transparent L2 orthography)? This symposium aims to present new findings addressing these questions within the context of four typologically diverse languages and scripts Chinese, Russian, English and Hebrew within four language dyads: Chinese-English, Russian-Hebrew, English-Hebrew and Russian-English. The symposium will address key theoretical and methodological issues regarding emergent literacy acquisition in dual-language contexts and the validity of transfer-based interpretations.

Considering the interplay of language typology, emergent language, reading skills and transfer

Esther Geva, Dana Shafman, *University of Toronto*

We focus on the emergence of language and literacy skills in children whose L1 is English, attending a bilingual English-Hebrew day-school where these typologically different languages are fostered. We examined the extent to which parallel language skills correlate with word reading within and cross-linguistically. Two groups differing in extent of Hebrew exposure were compared at the end of Grade 1: (1) Hebrew from age 5 (Early Hebrew, EH) (N = 17); (2) Hebrew from age 6 (Late Hebrew, LH) (N = 19).

The EH and LH groups were similar on non-verbal ability, English language and word-reading, and Hebrew decoding. The EH group had stronger Hebrew language skills (grammar, vocabulary). The groups did not differ on English phonological awareness (PA) (elision) or 2 measures of morphological awareness (MA) (inflections, compounds) in English or Hebrew, however, the LH group performed at chance on Hebrew derivations. Hebrew grammar correlated with Hebrew word-reading skills for the EH group only. English language measures did not correlate with word-reading in English or Hebrew in either group.

In the EH group English MA correlated positively and significantly with both English and Hebrew word-reading, while Hebrew MA (inflections and compounds) correlated with Hebrew word-reading skills. English PA correlated significantly with English word-reading skills in the EH group. The only significant correlation in the LH group was between English PA and Hebrew word-reading. Results are discussed in terms of language proficiency threshold and the interaction between language typology, emergent language proficiency, and limits on transfer.

Positive language transfer and language preservation of morphosyntactic structures in the context of L1 literacy: Evidence from different tasks

Elena Zaretsky, *University of Massachusetts-Amherst*

Language transfer and language preservation among bilingual individuals is an area of intensive research. Positive or negative L1/L2 transfer may depend on the structure, phonotactic constraints, as well as the orthography of the ambient language. Some empirical evidence shows possible interferences between L1 and L2 linguistic systems. However, it has been suggested that orthographic representations in transparent languages may not only facilitate reading acquisition, but also increase child's awareness of language-specific morphosyntactic structures. This study examined the role of L1 proficiency and L1 use as factors promoting positive transfers to L2 use of lexical and morphosyntactic constituents. In addition, we examined the influence of reading skills in L1 transparent orthography on preservation of the lexical and morphosyntactic structures of the ambient language and acquisition and use of L2.

25 Russian-English bilingual children between the ages of 4;0 and 10;11 participated in this research. Story re-tell, grammaticality judgment and elicited narratives were assessed in L1 (Russian) and L2 (English). A questionnaire, filled by older participants or parents of younger participants, assessed the daily use and preferences for L1/L2, as well as L1 reading abilities.

Our results strongly indicate that combination of L1 exposure and L1 literacy, decrease error frequencies in perception and production of morphosyntactic structures in L1 and stimulate correct use of L2. The main effect of L1/L2 use and L1 reading were significant for the production of correct linguistic structures in both languages. These findings support the notion that solid knowledge of L1 increases positive transfer to L2.

Cross-language transfer of morphological awareness in Chinese-English bilinguals: the effects on word reading, vocabulary, and reading comprehension

Becky Xi Chen, Adrian Pasquarella, Katie Lam, Yang C. Luo, Gloria Ramirez, *University of Toronto*

Recent research has identified morphological awareness as an important predictor of reading success in monolingual children. Relatively little is known, however, about the impact of morphological awareness in bilingual children. This study examined within- and cross-language relationships of morphological awareness, word reading, and reading comprehension in Chinese-English bilingual children. One-hundred and fifty children in Grade One and above participated in the study. Structural Equation Modeling was used to compare a baseline model with only within language paths to models with cross-language paths. All the cross-language models fit better than the within-language model, suggesting transfer of morphological awareness. In particular, English compound awareness was a significant predictor of Chinese vocabulary and Chinese reading comprehension. English derivational awareness was negatively related to Chinese word reading. These findings provide strong evidence for the transfer of morphological awareness between Chinese and English. They suggest that the aspect of morphological awareness (compound vs. derivational) that transfers, and the direction of transfer (from L1 to L2 vs. from L2 to L1) are both influenced by the morphological structures of the languages involved. Specifically, positive transfer occurs when the target morphological

structure (compounding) is similar across children's L1 and L2, and negative transfer may occur when the target morphological structure (derivation) is drastically different. The direction of transfer seems to be determined in particular by the morphological structure of the language of the outcome variable – since reading Chinese requires more compound awareness, cross-language transfer of compound awareness is more likely to be observed from English to Chinese.

Cross-linguistic transfer of emergent literacy skills for Russian to Hebrew: The interplay of linguistic, orthographic and instructional factors

Mila Schwartz, David L. Share, Katia Khariton, *University of Haifa*

This study examined the cross-linguistic transfer of phonemic awareness and code knowledge across two regular alphabetic scripts, Russian and Hebrew, which represent phonemes in different ways. The study aimed to elucidate the mechanism of transfer in light of the unique linguistic and orthographic structure of these two languages, and the context of emergent literacy instruction. Two groups of bilingual Russian-Hebrew pre-school children ($n = 38$) were included: bilingual children from bilingual and bi-literate speaking kindergartens and bilingual children from monolingual (monoliterate) Hebrew-speaking kindergartens were assessed on measures of emergent literacy (phoneme segmentation, first and last phoneme deletion, letter identification, word writing, and vocabulary knowledge in both L1 and L2) at two time points: at the beginning and at the end of the kindergarten year. Emergent literacy instruction was observed and teachers interviewed. The bi-literate subgroup was superior to the monoliterate group on most of the measures of phonemic awareness in both Russian and Hebrew, indicating clear evidence of transfer from L1 to L2. Classroom observations revealed that in the Hebrew-speaking (mono-literate) kindergartens phonological awareness was taught using rhyme and the sub-syllabic consonant-vowel units, whereas in the bi-literate kindergartens, instruction focused on phoneme manipulation, analysis of consonant clusters, discrimination between consonants and vowels, and phonemic segmentation of syllables. As expected, there was no evidence for transfer of code-specific knowledge from Russian to Hebrew. We conclude that the transfer of phonemic awareness from L1 to L2 derives from the linguistic and orthographic structure of Russian and the way emergent skills are taught.

14:30 – 16:45

Amphitheater H • Satellite 2

Symposium Session 4 • H

USE OF CONTEXTUAL INFORMATION FOR SPEECH AND LANGUAGE PROCESSING IN CHILDREN WITH AUTISM SPECTRUM DISORDER: WHAT EYE-TRACKING MEASURES CAN SHOW US

Convener Aparna Nadig, *McGill University*

Description:

Children with Autism Spectrum Disorders (ASD), even those with age-appropriate language ability, demonstrate difficulty in day-to-day language interactions. Many of these situations can be viewed as problems of ambiguity resolution: which of two similar speech sounds is being pronounced, which meaning of a homonym is intended, which referent should be encoded in a description, which structure of a syntactically ambiguous sentence is the appropriate one. In natural language use, the answer to these questions is often provided by various types of contextual cue such as visible articulatory movement from a speaker's face, the discourse context in which a homonym appears, or prosodic cues to syntactic phrasing. The papers in this symposium make use of eye tracking methodology to explore four different domains of speech and language processing in school-aged children with ASD and matched comparison groups. The first investigates cross-modal (audio-visual) speech perception when viewing the speaker's face. The second looks at the processing of homonyms following a biasing context sentence. In the third paper sentence production is explored via the description of visual scenes. The last paper investigates the interpretation of syntactically ambiguous sentences in the presence of disambiguating prosodic cues. In each case particular consideration is given to how participants incorporate informative contextual cues in their real-time language processing. This work furthers our understanding of the often subtle differences in real-time processing that may contribute to difficulties in language usage by children with ASD.

Eye Say! Language production in developmental disorders

Courtenay Norbury, David Kelly, *University of London*

Children with specific language impairment (SLI) and autism spectrum disorders (ASD) experience expressive language deficits relative to typically developing peers (TD). Using an eye-movement paradigm, we ask whether these deficits reflect differences in event apprehension or disorder-specific difficulties formulating sentences. We used eye-tracking to distinguish these possibilities. Participants were 11 children with ASDs, 10 children with SLI and 11 TD, aged 9-14 years. We simultaneously recorded verbal output and eye-movements in two conditions: (a) picture description, in which children verbally described the scene (b) patient detection, in which children identified the person receiving the action (scenes included two actors and an action). We



predicted that (a) would be more challenging for children with SLI, whereas (b) would be more challenging for children with ASD, as it explicitly requires apprehension of the 'gist' of the event. We measured fixation latency to patients across conditions, time taken to initiate and complete a verbal response, and fixation durations to key scene elements ('agent' 'patient' and 'event core') before and after speech onset. The sequence of eye-movement patterns and content of verbal responses were similar across all groups; however both clinical groups showed significant delays in fixations to the patient and in the onset and offset of their verbal responses. This delay was evident in both sentence production and patient detection conditions, suggesting that rather than event apprehension guiding production processes, language abilities are crucial to understanding visual events.

Figure. In patient detection, children would identify the man as the receiver of the action. In description, a typical response would be, 'the monkey is tickling the man.'

Use of sentence context for lexical ambiguity resolution in high functioning autism

Aparna Nadig, *McGill University*

This experiment examined online processes of lexical ambiguity resolution in a looking-while-listening paradigm where a context sentence was provided to facilitate the interpretation of homonyms (e.g. cell). Participants were 17 children with HFA and 19 typically-developing comparisons (TYP) matched on language level and an age range of 9- to 13-years. They heard context sentences that biased towards one meaning of a homonym (prison meaning of "cell" rather than biological meaning), were then shown displays containing pictures of both versions of the homonym and 2 fillers. Finally they heard the target word "cell" and were asked to pick the picture that went best with what they had heard. Dependent variables were the visual attention measures of target bias and competitor bias during both a preview period and upon presentation of the homonym, accuracy in selecting a target picture, and response time to do so. It was predicted that the HFA group would make less use of sentence context in their online interpretation and demonstrate problems inhibiting the competing version of homonyms. **Balanced Homonyms:** During the preview period the TYP group displayed a significantly higher target bias than the HFA group, suggesting anticipation of the context-appropriate target. They continued to demonstrate a higher target bias upon hearing the homonym, whereas the HFA group displayed a greater competitor bias. However, despite these significant differences in online interpretation the groups did not differ in accuracy or response time to choose a target referent. These findings suggest that HFA group are less influenced by sentence context online, though they are able to arrive at the appropriate meaning of balanced homonyms similarly to TYP peers in an explicit offline task.

Use of visible articulatory information for speech perception in autism

Julia Irwin, *Haskins Laboratories & Southern Connecticut State University*

Eye-tracking methodology was employed to measure audiovisual (AV) speech perception in 26 children ranging in age from 5-15 years, half with autism spectrum disorders (ASD) and half with typical development (TD). Given the characteristic reduction in gaze to the faces of others in children with ASD, it was hypothesized that they would show reduced sensitivity to visible articulatory information on the speaker's face. Even when fixated on the face of the speaker, children with ASD exhibited less visual influence on what was heard than the TD controls. To examine whether pattern of gaze to the speaker's face differed between the groups, four listening conditions were assessed: audiovisual (AV) speech in the clear, AV speech in auditory noise, visual only (lipread) speech and AV non-speech. The results indicated that the children with ASD looked less to the speaker's mouth than the TD controls, but did not differ for the non-speech condition. Further, the children with ASD showed a more dispersed, less consistent pattern of gaze at the face of the speaker. These findings indicate that children with ASD may not be processing critical visible articulatory information in the same manner as TD controls.

Cognitive and Developmental Factors in Prosody Comprehension in Children with Autism Spectrum Disorders

Joshua Diehl¹, Jesse Snedeker², Karen Tang¹, Rhea Paul³, ¹*University of Notre Dame*, ²*Harvard University*, ³*Yale Child Study Center*

Abnormal prosody production is a characteristic feature of Autism Spectrum Disorders (ASDs), but deficits in prosody comprehension is less clear. Moreover, little is known about developmental and cognitive factors in prosody comprehension in ASDs. We used a psycholinguistic paradigm to explore whether children with ASD use prosodic structure as a cue to resolve syntactic ambiguities in a language processing task. 48 children with ASDs and 48 typically-developing controls matched on age, IQ, and language abilities were tested in an eye-tracking paradigm based on Snedeker & Yuan (2008). Each diagnostic group was divided into a younger group (8-12 y.o.) and an older group (13 y.o.–17 y.o.) in order to explore developmental differences. Prosody was manipulated by placing an intonational phrase boundary in one of two places in an utterance, with each placement resulting in a different utterance meaning. Presentation of cues was blocked so that participants would hear 4 trials using one prosodic cue, and then 4 trials using the other cue. Children with ASD were

worse than controls at using prosodic cues in the younger group ($p < .05$), but not in the older group. Eye-tracking data suggest that younger children with ASD are just as good as younger controls at interpreting an initial presentation of a prosodic cue, but when this cue changes the children with ASD have difficulty shifting their interpretation. Findings suggest developmental differences in prosody comprehension between children with ASDs and controls. Moreover, eye-tracking data suggest that cognitive factors are important for understanding prosody processing in ASD.

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SATELLITE 1
MORNING SYMPOSIA
AMPHITHEATERS A•B•C•D

10:15 – 12:30

Amphitheater A • Satellite 1

Symposium Session 5 • A

STABILITY OF LANGUAGE DEVELOPMENT: FROM INFANCY TO ADULTHOOD

Convener Sheena Reilly, *Murdoch Children's Research Institute, Melbourne*

Discussant Gina Conti-Ramsden, *University of Manchester*

Description:

The science of language development needs to complement the detailed study of the individual with an understanding of large scale population level data. Without the latter it is impossible to truly capture the nature of change across time. Indeed such studies are arguably the only way of employing the sophisticated statistical techniques needed to explore these issues in full. We have assembled data from a series of longitudinal studies that will address key questions about stability across the early and middle years (Sessions 1 and 2), the middle years and adolescence (Session 3) and early adulthood (session 4). This symposium reports on different ways of measuring language change over childhood and into adulthood in four large scale studies from the UK, the US and Australia

Profiles of language development in pre-school children: a longitudinal latent class analysis of data
Obi Ukoumunne¹, Sheena Reilly², Melissa Wake³, Edith Bavin³, John Carlin³, Joanne Williams³, Jarrad Lum³, Jemma Skeat¹, ¹*Murdoch Children's Research Institute*, ²*University of Melbourne*, ³*Royal Children's Hospital*

Objective: This study used latent class analysis to identify the most common language development pathways in the pre-school years. **Methods:** Longitudinal latent class analysis was applied to language measures across 5 waves (8, 12, 24, 36 and 48 months of age) on 1113 children from ELVS, in order to identify groups (classes) exhibiting distinct profiles of development. Continuous language measures were trichotomised at each wave into three categories: "impaired" (bottom 7% of scores), "typical" (middle 85%) and "precocious" (top 8%). Six latent class models were fitted with increasing numbers of classes from 1 to 6 using *MPlus* software. **Results:** Five substantive classes were identified: *Typical*, i.e. language development in the typical range at each age; *Precocious (late)*, i.e. typical development in infancy followed by high probabilities of precocity from 24 months onwards; *Impaired (early)*, i.e. high probabilities of impaired language up to 12 months followed by typical language thereafter; *Impaired (late)*, i.e. typical language in infancy but impairment from 24 months on; *Precocious (early)*, i.e. high probabilities of precocity in early life followed by typical language ability by 48 months. High levels of maternal education, socio-economic status and maternal vocabulary were more common in classes with improving language profiles. **Conclusions:** For some children, language is characterised by periods of slow development, accelerated development and catch-up growth. The path to language impairment at 4 years is not straightforward. These findings may partly explain why population screening efforts in young children have not proved to be particularly effective

Mapping patterns of change from 12 months to 8 years

James Law¹, Sue Roulstone², ¹*Newcastle University*, ²*University of the West of England*

Study of Parents and Children (ALSPAC) to link early vocabulary and grammar acquisition based on parent report (CDI) through to tested performance on the Wechsler Objective Language Dimensions at eight years. **Methods:** We map the performance of children (~7000) at three time points – 12, 18 and 24 months, identifying those whose language scores remain either high or low and comparing them with those that change (i.e. starting low and rising or vice versa) and then following up all children at school entry (five years) and then at eight years. The aim will be to demonstrate outcomes for those with consistent and those with inconsistent early vocabulary scores as they move to primary school, thus adding to the knowledge about early expressive language development and informing both our understanding of early vocabulary as a predictive tool and of the process of early identification more generally. We will also examine resilience within the group, in particular, those with poor early vocabulary and social disadvantage who go on to improve over the first eight years of life. **Conclusions:** The data confirm the oft-cited pattern of differential change even on vocabulary growth, with children having scores which decreased almost as often as they increased and with only moderate associations into school.

Group and individual differences in adult outcome of children identified as language impaired at school entryJames Law, *Newcastle University*

Objective: One of the key questions in our understanding of language change across time is the extent to which it is possible to predict adult outcomes from early language data. This session will use the UK British Cohort Study of eleven thousand children born in the UK in one week in 1970 and followed up on three key outcomes in adulthood. **Methods:** We will report the association between their receptive vocabulary scores at five years and their literacy, mental health and employability at 34 years comparing the performance of those with both specific and general language delays with that of typically developing children. **Results:** The results show clearly that language remains associated with adult outcomes even once demographic factors and non verbal performance are taken into consideration. For those with non-specific language impairment the odds remain significantly associated with all three outcomes [literacy (4.35), mental health (2.9) and unemployment (1.88)]. For those with specific language impairment were significant in the final model for literacy (1.59), unemployment (2.24) but not mental health. In each case the introduction of environmental and within-child variables substantially reduced the association of early language skills, especially for the non-specific group. Despite these persistent thirty year associations it is clear that an assessment at five years while relatively good at predicting individuals who will not have difficulties later on (specificity range 0.9-0.94), they are much less useful in predicting those that will (sensitivity range 0.12-0.21) suggesting that there remains considerable potential for change across time. **Conclusions:** The data indicate that reasonable performance is a good protective factor for long term outcomes. By contrast for those with difficulties a more complex model is required including a combination of demographic and within-child characteristics. The results will be discussed in terms of their implications for early identification at school entry

Growth trajectories of vocabulary and sentence use from school entry into adolescenceBruce Tomblin, *University of Iowa*

Objective: Throughout childhood we can observe individual differences in language proficiency. A fundamental question concerns the factors that contribute to these individual differences. Insight into these factors can come from the study of the variability of these individual differences across development and the association of child and environmental factors with this variability. **Methods:** This study investigated individual differences in growth of language in 604 children from kindergarten (6 years) to 10th grade (16 years). These children who were participants in a longitudinal study in Iowa, US, had been sampled to have a range of initial language ability. Measures of vocabulary and sentence use were obtained at four time points in development (6, 8, 10, 14 and 16 years of age). Multilevel modelling was used to characterize the growth trajectories of vocabulary and sentence use. **Results:** The growth parameters from this model revealed growth rates greater than 0 for both vocabulary ($t=16.76$; $p<0.0001$) and sentence use ($t=37.85$; $p<0.0001$). Importantly, the residual random effects for growth and intercept were also significantly greater than 0 for both measures. A conditional model that contained a dichotomous variable for initial language ability (poor/good initial language prior to first test), performance IQ, phonological processing, mother's education and home literacy significantly reduced the residual variance in the unconditional model. These effects however, were largely found with respect to individual differences in intercept (6 year) for both vocabulary and sentence use. The rate of growth during the school years was much less variable across children. **Conclusions:** The results demonstrate that it is feasible to capture different growth trajectories and emphasise the pivotal role played by non-linguistic factors in contributing to the model.

10:15 – 12:30

Amphitheater B • Satellite 1

Symposium Session 5 • B

CHILDREN'S UNDERSTANDING OF SPACE: TRACKING DEVELOPMENT IN (SPATIAL) LANGUAGE AND (SPATIAL) COGNITION**Convener** Hannah De Mulder, *Utrecht University***Description:**

The relationship between language and cognition has always sparked much debate. Does linguistic development determine the child's cognitive development or is cognitive development a prerequisite for language acquisition? In this symposium, this question is addressed in a more specific domain: children's linguistic and cognitive understanding of space. What kind of relationship is there between the development of spatial language and spatial cognition?

In the first paper, evidence from a longitudinal naturalistic study on 14- to 54-month-old children demonstrates that earlier production of spatial terms predicts later performance on non-verbal spatial tasks. In looking at effects of spatial language on a different aspect of cognition, social cognition, the second paper presents evidence from a longitudinal study on four- and five-year-olds that suggests that earlier spatial language predicts later social cognition. In contrast to these findings suggesting an effect from spatial language to cognition, the third paper presents evidence for the opposite direction, claiming that 20-month-

old's spatial cognition is predictive of their spatial verb use at 24 months. The final talk presents yet another view on this issue, which might be seen as a bridge between the two approaches. The idea behind this study on 9-month-old infants is that spatial cognition and spatial language are related, both subserved by a more basic underlying mechanism: sequential learning. The relationship between (spatial) language and (spatial) cognition is thus discussed in light of novel findings in infants and preschoolers and in naturalistic and experimental paradigms, thereby increasing understanding of the issues in this heated debate.

Understanding minds through space: The relationship between theory of mind and spatial language

Hannah De Mulder, *Utrecht University*

At around 4,5 years old, the child has developed a "Theory of Mind" (ToM) and understands that others can have mental states that differ from her own. Many studies find that language influences ToM development, but which aspects of language may be important is not clear. This paper suggests that spatial language, in particular locative prepositions (LPs), is relevant. LPs encode perspective (they denote the spatial relationship between two objects from the perspective of the speaker); perspective also relates to the development of ToM (which requires an understanding of the notion that differing perspectives on events can lead to different beliefs). As the perspectival relationship described by the LP is concrete in nature (by placing oneself in the spatial position of the speaker, the truth of the utterance with the LP can be verified), the child can use this relationship to bootstrap understanding of the more abstract perspectival relationship implicit in ToM. A longitudinal study in which 101 four-year-olds were given tests assessing (spatial) language and ToM considered this possibility. Regression analyses demonstrated that only spatial language predicted ToM ($t_{94} = 2.93$; $p < .01$), but not vice versa. These findings thus point to the relevance of spatial language in the development of ToM. By drawing attention to the nature of concrete perspectival relations between two objects, spatial language may prompt the child to consider the nature of more abstract perspectival relationships between minds and mental representations. In this way, spatial language provides the child with the representational means to understand mental states

Children's spatial thinking: Does talk about space matter?

Shannon Pruden¹, Susan C. Levine², Janelle Huttenlocher², ¹*Florida International University*, ²*University of Chicago*

Prior studies suggest that spatial language reflects children's underlying spatial concepts (Hirsh-Pasek & Golinkoff, 2006; Mandler, 2004) and promotes the development of spatial thinking (Casasola, 2005; Loewenstein & Gentner, 2005). Our study examines the range of spatial words that children produce during naturalistic interactions and whether individual differences in spatial language are related to spatial skills.

Fifty-two parent-child dyads were studied longitudinally in their homes for 90 minutes at nine time points between 14 and 46 months. Spatial language was identified with three spatial categories targeted: Dimensional adjectives (e.g., *big, little, tall*); Shapes (e.g., *circle, triangle, shape*); Features/properties (e.g., *bent, curvy, side*). Three nonverbal spatial tasks were given to children at 54 months: Mental rotation: assesses the ability to mentally rotate shapes. Child selects a shape that two pieces would make if they were put together; Block design: Child must recreate a design using 4 red and white blocks; Spatial analogies: Child must select one picture out of four that is most spatially analogous to a target picture.

Results indicate that children's cumulative production of spatial terms from 14 to 46 months predicts their performance on these non-verbal spatial tasks at 54 months, even after controlling for overall word tokens. Our findings show that there is a relation between spatial language and performance on spatial tasks. Future work is needed to examine whether children's spatial language use is causally related to the development of spatial thinking. We end by discussing a new study aimed at addressing this question.

Words from space: Spatial cognition and (spatial) language in early development

Ora Oudgenoeg-Paz, Chiel Volman, Paul Leseman, Marian Jongmans, *Utrecht University*

Embodiment theory suggests that cognition and language emerge in real-time through body-environment interaction. Through physical interactions with the environment, children develop their (spatial) cognition. This cognitive development, in turn, supports their linguistic development. Therefore, a positive relation over time between spatial cognition and (spatial) language can be expected. Some studies have shown cross-sectional correlations between spatial cognition and language, but these *developmental* hypotheses are understudied.

In the current study, one group of children was tested at ages 9 and 12 months and another group was tested at ages 20 and 24 months. The children's spatial cognition and general and spatial language were measured. Spatial cognition was operationalized using a combination of instruments designed to measure spatial working memory, spatial processing and spatial orientation. Regression analysis revealed that spatial working memory at 9 months could predict productive vocabulary at 12 months. Spatial working memory and spatial processing at 20 months predicted the production of spatial verbs at 24 months. No effects on general language were found at 24 months.

The results provide initial support for the relation between spatial cognition and language over time. In the younger group, the effect of spatial cognition on language is not yet specific to spatial language. However, in the older group the effect becomes more specific, as spatial language develops and can be viewed separately

from general language. Further longitudinal research is needed in order to describe the dynamics of the relations between spatial cognition and spatial language over the course of early development.

Infant sequential learning across domains: Language and visuospatial perception

Desiree Capel, Frank Wijnen, *Utrecht University*

Finding regularities in the vast amount of sensory input that surrounds an infant is an important goal in development. Statistical learning is a mechanism by which patterns can be detected. One particular statistical learning mechanism is sequential learning, which can be described as the implicit statistical analysis over sequences of perceived items. Sequential learning could, for instance, play a role in the segmentation of words from continuous speech. It is generally assumed that sequential learning is a domain-general ability. However, sequential learning has not been tested in various domains in the same group of infants yet. The current study presents experiments in the language domain and in the visuospatial domain. Infants (8.5 months old) are exposed to a sequence of positions of an object on a computer screen, and to a sequence of monosyllabic nonsense words. The sequences in both domains have an identical statistical pattern. The key feature of this pattern is that some elements in the sequence predict the next element with higher certainty (higher transitional probability, TP) than others: TP 1 means that X is always followed by Y; with TP 0.5, only half of the X's are followed by Y. In a paradigm based on visual fixation, infants are tested on their sensitivity to these transitional probabilities, and their looking times are measured by an eye-tracking system. Preliminary results suggest that sensitivity to the transitional probabilities tested does not differ in either of the experiments. Further research will be conducted to confirm this finding.

10:15 – 12:30

Amphitheater C • Satellite 1

Symposium Session 5 • C

A CROSS-LINGUISTIC STUDY OF PRESCHOOLERS' NARRATIVES AND THEIR DEVELOPMENT

Convener Ageliki Nicolopoulou, *Lehigh University*

Discussant Dan Slobin, *University of California at Berkeley*

Description:

This symposium examines the interplay of universal and language-specific aspects of children's narratives in 12 different languages (English, German, Swedish, Danish, French, Italian, Spanish, Slovak, Croatian, Greek, Turkish, and Mandarin) spanning five different families. While narratives of school-aged children have often been examined, young children's narratives have received much less attention despite their significance for literacy acquisition. Narratives were collected from 3- to 6-year-olds using two 4-picture sequences. This symposium is based on our analyses of these data. Based on the rich array of languages included, we examined preschoolers' narrative development in languages that differ along a number of dimensions: from strict to more flexible word-order, from highly inflected to less inflected, from analytical to more synthetic, from pro-drop to non-pro-drop languages etc. The first paper focuses on the development of young children's narratives and compares this development across all participating languages. Narratives were analyzed for linguistic and narrative structure as well as overall narrative quality. The rest of the papers deepen this analysis by focusing on aspects where the greatest variability across languages was observed. The second paper focuses on children's developing ability to mark information as new, given, and most presupposed by examining their ability to introduce, maintain, and switch characters. The third paper focuses on children's developing ability to use complex syntax (coordination and subordination) in creating cohesive narrations. Each of these papers explains the similarities and differences observed in terms of linguistic, cognitive, social, and situational (stimuli-based) factors.

Emerging narratives: A cross-linguistic study

Judy Reilly¹, Ayhan Aksu-Koc², Mark Appelbaum¹, Dorthe Bleses³, Chien-ju Chang⁴, Marten Eriksson⁵, Svetlana Kapalkova⁶, Sophie Kern⁷, Jelena Kuvac-Kraljevic⁸, Ageliki Nicolopoulou⁹, Julian Parris¹, Miguel Perez Pereira¹⁰, Alessandra Sansavini¹¹, Ralf Vollmann¹², ¹*San Diego State University*, ²*Bogazici University*, ³*University of Southern Denmark*, ⁴*National Taiwan Normal University*, ⁵*University of Gävle*, ⁶*Comenius University in Bratislava*, ⁷*University of Lyon*, ⁸*University of Zagreb*, ⁹*Lehigh University*, ¹⁰*University of Santiago de Compostela*, ¹¹*University of Bologna*, ¹²*University of Graz*

Narratives are common in everyday discourse and represent the first use of decontextualized language in preschoolers. As such, they are considered critical in the development of literacy. To better understand their early development and the respective roles language typology and cognition in their development, we collected picture stories from 54 children (3;0-6;0 years) per language in each of 12 languages (Spanish, Italian, French, Danish, Austrian German, Swedish, English, Croatian, Slovak, Turkish, Greek and Mandarin). Stories were transcribed using CHILDES and were analyzed for the occurrence of specific linguistic structures (single word responses, phrases, single clauses, coordinate and subordinate sentences); narrative components (setting, characters, initiating event, problem, attempt at resolution, resolution); and narrative

quality (labeling, describing, relating or motivating). The development for cognitive aspects of narrative, e.g., narrative quality, was broadly consistent across languages and language families, such that three year olds were more likely to label and describe, and five year olds generally used relating and motivating strategies in their stories. With respect to linguistic structures, the specific features of the language played a role. For example, easily accessible subordination, as in Turkish and Mandarin, influenced both linguistic structure and narrative quality. In sum, the language typology and conventions of language use appear to be influential in the child's mastery of particular discourse genres.

A cross-linguistic study of character reference in young children's narratives

Ageliki Nicolopoulou¹, Ayhan Aksu-Koc², Aylin Kuntay³, Christina Andersen⁴, Chien-ju Chang⁵, Matt Ignacio⁶, Daniela Slancová⁶, ¹Lehigh University, ²Bogazici University, ³Koc University, ⁴University of Southern Denmark, ⁵National Taiwan Normal University, ⁶San Diego State University, ⁷University of Presov

Different languages offer different combinations of linguistic forms to mark the status of information as new, given, and/or most presupposed in discourse, thus presenting children with different acquisition problems. The present study explores the universal and language-specific aspects of children's ability to introduce, maintain, and switch characters in narratives using 6 languages (English, Danish, Slovak, Greek, Turkish, and Mandarin) that differ in the extent to which they allow ellipsis of nominal arguments (pro-drop or non-pro-drop languages).

Fifty-four children (3- to 6-year-olds) per language participated in this study. Narratives were elicited using two 4-picture sequences. We coded the introduction, maintenance and switching of animate characters in terms of indefinite and definite noun phrases (NPs), pronominals, and null elements. Our results indicate that for *character introduction*, irrespective of language, children mainly used definite forms with indefinites increasing with age. However, for *reference-maintenance*, children in non-pro-drop languages (English and Danish) used definite forms (predominantly pronouns with NPs decreasing with age) whereas children in pro-drop languages (Turkish, Mandarin, and Greek) used mainly null forms with NPs increasing with age. For *reference-switching* definite forms (pronouns and NPs) were used in both non-pro-drop and pro-drop languages in the story with two central characters, whereas null forms were used in pro-drop languages for the story with a single central character. These results reveal cross-linguistic differences in children's use of referring expressions along the dimension of ellipsis of nominal arguments. Important similarities across languages were also observed based on the conceptual basis of information structuring.

Coordination and subordination in preschoolers' narratives in nine languages

Ralf Vollmann¹, Katrin Bartl¹, Maria Papakonstantinou², Alessandra Sansavini³, Chien-ju Chang⁴, Sophie Kern⁵, Jelena Kuvac-Kraljevic⁶, ¹University of Graz, ²Aristotle University of Thessaloniki, ³University of Bologna, ⁴National Taiwan Normal University, ⁵University of Lyon, ⁶University of Zagreb

Syntactic complexity and cohesive elements are indicators of expanded linguistic competence. The emergence of complex syntactic constructions depends on the actual complexity of a construction, its usage (frequency and communicative functions), and other developmental factors (social and cognitive). Within the framework of the CDI-III, 54 children (3;0-6;0) in 9 languages have been tested for narrative competence. The data of two stories for each language have been annotated and analyzed for syntactic complexity: coordinating and subordinating relations between sentences, modal verbs, infinitives, serial verbs. Simple coordination of events following chronological order ('and then ...') developed early (3;6-5;0). Subordination was infrequent in preschoolers, with some increase (or stagnation) over age in most languages. Non-finite verbs were increasingly used by older children. Relative clauses were rare in all languages. Language specific features were apparent early, for example, clause chaining and serial verbs in Mandarin showed an early and steady increase over age; Turkish children used more non-finite constructions; Greek, which does not use infinitive, shows an age-related increase in subordinating conjunctions. Danish among others showed a very low rate of subordination, but increased coordination. Italian showed increase in all categories, but coordination was rare. German colloquial language avoids subordinate constructions in favor of (similar) coordinate ones. The cross-linguistic differences observed in the data may be explained both by typological and usage-based characteristics: Clause chaining, serial verbs, and subordination are functionally similar but of different grammatical complexity. Furthermore, languages may behave differently when it comes to the actual usage of patterns.

10:15 – 12:30
 Amphitheater D • Satellite 1
 Symposium Session 5 • D

FREQUENCY EFFECTS

Convener Heike Behrens, *University of Basel*

Description:

Frequency effects are considered to be one of the most important factors in first (e.g., Tomasello, 2003) and second language acquisition (e.g., Ellis, 2008). In L1-learning, frequency is particularly predictive of the order of acquisition when function is taken into consideration: children seem to start out with the most frequent type that represents a particular function (Lieven & Tomasello, 2008). But it is not straightforward what counts as a type for a child. If early grammatical structures consist of unanalyzed chunks of variable size and constituency (e.g., inflected word forms like kick-s, or multiword combinations like what's the), the relevant units (or types of constructions) could be the product of morphological processes. Köpke (1998) claimed that German plural errors could best be analyzed from a schema perspective. Children would form plurals that match the most typical schemas of article plus inflected noun (in German, the definite plural article die plus a b- or multisyllabic noun ending on -n). Children perceive the inflected plural forms, and can generalize the relationship between noun root and affixation by comparing singular and plural forms. This comparison is facilitated if the family size of the nouns is large, i.e. the group of words that are part of the same inflectional or word formation class. In addition, the family frequency (the resulting token count) plays a role in the facilitation of processing.

Introduction: What counts? Frequency effects across constructions

Heike Behrens, *University of Basel*

Frequency is one of the strongest factors in language processing and in corpus-linguistics. But its relevance critically hinges upon addressing the grain-size issue as raw word frequency does not predict the course of acquisition: what are the units whose frequency speakers are sensitive to? Several measures apart from the simple type token frequency of individual lexemes or word forms have been shown to affect language use (e.g. frequency of the underlying category or structure, or the family size of an item). In usage-based approaches to language, frequency plays a critical role because it is assumed that language structure is derived from language use, hence frequent structures in the input should play a more prominent role in acquisition. This symposium brings together four experimental studies with different methodologies that address the effect of frequency regarding the effect of distribution or skewness (Papers 1 and 2), and regarding the effect of the constructional context on frequency (Papers 3 & 4).

Paper 1 (Input sensitivity) shows age effects in the processing of new syntactic structures: whereas adults generalize regardless of the internal structure of the input, younger children profit from type variation. Paper 2 (flat frequency distribution) confirms that type variation enhances acquisition, but does not confirm previous findings that skewed input distribution is most beneficial. Paper 3 (More than words) shows that children are sensitive to transitional probabilities within verbs-object frames. Paper 4 (Processing cue frequencies) finds that children are sensitive to frequency only within a particular syntactic frame and do not readily generalize over frequency information across frames.

The results suggest that a more differentiated treatment of frequency is needed. The papers demonstrate how skewness, distribution, transitional probability, and concreteness or abstractness of the constructional frame interact with children's stage of development.

More than words: how frame frequency and predictability affect children's word production

Inbal Aron¹, Eve V. Clark², ¹*University of Manchester*, ²*Stanford University*

Adult speakers are faster to produce words when they appear in more predictable (and frequent) contexts. Even though children (like adults) generally hear words embedded in larger phrases, and even though children can (and do) attend to co-occurrence information in language, most studies of lexical and morphological acquisition have paid little or no attention to the effect of linguistic context on word production. We explore the effect of frame-frequency and frame-predictiveness on the production of irregular English plurals by comparing production following a labeling-question (*What are all these?*) to production following a lexically-specific frame (one that often precedes the noun, e.g., *Brush your – teeth*).

In study 1 we show that children (age 4;6, N=24) attend to the larger phrases words appear in and make use of that distributional knowledge in production: They are better at producing irregular plurals (e.g., *mice*, *teeth*) after frames they often occur with (e.g., *Brush your – teeth*). In particular – they are more accurate after more predictive frames; variation in accuracy was affected by the predictability of the word, not by the overall frequency of the chunk. In study 2 we document a similar effect in much younger children: three-year-olds (3;0, N=20) produced irregular plurals better in more predictive frames.

The results reveal a novel effect of linguistic context on children's production accuracy and highlight the importance of larger distributional patterns in children's language from early on. Moreover, though predictability plays an important role in adult language, it has been less studied in children. Our findings, that children are more accurate in more predictive frames, underline the potential importance of predictability in child language, and the concept of prediction in models of learning. We discuss ways to tease apart the effect of frequency

and predictability in other domains.

Input (in)sensitivity in the acquisition of novel phrasal constructions

Jeremy K. Boyd¹, Elizabeth Wonnacott², Jennifer Thomson², Adele E. Goldberg³, ¹University of Illinois, ²University of Oxford, ³Princeton University

Studies of child language regularly point to input-related factors as shaping children's linguistic competence. In contrast, research on adult language acquisition often finds that adults are to some extent insensitive to the input. The present work assesses these disparate findings jointly in a novel construction learning paradigm. Participants witnessed instances of a phrasal construction with a novel form and meaning (e.g., VN₁N₂, where the construction describes *approach* events in which N₂ approaches N₁ in a manner encoded by V: so *Migging dog gorilla* would refer to an event in which a gorilla somersaults towards a dog). After exposure, participants' knowledge of the construction was tested.

Experiment 1 looked to see if children and adults would show different test behaviors in a forced-choice comprehension task, even when their exposure to the construction was identical. Adults readily generalized beyond the input, whereas five and seven-year-olds were more conservative in extending the knowledge garnered during exposure to new constructional exemplars.

Experiment 2 varied type frequency in the input, and tested using act-out comprehension and production tasks. Five-year-olds who saw four verbs in the input showed good generalization to constructional exemplars containing new verbs, but those who saw only one verb were significantly more conservative. Adults generalized beyond their experience, regardless of the input.

These findings indicate that language learning does not reduce to the input. Learners come to the task with different prior expectations about language, which may lead to conservative behavior in children, and potentially anti-conservative behavior (i.e., overgeneralization) in adults

Processing cue frequencies across constructions

Silke Brandt¹, Elena Lieven^{1,2}, Michael Tomasello¹, ¹MPI-EVA, ²University of Manchester

Previous research suggests that children follow those cues that are frequent and reliable in their language, and that they use the same cues for the processing of both simple and complex constructions (e.g., Bates & MacWhinney, 1987; Diessel & Tomasello, 2005). We found that word order is less reliable, and that case marking is less frequent in transitive relative clauses (RCs) than in simple transitives in German child-directed speech. In Experiment 1, German children heard simple transitives and transitive RCs without case marking (*das Pferd schubst das Schwein* (the-NOM/ACC horse pushes the-NOM/ACC pig)) and were asked to point to one of two movies that only differed in semantic role assignment. Children at 3;0 (n=24) were significantly more likely to follow word order and interpret the simple transitives as subject-first than the transitive RCs. Children at 6;0 (n=16) interpreted both constructions as subject-first. In Experiment 2, children heard simple transitives and transitive RCs with case marking, which signalled either a subject- or object-first reading (e.g., *den Hund schubst der Löwe* (the-ACC dog pushes the-NOM lion)). Children at 3;0 (n=24) could only interpret the subject-first sentences correctly. Children at 6;0 (n=24) also understood the object-first simple transitives, but did not use case to correctly interpret the object-first RCs. This suggests that children's calculation and sensitivity to cue frequencies and reliabilities are initially bound to specific constructions and not readily generalized across construction inventories. Cue frequencies also interact with other cognitive and linguistic factors, such as perspective shifts and working memory, which effect the processing of object-first RCs.

Flat frequency distribution facilitates learning of novel morphological constructions

Grzegorz Krajewski¹, Ann-Kristin Siebenborn², ¹University of Manchester, ²Ludwig-Maximilians-Universität

The aim of this study was to test how the shape of its frequency distribution affects learning of a novel construction. Results of Casenhiser and Goldberg (2005) suggest that such learning is easier when some items occur in a given construction more frequently than others (skewed distribution) than when all items are evenly distributed (flat distribution). On the other hand, a growing body of research (Armon & Snider, 2010; Matthews & Bannard, 2010) show that generalisations of partially schematic constructions might be easier, if their distributions are characterized by greater entropy. Since the flatter a distribution the greater its entropy, it would suggest a facilitatory effect of flat distributions. We examined the role of the skewness of a distribution with respect to morphological constructions. To better accommodate for the continuous nature of this property, we tested three rather than two levels of skewness. Ninety-three children (5;7-7;0) heard a novel verbal prefix (*va-* meaning "pretence") 12 times with 6 familiar verbs. The distribution of the verbs varied as a between-subject factor. In the flat condition each verb was heard twice (2-2-2-2-2-2), in the skewed condition one verb was unusually frequent (7-1-1-1-1-1), with the semi-skewed condition lying in-between (5-3-1-1-1-1). The children then heard the prefix with 12 different familiar verbs, while watching 12 pairs of simultaneously played video clips. Each time, they had to point to a corresponding clip. The results show a significant and consistent effect of the skewness of the distribution: the flatter the distribution, the better the children's performance

SATELLITE 2
MORNING SYMPOSIA
AMPHITHEATERS E•F•G•H

10:15 – 12:30
Amphitheater E • Satellite 2
Symposium Session 5 • E

RULES VERSUS CONSTRUCTIONS: A DEBATE ON QUESTION ACQUISITION

Convener Ben Ambridge, *University of Liverpool, UK*

Description:

The major debate in child language acquisition is between generativist and constructivist approaches. Questions are an ideal test case for this debate as they constitute a prime example of a structure that is formed by abstract formal rules under the former account and (initially) lexically-specific constructions under the latter. Furthermore, relative to other structures, questions display a high rate of errors, for which both approaches must account. This symposium brings together four groups of leading researchers – all of whom have published numerous papers on this topic – for a debate on question acquisition. The symposium follows a unique format in that after each 20-minute presentation, a discussant from the opposing "side" will present a 5-minute rebuttal (leaving 5 minutes per talk for audience questions). The first two talks focus on English with Pozzan, Tornyoova & Valian (rebuttal: Ambridge) and Cameron-Faulkner & Theakston (rebuttal: Westergaard) presenting elicited imitation/production data in support of the rule-based and construction-based approach respectively. The final two talks each contrast English with a V2 language (German/Norwegian), with Schmerse et al. (rebuttal: Valian) and Westergaard & Bentzen (rebuttal: Theakston) using corpus/experimental data to argue for the construction-based and rule-based approach respectively. As is clear from the abstracts, all four groups of researchers broadly agree with regard to the predictions made by each account. This symposium therefore constitutes a unique opportunity for researchers from the two major theoretical approaches to child language acquisition to come together to debate the empirical evidence for and against each position

The acquisition of yes/no and wh-questions in English

Lucia Pozzan, Lidiya Tornyoova, Virginia Valian, *CUNY*

We contrast two general models of the acquisition of English questions, rule-based vs. construction-based. On rule-based models, children generalize over abstract syntactic features of their language; on construction-based models, children are limited to low-level regularities. Two studies (elicited imitation and production) of question acquisition support the first model. The elicited imitation study with 20 2-3-year-old children shows no difference in subject-auxiliary inversion rates in *wh-* (95%) and *yes/no* questions (91%). One would predict that result if children recognize both as questions, but not if children's productions are based only on frequency differences in the input, where inversion occurs more in *wh-* than *yes/no* questions. The elicited production study with 15 3-5-year-old children, in which all productions used main verb *be*, found more inversion in *yes/no* (98%) than *wh-*questions (90%), contrary to the predictions of models based on input frequency, and largely due to performance with *why*. *What* (98%), *which* (94%), and *when* (93%) showed similar inversion rates; *why* (85%) showed significantly less. This pattern does not mirror input frequency: in 8 CHILDES corpora only 2% of adult utterances were *wh+be* main questions, of which 88% were *what* questions, 7% *why*, 4% *which* and 1% *when*. The different behavior of *why*-questions is captured by acquisition models in which children are sensitive to abstract properties of their language (e.g., a dedicated position for *why* in the left periphery). In summary, a model of English-speaking children's questions should posit sensitivity to abstract features rather than sensitivity solely to frequency of specific word combinations.

What factors affect children's production of double marking errors in questions?

Thea Cameron Faulkner, Anna Theakston, *University of Manchester*

Children sometimes produce double-marking errors in their early questions, producing both an inverted and clause-internal auxiliary (**Can he can't find his shoes?*). These errors are more frequent with negative than positive internal auxiliaries. Under some generativist accounts, this reflects children's belief that the neg-criterion can be satisfied clause-internally, licensing AUX-AUXn't but not AUX-AUX errors. Constructivist accounts attribute these errors to input frequencies of particular Wh+AUX and AUX+Subject combinations. In the current study, we test accounts of double-marking errors by examining the factors affecting children's production of positive and negative *yes-no* and *wh-*questions. We present data from a sentence repetition study carried out with 3-4-yr-olds (Study 1) and examine diary data from two children (Study 2). In Study 1, children were asked to repeat/correct grammatical and ungrammatical *yes-no* and *wh-*questions. The results showed higher rates of correct performance for high frequency (e.g. *What+can+you*) than low frequency frames (e.g. *What+can+she*, $F=21.83$, $p<0.001$). There were interactions between question type (*yes-no/wh-*) and rate of correction of double-marked positive vs. negative questions ($F=4.92$, $p=0.03$), and differences

between auxiliaries (e.g. *can/will/could*) in the rate at which children repeated double-marking errors ($F=10.59$, $p<0.001$) which also interacted with error type ($F=8.03$, $p=0.01$). In Study 2, we examined the nature of children's spontaneous double-marking errors which broadly corroborated the experimental data. We conclude that although these data are consistent with constructivist approaches to acquisition, they also highlight the need for more sophisticated models of development to better explain the precise pattern of errors.

Why are non-inverted wh-question errors observed in English but not German? A cross-linguistic experimental/corpus study

Daniel Schmerse¹, Ben Ambridge², Silke Brandt¹, Caroline F. Rowland², Elena V. M. Lieven¹, ¹MPI-EVA, ²University of Liverpool

Object *wh*-questions with an auxiliary have the same structure in English and German (*What will we eat / Was wollen wir essen?*). Why, then, are non-inversion errors (e.g., **What we will eat?*) reported only for English-speaking children? First, we conducted an elicited production study to investigate whether English children ($N=16$) indeed show higher rates of non-inversion error than German children ($N=16$) on closely-matched stimuli (ages 3;0-3;9; $M=3;6$). In each language, 24 Object *wh*-questions, all of the form *What AUX we VERB / Was AUX wir VERB?*, were elicited. The target questions used three different auxiliaries - one high frequency (*can/können*), one medium frequency (*will/wollen*) and one low frequency (*should/dürfen*). English children produced more non-inversion errors (9% vs 0%) and fewer correct questions (35% vs 57%) than their German counterparts, and performed significantly worse with the lower frequency auxiliaries *will* (23% correct) and *should* (18%) than *can* (52%; $F_{2,30}=8.65$, $p<0.01$). This pattern would be predicted under a constructivist account on the assumption that German uses a far greater variety of verb forms (both auxiliaries and tensed main verbs) in the post *wh*- position than English. To investigate whether this is the case, we analyzed 1504 *wh*-questions produced by six children from the Szagun corpus (ages 2;0-3;0). On average, German children produced 18.33 different verb types in this position ($SD=9.00$), as compared to just six (*are/is/'s/can/was/did*) for comparable English children (Dabrowska & Lieven, 2005). This greater type frequency means that German children acquire a productive *wh*-AUX/VERB construction earlier than their English counterparts.

The Acquisition of Question Word Order in English and Norwegian: Micro-cues vs Frames

Marit Westergaard, Kristine Bentzen, University of Tromsø

This paper discusses the issue of rule-based vs. frame-based learning in relation to the acquisition of question word order in English and Norwegian. While generativist models assert that children set major word order parameters and acquire a rule of generalized V2 or subject-auxiliary inversion at an early stage, constructivist work argues that children are creating and combining *frames* of frequent word order combinations (e.g. *What does THING PROCESS?*).

Taking into account the considerable word order variation found in *wh*-questions in the adult language, the paper questions both approaches. Investigating corpus data on English and Norwegian child language (age 1;9-3;9), we find that children make fine syntactic distinctions from early on, e.g. between monosyllabic and phrasal *wh*-elements (in Norwegian) or between main and embedded contexts (in both languages). To the extent that children produce non-target-consistent forms, they typically have more restricted grammars than adults, making even finer linguistically relevant distinctions (e.g. between auxiliaries and the copula in English). We analyze these findings within a cue-based model of language acquisition and argue that children are sensitive to *micro-cues*, small pieces of (hierarchical) structure formed in children's L-language in response to relevant input. Micro-cues may account for children's early target-consistent production and the lack of syntactic (over-) generalization in the acquisition process. Furthermore, we show that error prediction in experimental data accounted for by a frame-based approach (such as auxiliary doubling and different error patterns for different question and verb types) may also be explained by an analysis based on movement rules and micro-cues.

10:15 – 12:30

Amphitheater F • Satellite 2

Symposium Session 5 • F

DEVELOPMENT OF VERBAL AND GESTURAL EXPRESSIONS OF MOTION EVENTS: NEW INSIGHTS FROM DIFFERENT LINGUISTIC ENVIRONMENTS AND AGES

Convener Michèle Guidetti, *University of Toulouse*
Discussant Maya Hickmann, *Université Paris 8-CNRS*

Description:

The aim of this symposium is to contribute to the general discussion about the impact of crosslinguistic and developmental differences on conceptualization and multimodal expression of motion. A motion event is characterized by translocation, specific path (up, down), manner (to run, to fly) and also by the fact that it is caused by an agent or is voluntary. Languages of the world seem to follow two possible patterns to describe

motion: verb-framed languages like French encode path in a main verb and manner in a gerundium or in a separate clause as in Turkish, satellite-framed languages like English encode path in a particle and the verb conveys the manner. Since gestures we use are linked to the speaking process, scholars have recently shown that gestural depictions of motion events are influenced by language-specific ways of expressing motion.. However, little is known on the developmental trajectories leading to the lexicalisation and the gestural patterns of these language-specific preferences. The papers presented here rely on data (elicited and spontaneous) collected in a variety of cultural and linguistic contexts (French, Czech, Japanese, Turkish, Tamil and Dutch) and in different age groups (from the end of the first year to adults). These papers reveal overall that the language specificities are evident from the outset but also seem to evolve throughout development in both modalities. The findings shed new light on language-specific versus general aspects of language development from a multimodal perspective as well as on the development of speech and gesture links.

Early language-specificity in Turkish children's caused motion event expressions in speech and gesture

Reyhan Furman, Asli Ozyurek, *Max Planck Institute for Psycholinguistics*

Caused motion events (e.g. *the girl pushed the basket into the room*) are basic events where an Agent (the girl) performs an Action (push) that causes a Figure (basket) to move in a spatial Path (into) to a Goal (the room). Languages express these semantic elements differently. Verb-framed languages (e.g. Turkish) encode the Path in the verb, whereas satellite-framed languages (e.g. English) encode it in a non-verbal element. Turkish encodes caused motion with verbs which specify only Action and those that conflate Action and Path. Turkish children are expected to use both verb types when talking about caused motion. Here we study how Turkish-speaking children start to describe caused motion events and also examine their co-speech gestures. We sampled the spontaneous speech and co-speech gestures of eight Turkish-speaking children observed monthly between 12 and 36 months. Children started with verb-only constructions at 14 months and after 17 months used verb-plus-argument constructions. They used both Action and Path verbs as well as those encoding only Action, showing language-specificity from the outset. Co-speech gestures, equal amounts of iconics (action/motion depictions and points), appeared around 20 months. Children's gestures conflated Action and Path as well as encoding only Action early on. Gestures continued to encode elements not conveyed in speech until 36 months-due to acceptable argument omissions in Turkish. Our findings show that linguistic event representations are influenced by the specific language children learn from the outset and this language-specificity is also evident in children's gestures encoding caused motion.

Development of iconic gestures and sound symbolic words in motion event narratives in Japanese

Sotaro Kita¹, Asli Ozyurek², Shanley Allen³, Tomoko Ishizuka⁴, ¹*University of Birmingham*, ²*MPI, Nijmegen*, ³*Boston University*, ⁴*Tama University*

Speaking and gesturing are tightly coupled behaviors. A substantial number of these gestures exhibit iconic resemblance to their referents in motion event descriptions. We examined the development of early links between such gestures and sound symbolic words in a language rich with such words, namely, in Japanese. Thus we looked at (1) how often events are referred to with words with universal sound symbolism and (2) whether sound-symbolic words play a special role in a speech-gesture link in young children's narratives. Japanese 3-year-olds, 5-year-olds and adults (n = 20 in each group) described motion events. 3-year-olds used sound symbolic words such as "pyonpyon" (repeated swift jumping) more frequently compared to adults and sometimes even invented novel sound symbolic words to refer to manner of motion. The meanings of these conventional and invented sound symbolic words were recognizable by people without knowledge of Japanese. This indicates that children have access to features of universal sound symbolism and preferred linguistic expressions with such features. We also found that iconic manner gestures were coupled specifically with sound symbolic manner words in children, but with both sound symbolic and non-sound symbolic manner words in adults. Thus, the coupling of iconic gestures and speech is specifically strong for sound symbolic words in younger children, which then spreads to non-sound symbolic words during development. This indicates that speech-gesture coupling starts out first in sound symbolic words because both iconic gestures and sound symbolic words have non-arbitrary motivated form-meaning relationships

Development of speech-gesture relations in the context of French and Czech descriptions of motion events

Katerina Fibigerova¹, Michèle Guidetti¹, Lenka Sulova², ¹*University of Toulouse*, ²*Charles University, Prague*

Based on the theoretical background combining the hypothesis of linguistic relativity, the verb-framed vs. satellite-framed language typology and the gesture-speech tandem conception, we studied the language and age impact on the way French and Czech natives speak and gesture when describing motion.

French and Czech 5 and 10 year old children and adults (N = 24 in each group) told just watched animated cartoons containing voluntary motion events. The analysis of their speech and gesture brought five main results:

(1) Children adopt adult language-specific descriptive patterns very early. French children verbalise motion path (up/down) rather than manner (walking/running) while Czech children express both path and manner.

(2) Semantic density of motion descriptions grows with age but in language-specific ways. In French, an increasing number of clauses was observed: manner information appears in a second clause in addition to a path clause. In Czech, a decreasing number of motion expressions was found: path and manner information are conflated into one verb rather than split into two separate expressions.

(3) Children produce co-speech iconic gesture less frequently than adults.

(4) Concerning the gesture-speech relation, we observed cases of semantic redundancy (path&manner in speech – path&manner in gesture) as well as those of non-redundancy (path&manner in speech – only path in gesture).

(5) Gesture provides more appropriate representation of originally viewed manner than speech. When verbally conveyed manner is less appropriate, gesture completely excludes manner information or makes corrections but almost never displays incorrect manner.

Speaking and gesturing about placement: The development of verb meaning in Tamil and Dutch

Marianne Gullberg¹, Bhuvana Narasimhan², Lund University,²University of Colorado

Languages differ in the semantic granularity of verbs used to describe placement (*put* vs. *stand/lay*), posing different learning challenges for children acquiring these languages. We know that Tamil-learning children use both a high-frequency general verb (*veyyii* 'put') and low-frequency caused posture (CP) verbs (*nikka veyyii* 'make stand', *paDka veyyii* 'make lie') accurately early, whereas Dutch children have difficulties with the obligatory and high-frequency CPs (*zetten* 'set/stand', *leggen* 'lay') even at age 5. Here we explore how semantic systems develop crosslinguistically by investigating gesture and speech together. We examine how Tamil and Dutch four- and six-year-old children talk and gesture about placement compared to adults when describing videos depicting objects placed vertically or horizontally (e.g. 'put a cup on a table'). Results show that Tamil adults prefer the general verb *veyyii* and gesture about Path, while Dutch adults use the CP verbs with object-incorporating gestures. The youngest Tamil children are adult-like both in verb preference (*veyyii*) and gesture (Path) whereas the youngest Dutch children differ from adults both in verb use (over-extension of *leggen*) and gesture (Path). Older Tamil children increase use of CPs and object-incorporating gestures in non-adult-like ways. Older Dutch children also shift towards increased differentiation of the CPs and use of object-incorporating gestures, but in adult-like ways. Children learning both languages thus move from a focus on translocation only to an increased focus on object orientation - an alternative in Tamil but obligatory in Dutch. We discuss the implications of our findings for acquisition and gesture studies.

10:15 – 12:30

Amphitheater G • Satellite 2

Symposium Session 5 • G

BRIDGING L1 AND L2 ACQUISITION: SYMPOSIUM IN HONOR OF BRIAN MACWHINNEY

Convener Ping Li, *Pennsylvania State University*

Description:

Recent years have seen laudable efforts in the integration of first language (L1) and second language (L2) acquisition research. Acquisition of L1 and that of L2 clearly show significant differences, particularly with regard to the age of acquisition effects, but the two processes also appear to tap into similar computational and neural mechanisms (Hernandez, Li, & MacWhinney, 2005). Understanding of the mechanisms underlying L1 and L2 and their interactions is crucial for a comprehensive theory of language acquisition. Brian MacWhinney has been a forerunner in bridging research in L1 and L2 acquisition. His contribution to the fields of language acquisition and applied psycholinguistics are many, the most notable of which is the development of the Competition Model that has provided a unified framework for understanding both first and second language acquisition (MacWhinney, 2010; Bates & MacWhinney, 1982). In this symposium, researchers gather at IASCL to celebrate MacWhinney's contributions and to discuss the latest research findings from studies of monolingual and bilingual infants, children, and adults with a variety of theoretical perspectives and behavioral, computational, and neuroimaging methodologies.

Is L2 acquisition fundamentally different from L1 acquisition?

Brian MacWhinney, *Carnegie Mellon University*

The Fundamental Difference Hypothesis (Bley-Vroman, 1998, 2009) holds that L2 acquisition is fundamentally different from L1 acquisition, possibly because of Critical Period (CP) effects. Emergentist accounts such as the Competition Model hold that language learning is based on general cognitive mechanisms that are not subject to CP effects. But such accounts have problems explaining why L2 learning is often incomplete or fossilized. To account for this, the Competition Model emphasizes these five risk factors: entrenchment, parasitism, misconnection, negative transfer, and isolation. These risk factors arise from neurological, cognitive, and social configurations that change with development. Counterbalancing each of these risk factors are these protective factors: resonance, internalization, reconfiguration, positive transfer, and participation. In order to achieve successful L2 acquisition, using the same core mechanisms that were available to the child,

the older learner must be helped to maximize use of each of these protective factors. This talk will present evidence in support of analysis from neural network modeling, psycholinguistic experimentation, and studies of the CHILDES and BilingBank corpora.

Why we don't need a theory of language acquisition

William O'Grady, *University of Hawaii at Manoa*

The study of language acquisition, a defining event in human cognitive development, has long occupied a privileged place in linguistic inquiry. I will argue that despite its enormous social importance, language acquisition is an epiphenomenon that arises from a more fundamental and important activity, which I take to be processing. In particular, I will argue that language acquisition is simply something that happens incidentally as learners go about processing the input that arises from exposure to language. On this view, language acquisition involves no mechanisms other than those that are independently required for the processing of form-meaning mappings and therefore does not call for a theory of its own. The proposal will be buttressed with the help of examples from first and second language acquisition, which also help illustrate the differences between these two epiphenomena.

Modeling the interactive dynamics of L1 and L2 lexical development

Ping Li, *Pennsylvania State University*

How does a child rapidly acquire and develop a structured mental organization for the vast number of words in the first years of life? How does a bilingual individual deal with the even more daunting task of learning and representing two lexicons? I present computational evidence here from modeling the lexicon as a dynamical system with regard to its acquisition, structural representation, and competition between L1 and L2. Our *DevLex* connectionist model simulates the developmental changes underlying both monolingual and bilingual language acquisition (Li, 2009; Li et al., 2004, 2007), in particular, by demonstrating how early learning leads to dedicated representational structures that affect the rate and outcome of later development, either positively or adversely. For example, rapid vocabulary growth observed in early childhood (the so-called "vocabulary spurt") is predated and prepared by the system's building of a structural representation that sets up the basic organization of the lexicon. On the other hand, the structural consolidation of the first-language lexicon can adversely impact the representation and retrieval of the second-language lexicon, resulting in parasitic L2 due to reduced plasticity in lexical organization and restructuring (Hernandez, Li, & MacWhinney, 2005). These findings point to the interactive dynamics in which linguistic input, learner characteristics, and timing and history of learning jointly determine the developmental trajectories.

The landscape of word learning in first language, second language, and bilingual acquisition: The search for causes and effects

Barbara Zurer Pearson, *University of Massachusetts*

As the lexicon grows, one's existing store of words plays an increasing role in the learning of new words. For example, phonological memory has been shown to be an important factor in word learning (Gathercole & Baddeley, 1989, 1990, 1993; Gupta, MacWhinney, Feldman & Sacco, 2002). At the same time, the more words one knows, the better the phonological memory, at least for phonemes already in one's inventory (Hoff, 2004; Soares & Hoff, 2000). So increases in phonological memory capacity are both a predictor and a consequence of word learning. It is an empirical question whether the words in one language have this bi-directional effect on lexical acquisition in the other language, as has been argued for in grammar (Gawlitzeck-Maiwald, 2000). Some studies in bilingual first-language acquisition indicate that the link between vocabulary size and utterance length, for example, operates only within languages, not across them (Conboy & Thal, 2006). Nonetheless, different relationships may obtain for different phenomena, and/or in different learning circumstances. Thus, this paper explores cross-language relationships between the lexicon and other cognitive and linguistic achievements for children learning two languages simultaneously, as in bilingual acquisition or sequentially, as in second language acquisition.

Native and non-native speech perception in infancy: The development of lexical-tone and consonant perception

Feng-Ming Tsao¹, Huei-Mei Liu², ¹*National Taiwan University*, ²*National Taiwan Normal University*

Consonant perception undergoes rapid changes during the first year of life. At 10-12 months of age, infants show an improved sensitivity to native consonants but reduced sensitivity to non-native consonants. Would this developmental pattern show in lexical-tone perception? When tested with Mandarin lexical-tone contrasts that are not difficult to English-speaking adults, both English- and Mandarin-learning infants at 10-12 months of age perform better than infants at 6-8 months. However, the older Mandarin-learning infants perform better than English-learning infants of the same age perceiving lexical tones. Thus, both language-specific and language-general mechanisms are involved in learning lexical tones. With regard to consonant perception, our research shows that foreign language exposure between 9-10.5 months of age is effective in changing the

developmental trend. However, the effectiveness is only observed with distributed learning (3 sessions/week) and not massed learning (1 session/week), revealing the role of memory consolidation process in learning non-native consonants. Finally, in support of listening experience on infant speech perception development, could the phonetic features of infant-directed speech (IDS) affect perceptual development? Results show that the expanded vowel space and lexical-tone contours of IDS are positively associated with infant phonetic sensitivity. Our results demonstrate the effects of listening experiences, speech input quality, and memory on infants' learning of speech sounds in the native and non-native languages.

10:15 – 12:30

Amphitheater H • Satellite 2

Symposium Session 5 • H

THE MENTAL LEXICON IN LATER LANGUAGE DEVELOPMENT: INSIGHTS FROM HEBREW

Convener Ruth Berman, *Tel Aviv University*
Discussant Batia Seroussi, *Tel Aviv University*

Description:

School-age lexical development is examined in relation to structure (phonology/morphology), semantics (concreteness/imageability) and usage (familiarity/frequency). Presentations deal with complementary facets of tests at three age-groups (schoolchildren aged 11-12, adolescents aged 15-16, and adults). After a brief introduction, talks focus on (1) the sub-lexical structural level in online and offline processing of derived nouns in Hebrew; (2) lexical factors in word association tasks; (3) semantic abstractness and syntactic structure in defining, interpreting, and producing sentences with target items; and (4) discussion of the impact of these factors on the developing lexicon. Results on tasks varying in linguistic difficulty and cognitive demands demonstrate the effect of both language-particular and language-general factors on the developing lexicon. For example, a strong Hebrew-specific impact emerged for morphological roots in contrast to the importance of phonology in languages like English or Dutch, whereas the factors of lexical frequency and familiarity and relative concreteness were consistent with findings of research in other languages as well. The lexicon of grade-school children was shown to differ significantly from that of high-school students, whose responses were closer to yet still distinct from those of adults in both quantity and quality. Across the population, responses to different tasks demonstrated that the more fully established is lexical knowledge, the more speakers rely on factors of semantic content and pragmatic context, where younger children seek recourse to word-internal structural cues. Findings highlight lexical knowledge as multidimensional and as pursuing a long developmental route into and even beyond adolescence

Introduction: Goals and design

Ruth A. Berman, *Tel Aviv University*

The symposium derives from a large-scale investigation of the morphology-semantics interface in the mental lexicon. Command of a "literate lexicon" in later, school-age language development is examined for different facets of the notion "word" by tasks involving comprehension and production of Hebrew derived nouns. To probe word-internal structure, the Hebrew-specific variable of **Consonantal Root** is examined through tests of Relatedness between groups of nouns (e.g., the stimulus noun *taxazit* 'forecast' is morphologically and semantically related to the noun *xizuy* 'outlook', morphologically to *maxaze* 'play' – all from the root *x-z-y* – phonologically to *xazazit* 'lichen', and semantically to *nibuy* 'prediction'), with results compared to online masked-priming tasks. The lexical usage factor of **Familiarity/Frequency** [an F-score], measured by responses to two Word Association tasks (single and multiple), emerges as having a major impact on form-meaning relations: Semantic/pragmatic associations are favored for high-F items and structure-based associations for low-F nouns, in interaction with age. The semantic variable of **Concreteness**, tested by three written tasks -- Definitions, Interpretation in Context, and Sentence-Construction – strongly affects development of form-meaning mappings, both in and out of context, interacting with syntactic structure. Construal of Hebrew nouns by schoolchildren and adolescents compared with adults reveals acquisition of the "literate lexicon" as a multi-faceted process, which evolves in quality as well as quantity well beyond grade-school age, constituting a critical component of later language development.

Sublexical offline and online processing

Bracha Nir, *Haifa University*

The Hebrew-specific morphological factor of consonantal root was examined by written offline tests (multiple-choice and ranking) and online priming tasks. Schoolchildren, adolescents, and adults were tested on four types of relatedness between nouns (e.g., for the input item *xovéret* 'booklet': semantically -- *pinkas* 'notebook'; phonologically -- *gevéret* 'lady'; morphologically by the shared root *x-b-r* -- *xaverut* 'friendship'; and morphologically plus semantically -- *maxbéret* 'copybook'), with items further subdivided by the variables of root transparency (full/defective) and frequency/familiarity (high-F/low-F). A clear age-related change emerged in ratio of semantic to structure-based responses: Older participants favored semantics, while younger

participants gave more morphological responses, particularly to words with defective roots and to low-F words. Younger children were more strongly affected by task demands: Responses on the Multiple-Choice test ranged overall from semantic to morpho-semantic to morphological, with few phonological choices; responses on the cognitively more demanding Ranking task favored morphological distracters overall, with the youngest participants also selecting more phonological distracters for low-F items. Online Priming tasks given to another group of adult participants further underlined the interaction of familiarity/ frequency with root transparency. Semantic as well as morphological effects were found for high-F words with transparent roots but not for low-F words or defective roots. Different methods of studying word-relatedness underscore both the gradual developmental path of lexical knowledge and the multifaceted nature of lexical processing. In temporally restricted priming, word-relatedness is activated simultaneously at all levels; more monitored offline strategies yield a radically different outcome, favoring one particular type of relationship.

Word associations in lexical development

Batia Seroussi, *Tel Aviv University*

The impact of lexical familiarity/frequency was evaluated by Free Association tasks given to schoolchildren, adolescents, and adults. Participants were asked to provide single associations to one set and multiple associations to another set of Hebrew derived nouns, including both familiar/frequent (High-F) items (e.g. *migdal* 'tower') and unfamiliar/infrequent (Low-F) items (e.g., *gdil* 'tassel'). Results of over 10,000 associations were coded in three major categories, each further sub-categorized: (1) semantic-pragmatic (e.g., to *migdal* -- *binyan* 'building', *góva* 'height'), (2) morphological/phonological (e.g., *gadol* 'big', *bdil* 'tin' to *gdil*), and (3) syntagmatic (e.g. *gavóa* 'tall' to *migdal*). Significant effects emerged in both amount and type of responses for the variable of familiarity/frequency in interaction with age-schooling level. Overall, High-F nouns received significantly more associations than Low-F nouns. Qualitatively, associations to High-F nouns revealed clear preference for meaning relations while associations to Low-F items were mainly structure-based. Developmentally, there were relatively few syntagmatic responses but, contrary to expectations, a marked increase emerged for syntagmatic as well as semantic associations with age, accompanied by an age-related decrease in morphological and phonological associations. There were also dramatic age-related changes in responses to Low-F nouns and a marked difference between 6th graders and the two other groups in proportion of semantic-pragmatic as against structure-based responses. Word-association tasks thus proved highly sensitive to Hebrew-specific factors as well as to more general lexical variables that play a role in the qualitative and quantitative changes characterizing later, school-age language development.

Knowledge of Words Isolated and in Context

Lyle Lustigman, *Tel Aviv University*

The semantic factor of concreteness was investigated in tasks requiring schoolchildren, adolescents, and adults to define, interpret, and construct sentences with Hebrew derived nouns, half concrete (e.g., *mazgan* 'air-conditioner') and half abstract (e.g., *bexira* 'choice'). Participants were required to provide Definitions of 10 familiar/frequent nouns; Interpretations of 20 unfamiliar/infrequent nouns presented in sentential contexts; and Sentence-Construction with another 20 nouns. Clear developmental trends emerged on all tasks, with concrete nouns more accessible to younger children. In **Definitions**, there was an age-related increase in superordinate terms for concrete nouns and in synonyms and antonyms for abstract nouns, and more relative clauses were used with concrete than abstract nouns, increasingly from 10th grade. **Interpretations** showed gradual age-related increases in semantically-based responses for both concrete and abstract nouns, while across age-groups, only abstract nouns relied on word-internal morphology together with semantic-pragmatic inferencing. **Sentence-Construction** with concrete nouns improved from 6th to 10th grade, and with abstract nouns from 10th grade to adults; subject-position was favored for abstract nouns and non-subject for concrete nouns in all groups; concrete nouns elicited fewer modifiers than abstract with an overall age-related increase in open-class lexical modifiers. Acquisition of concrete versus abstract nouns thus differs not only in rate and amount, it reflects two orthogonal developmental routes, with abstract nouns showing more dramatically age-related patterns than concrete. More generally, semantics, pragmatics, and syntax all play a role in later lexical development, proceeding into and beyond adolescence.

SATELLITE 1
AFTERNOON SYMPOSIA
AMPHITHEATERS A•B•C•D

14:30 – 16:45

Amphitheater A • Satellite 1

Symposium Session 6 • A

EARLY GENDER DIFFERENCES IN LANGUAGE: A DEVELOPMENTAL PERSPECTIVE

Convener Stéphanie Barbu, *Université de Rennes 1 - CNRS*

Discussant Marc Bornstein, *NIH/NICHHD*

Description:

There is great variability among children in the time course of language acquisition. Gender has been repeatedly identified as a source of variation in various aspects of language. A growing body of empirical data indicates that girls develop certain features of language earlier than boys do. However, the magnitude, consistency and stability across time of these differences remain in question. This symposium explores the onset and the developmental dynamics of gender differences, from the first year to the entry to school, in various aspects of language (phonological, lexical, syntactic, and gestural skills) using multiple measures in different languages (American English and French). The first paper confirms quantitative differences in first word production and combination at 24 months, and also reveals qualitative differences. The second paper shows that gender differences appear even earlier in gesture-speech combinations that also predict verbal skills at later ages from the first three years to school entry. The third paper compiles several studies evidencing small but consistent gender differences in vocabulary after the first year and before 7 years, but no systematic differences between girls and boys in stability. The final paper shows that children's social backgrounds influence the developmental course of gender differences between 2 and 6 years and explores the role of speech exposure in the acquisition of categorical and variable phonological alternations. Overall, the symposium identifies the factors responsible for individual variation in language development and addresses important methodological issues. Future research needs to study in much depth the causes of gender differences

Dolls vs. cars: Quantitative and qualitative differences in first words production according to gender at two years of age

Sophie Kern¹, Toni Alfaiate², Barbara Heude², Maria De Agostini², ¹*Laboratoire Dynamique du Langage*, ²*INSERM*

Prior studies revealed quantitative differences in the first steps of language production according to sex with lower performance in boys than in girls. The aim of this study was to evaluate first words production according to sex and particularly to investigate the presence of qualitative differences among the two groups. To evaluate productive lexicon size and grammatical emergence, a short version of the French adaptation of the MacArthur-Bates Communicative Inventories was administered to a sample of 1,128 twenty-four months old French monolinguals (a subsample of the Eden mother-child cohort). Girls produced significantly more words, combined significantly more often words and produced longer utterances than boys. Grammatical distribution of produced words was also significantly different among the two groups with a higher percentage of predicates and nouns reported in girls. An item-by-item analysis revealed also differences as a function of gender in 2/3 of the listed words. However, these results were less important when lexicon size was controlled. These findings confirm quantitative differences in language acquisition according to sex but show also some qualitative ones as early as 24 months of age

Do early sex differences in gesture predict later language outcomes for boys and girls?

Seyda Ozçaliskan¹, Caroline Trofater², Susan Goldin-Meadow², ¹*Georgia State University*, ²*University of Chicago*

Children vary widely in how quickly they achieve linguistic milestones, with girls producing their first words and first sentences at a younger age than boys. The question we ask here is whether we see evidence of sex differences in the onset of communicative skills in children's gestures before they become apparent in speech, and, if so, whether the observed sex difference in gesture is a reliable predictor of children's language abilities at the later ages. To explore these questions, we observed 22 girls and 18 boys every four months as they progressed from one-word speech to multi-word speech between ages 1 and 3; we also assessed their language abilities at ages 4;8 and 6;4 as they entered kindergarten and first grade, respectively. We found that boys not only produced their first sentences (i.e., speech+speech combinations; 'drink juice') three months later than girls, but they also produced gesture-speech combinations expressing the same types of semantic relations ('eat'+point at cookie) three months later than girls. Interestingly, sex differences in early language abilities remained robust at the later ages, with girls exceeding boys in their comprehension and production of increasingly complex semantic relations in speech at school entry. More importantly, we found early gesture-speech combinations to be a good predictor of spoken language skills at school entry, particularly for girls.

Overall, our results suggest that gesture provides the first reliable sign that boys are likely to lag behind girls in the onset of increasingly complex language abilities.

Small but consistent gender differences in children's vocabulary

Marc H. Bornstein¹, ¹*National Institute of Child Health and Human Development*

In several converging studies from the 2nd through 5th years, I evaluated the role of gender in children's vocabulary and the relative stability of vocabulary in girls and boys across age. Past reviews of the literature concluded that gender differences in verbal ability in childhood favored girls, but were small in magnitude. For example, Bornstein and Haynes (1998) found that girls score higher than boys at 20 months in level of child language as observed in conversation, assessed by experimenter, and reported by mother. Studies focused on the onset of girls' putative advanced language sophistication relative to boys as well as the age when this difference attenuates and whether there are also gender differences in stability of language. We found no systematic differences between girls and boys in stability (both were moderately stable), but girls scored significantly and consistently higher than boys in multiple measures of vocabulary after the first year and before 7 years; however, effect sizes were small. It would appear that, during early childhood (2 to 6 years), girls are more verbal than boys. Perhaps maturational differences in girls versus boys affect their language capacities, or perhaps parents speak to their girls more or in more verbally promotive ways than to their boys. The findings have implications for understanding children's language and the representativeness of sampling child language.

Gender differences in language vary according to family socioeconomic status: what is the influence of mothers' and fathers' input during early childhood?

Stéphanie Barbu¹, Bahia Guellai¹, Ludivine Glas¹, Aurélie Nardy², Jean-Pierre Chevrot², Alban Lemasson¹, ¹*University of Rennes 1 - CNRS*, ²*University of Grenoble 3*

Family SES and related differences in children's input have a major influence on various aspects of language acquisition. Yet interactions between gender and SES have rarely been explored. Moreover, whether studies found gender differences or not seems to depend on children's age. To investigate whether gender differences are consistent across ages and socio-economic statuses, we focused on how children, from 2 to 6 years old, from two contrasting social backgrounds, acquire a frequent phonological alternation in French: liaison. Liaison is prone to evidence the impact of quantitative and qualitative differences in input. It is a strong indicator of frequency effects. And there are two types of liaisons: obligatory liaisons, which do not vary with speakers' socio-demographic characteristics, and variable liaisons, which are more frequently realised by higher-SES adults and women. In this perspective, 240 children, all French native speakers, participated in a picture naming task eliciting the production of both types of liaisons. We evidenced gender differences for obligatory liaisons in lower-SES children, but not in higher-SES children; lower-SES boys presented the lowest performances. Social differences were marked at the youngest age, but decreased with time, especially for lower-SES girls. Variable liaisons revealed social differences that appeared progressively during preschool years, but no gender differences. 80 parents and their child participated in another picture naming task and told a story to their child to investigate whether these differences were related to differences in the input girls and boys receive in relation to parent and/or social background.

14:30 – 16:45

Amphitheater B • Satellite 1

Symposium Session 6 • B

CONSTRUCTING VERBS AND THEIR MEANINGS

Conveners: Eve Clark¹ and Edy Veneziano², ¹*Stanford University*, ²*Université Paris Descartes-CNRS*

Discussant: Bruno Estigarribia, *University of North Carolina*

Description:

In order to use verbs in an adult-like manner, children, depending on the language they are learning, need to know several inter-related pieces of knowledge: their core meaning; that verbs can take different forms and how the meanings of those forms contrast with each other; which meaning dimensions are added by inflection (e.g., person, number, aspect, tense, negation) and where else such dimensions are expressed (e.g., in auxiliaries, semi-auxiliaries, and modal verbs; in pronouns; in negative particles); and how these elements are linearly ordered with respect to the core verb and to each other. In short, learning what a verb means and how to use it is a complex task for the language learner, a task we focus on in this symposium. This symposium will address the construction of knowledge about the use of verbs and about their paradigms in first language acquisition from different perspectives and in three languages: (a) the contrasting forms children start to produce and are exposed to in Mexican Spanish (Rojas); (b) the interface between verb morphology and syntax in the development of French verb and the contribution of conversation to this development (Veneziano & Clark) (c) adults' uses of verb constructions in reply to their children's use of homophonous verb forms in French (Clark and de Marneffe), and (d) the contexts (comparison and contrast) that favor children's learning

the meanings of new verbs in children acquiring English (Childers).

Acquiring verbs in French: Inflections, constructions and conversational usage

Edy Veneziano¹, Eve V. Clark², ¹Université Paris Descartes-CNRS, ²Stanford University

When children acquire verbs, they must not only identify the core meaning of each verb, but also discover that a verb meaning can be modulated by the addition of inflections and grammatical morphemes to express such features as tense, aspect, number, and person. In this paper, we report on early stages in the process of verb acquisition in four children acquiring French, videotaped and recorded longitudinally from the time they used verbs in one form to the period when they produced two or more forms of a verb, and started to add grammatical morphemes that modulated the relevant verb meanings. Once children started producing two different inflected forms of a verb, they seemed to use a strategy of adding grammatical morphemes onto the left edge as a function of the particular form of the verb involved. That is, with infinitival or participial forms, they first added the semi-modal future *aller* (usually *va*) and modals like *vouloir* (*veux*), *falloir* (*faut*), and *pouvoir* (*peux*) as well as auxiliaries like *avoir* (usually *a*) and *être* (usually *est*), and only later added pronouns in front of the modal or auxiliary. But with present tense forms, they started out by adding pronouns. This leads to a *décalage* with children producing adult-like NP+VP sentences earlier with present-tense verb forms than with infinitival or participial ones. This development is related to the conversational contingencies in which these verb forms are used, and the meanings they express.

Building on Adult Verb Uses

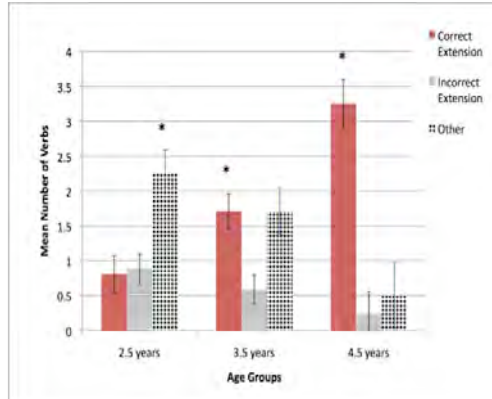
Eve V. Clark, Marie Catherine de Marneffe, Stanford University

Young children attend to the reformulations adults offer of incomplete and erroneous child forms. The present study focuses on adult reformulations produced when young children acquiring French make use of single-word utterances containing a verb form, and how these reformulations can lead children to distinguish between the infinitive (INF) and the past participle (PP) in class-1 verbs, where these forms are homophonous (e.g., *tomber* 'to fall' and *tombé* 'fall-PP, both pronounced /tɔ̃be/). Longitudinal data from two children (aged 1;6–2;3) acquiring French were analyzed for (a) the timing of the child's utterance relative to the pertinent event (anticipatory or following), and (b) the form of the adult reformulation given in the next turn. The findings showed that for anticipatory child verb uses, adults consistently reformulated with a construction containing the infinitive combined with a semi-modal or modal, e.g., *aller/vouloir/falloir/pouvoir* + INF, as in *Il va tomber* or *Il faut enlever la jupe*. But for child uses that follow an event, adults always reformulated with an auxiliary verb and participial form, *avoir* or *être* + PP, as in *Le bébé est tombé*. These two families of constructions clearly distinguish the two meanings of the form /tɔ̃be/, with anticipatory child uses consistently interpreted as pertaining to a future event, and following child uses as pertaining to an event just observed. These findings support the position that children learn to distinguish the meanings of homophonous forms by attending to the constructions adults use as well as to physical contexts of use in interaction.

Using Contrast to Infer Verb Meaning

Jane B. Childers, Amy Hirshkowitz, Trinity University

Contrast is useful in noun and adjective acquisition, but few studies have examined contrast in verb acquisition. In Study 1, two- and three-year-olds ($M = 2;8$; $n = 21$; $M = 3;7$; $n = 23$) heard a novel verb (e.g., "I am meeking it.") while seeing one novel event, and contrastive information (e.g., "I'm not meeking it.") for a different event with the same objects. At test, half the children had to extend the verb to new objects. The results showed that children used contrast but had difficulty extending the verb to new materials. In Study 2, two- and three-year-olds ($M = 2;8$; $n = 11$; $M = 3;7$; $n = 12$) heard two verbs while seeing two different events ("I'm meeking it." vs "I'm koobing it."). At test, all were given the original objects. Analysis across both studies showed that hearing a second verb was as effective as a negative statement. In Study 3, children received comparison and contrast information. Results show that by 3;6 years, comparison helps them extend verbs, and by 4;6, children clearly use both comparison and contrast (see Figure). Together these studies explore how contrast helps in the learning of new verb meanings.



Setting up contrasting verb forms in Mexican Spanish

Cecilia Rojas-Nieto, *Universidad Nacional Autónoma de México*

Previous studies of verbs in richly inflected languages (Spanish, Italian, Hebrew) show that early verbs are first produced in a single inflectional form, that typically differ for different lexical verbs. Given this lexically diverse starting point on a one-IF-per-verb basis, the question is how children set up contrasting forms for each verb. Usage-based analysis of one child and her mother’s verbs in Mexican Spanish presents evidence for both diversity and regularity in emergent contrasting forms. Different groups of verbs get inflectional contrasts in various ways: mood-based: *dame* ‘give me’ / *¿me das?* ‘Will you give me?’; person focused: *pasa* ‘it goes through’ / *paso* ‘I go through’ / *pasas* ‘you go through’; number centered: *es* ‘it is’ / *son* ‘they are’, tense oriented: *cayó* ‘it fell’ / *cae* ‘it falls’; or convey transitivity splits: *se rompió* ‘it got broken’ / *rompí* ‘I broke’. Close correspondences here map the child’s earlier verb forms to the more frequent contrasting pairs in the mother’s constructions with the same verbs. The child’s contrasting verb forms point towards those constructions that the verbs have been extracted from, the discourse practices and conversational frames they bring into play; and indirectly highlight specific lexical semantic types (e.g., active-agentive verbs take mood or person contrasts; resultative-telic verbs adopt tense contrasts). I argue that groups of verbs, based on similar IF contrasts, appear to orient the child towards building semantic-syntactic constructional verb subclasses, rooted in the discourse niches where the adult puts specific inflectional forms to use.

14:30 – 16:45
 Amphitheater C • Satellite 1
Symposium Session 6 • C

THE SOCIALLY CONSTRUCTED COMMUNICATIVE ACT OF MUSIC ACQUISITION

Convener & Discussant Suzanne Burton, *University of Delaware, Newark*

Description:

This symposium focuses on music acquisition as a socially-constructed, communicative act. Using the lens of language acquisition, the researchers present four papers: (a) An examination of the literature investigating adults’ abilities to identify, interpret, and respond to infants’ communicative behaviors in linguistic and musical contexts, with implications for future research on music acquisition; (b) An exploration of the aspects of music acquisition that parallel language acquisition through a study in which researchers examined infant interactions and engagement in language/play-based and music/play-based environments. This study indicates that, music often acts as a “topic of conversation” and paradigms from language acquisition are valuable for investigating young children’s musical behavior; (c) A longitudinal case study using a language acquisition and literacy framework to guide the musical development of a preschool child. Musical immersion, musical dialogue through imitation and improvisation, and the modeling of reading and writing music, supported the process of understanding the symbolic nature of musical notation; and (d) An heuristic inquiry into how musical communication was used as a means to form a relationship with a child who has autism. Through music play, the child learned to participate in two-way communication and found a place to express himself and practice many skills such as circles of communication, intention, and self-regulation. In this symposium, researchers will present compelling evidence on the social and communicative act of music acquisition and engage in discussion regarding the efficacy of the use language acquisition research as a parallel model to frame music acquisition research.

Links in Adult-Infant Chains of Interaction in Language and Music AcquisitionJill Reese, *Temple University*

Adult-infant chains of interaction influence development. Music acquisition researchers lag behind language acquisition researchers on the path toward understanding adult-infant interactions. Purposes of this paper are to synthesize literature investigating adults' abilities to identify, interpret, and respond to infants' communicative behaviors in linguistic and musical contexts; and recommend a trajectory for future early childhood music practice and research. The first chain link is adult identification of infants' communicative behaviors. Parents demonstrate heightened abilities to identify communicative behaviors, thus propelling their infant's linguistic achievement. Little is known about adults' abilities to identify musical behaviors, or how these abilities affect musical achievement. The second link is adult interpretation of meaning and intention of infants' communicative behaviors. Interpreting meaning and intention seems instinctive and promotes infants' development of intentionality. Less is known how adults' interpret infants' musical behaviors. The third link is adult contingent responses. Responses influence and guide the amount and quality of infants' communicative behaviors. Researchers describe adult responses to infants' music behaviors and how they affect subsequent musical behaviors but have yet to investigate affect on future musical achievement. Adult-infant interactions are at the heart of development. Language acquisition researchers provide models to examine factors contributing to interactions and development. Music acquisition researchers must systematically examine musical interactions; adults' abilities to identify, interpret, and respond to musical behaviors; and affects of interactions on development. Parents and teachers might scaffold infants' musical development by identifying musical behaviors, and responding (vocally and kinesthetically) as if infants' are musically meaningful and intentional.

Is It Music? Investigating Sequences Of Vocal And Movement Events Among Adults And Young Children In Early Childhood SettingsAlison Reynolds¹, Suzanne Burton², Jill Reese¹, ¹*Temple University*, ²*University of Delaware*

Communicative interactions among adults and infants/toddlers offer insights about a child's thinking. Cues from language events (vocalizations/physical movement) affect chains of interactions and, ultimately, language development. How do music events affect music interactions and music development? The purpose of this research was to document events during adults' and infants' play-based and music-play-based interactions in an early childhood setting. Researchers asked: What types and frequencies of events occur? How do events by individuals interrelate musically within interaction sequences? Which aspects of music acquisition parallel language acquisition? For 12 weeks, researchers/teachers visited 2 infant classrooms weekly, and captured events on four video cameras during regular playtime. Weeks 3-10, after taping playtime, 2 researchers entered each classroom offering non circle-time music interactions. Videotaping continued during music and for 15 minutes after. Researchers selected information-rich, minute-long clips from play-based and music-play based interactions. Modifying techniques from conversation and sequential analysis, they independently documented pitches, tempo, and movement in relation to time elapsing; and examined resulting sequences of interactions. Music events fluctuate in frequency; relate to the music's context (tonally and stylistically); and are numerous, overlapping, and complex. Analysis suggests music acts as a 'topic of conversation,' and elements of language interaction are typical. Adults, if open to interpreting infants' events as music-based rather than language-based, can respond to sustain interactions by offering (1) vocal and movement imitations or extensions of infants' events and (2) active, attentive vocally silent periods. Paradigms from language acquisition research seem useful for continued study of early childhood music development.

Language Acquisition: A Lens on Musical DevelopmentSuzanne Burton, *University of Delaware*

Researchers posit that music acquisition is a parallel process to language acquisition. They contend that language and music are communication systems unique to human beings, acquired through normal exposure. Language and music may be obtained aurally, orally, visually, and kinesthetically. Thus, the development of music literacy should be a natural consequence of musical growth when viewed through a language acquisition lens. Hypothetically, this process concerns interactive experiences leading to a child's capacity to comprehend the features of tonality and meter while reading or writing music. Through musical immersion, a listening foundation forms for the expression of musical thought through babble and imitation. A rich musical vocabulary is developed by engaging in improvisation, scaffolded by significant others. Through these encounters, the child gains the readiness to transfer musical meaning to and from print music. This paper presents a longitudinal case study of Joey, a participant in my music classes that focused on the application of the principles of language acquisition to music learning. I documented three-year-old Joey's musical growth over four years. Data were collected through videotape, my reflective research journal, Joey's notational artifacts, and anecdotal evidence. Constant comparison of data led to a primary theme elucidating Joey's construction of musical meaning: Joey learned music through the recurrent process of musical immersion, intentional musical interaction and improvisation, and the modeling of reading and writing music. Joey began to understand how print music functioned and how to capture his musical thoughts on paper through his own interpretation of standard musical notation.

Anthony, Autism, and Communicating with Him through Music PlayWendy Valerio, *University of South Carolina*

During a 3-year period Anthony, a 10-year-old boy with low-functioning autism, participated in group music classes for 3-, 4-, and 5-year-old children at a large university child development center and private music classes with music teachers, Hannah (graduate music education student), Claire (undergraduate music education student), and Wendy (music education professor) and with Annabel, his mother. In those classes based on Gordon's (2003) music learning theory, we established music contexts by playfully performing songs and rhythm chants, mostly without words. As co-music-makers, we observed Anthony and used his movements and vocalizations to encourage non-verbal and verbal two-way music communication while being sensitive to his states of stimulation and his need to practice self-regulation in order to engage in music activities. Using heuristic inquiry we examined 1) how each of us developed a relationship with Anthony using music as two-way communication, 2) how our experiences with Anthony have affected his quality of life, 3) and how those experiences have affected our lives and understandings of music development. Data were collected through observation of live and videotaped music sessions, dialogue, and in-depth interviews. Our approach is not music therapy per se, but it provides Anthony with a place to express himself and to practice many skills introduced to him in other types of therapy, including circles of communication, intention, and self-regulation. Moreover, as we have learned to read and interpret Anthony's vocalizations and movements, we have expanded our music interaction and improvisation skill sets.

14:30 – 16:45

Amphitheater D • Satellite 1

Symposium Session 6 • D**NEW METHODS AND APPLICATIONS FOR PARENT-REPORT MEASURES OF CHILD LANGUAGE****Convener** Dorthe Bleses, *University of Southern Denmark***Discussant** Philip Dale, *University of New Mexico***Description:**

Parent report has become a widely-used and well-validated method for obtaining information about both the language development of individual children, and also commonalities and individual differences with respect to development in a specific language. The MacArthur-Bates Communicative Development Inventories have been adapted into more than forty languages. The original format of the CDI, widely used in adaptations, is a paper form which includes the core components of a vocabulary checklist, a checklist for morphological forms, a forced-choice sentence-pair assessment of grammatical development, and a request for three of the longest sentences the parent has heard recently.

In the present symposium, we will report on innovations in data collection, test format, and applications for CDI-like measures of child language. In the first presentation, a successful use of web-based data collection will be reported, along with a discussion of issues relevant to the design of such systems. In the second presentation, new types of test items for evaluating grammatical and pragmatic development for somewhat older children will be discussed, and pilot results reported. In the third presentation, an innovative assessment of narrative competence based on a checklist rather than transcription and coding, will be reported. In the fourth presentation, the use of a CDI checklist format to obtain estimates of child input frequency will be reported. The results presented in these four presentations provide confirmation of the feasibility and value of these innovations. Finally, the discussant will consider these and other future directions for parent-report measures.

Using the Internet for data collection for CDI: an example from NorwayKristian Kristoffersen, Hanne Gram Simonsen, *University of Oslo*

Data collection for population based studies based on parental reports like the CDI is a time consuming task as data in paper format needs to be transferred to electronic format for analysis. New, more cost effective and rapid methods are needed. The internet is an obvious candidate. We have recently completed a web-based population-based study of early communicative development in Norwegian children using an adaptation of the MacArthur-Bates CDI, including approximately 6500 children between 8 and 36 months. We compared the web-based Norwegian study to the paper based, otherwise comparable Danish CDI study to identify possible advantages and drawbacks using a web-based data collection. The comparison between the two studies revealed that the response rate was not reduced in the Norwegian study and a similar socio-economic distribution among parents were obtained. In our study, the sample was skewed in the direction of higher educational levels of the parents responding, but no more so than in the Danish study. Also, coding errors are virtually eliminated. Only 1.8% of the parents experienced any problems. The most pronounced difference across the studies is the duration. Using the web, it only took 5 months from sending the invitation letters to parents until the norms were ready. We conclude that in societies with a high rate of internet access this method of data collection has great value. We will discuss design issues for web-based data collection systems. This approach also has potential for screening purposes

A new checklist method for narrative development

Dorthe Bleses¹, Judy Reilly², Svetlana Kapalkova³, Daniella Slancova³, ¹University of Southern Denmark, ²San Diego State University, ³Cornelius University

Narrative skills in children are developing in the preschool years. They are correlated with other aspects of language and are sensitive to language problems in children. Traditionally speech pathologists must record and transcribe a child's narrative before analyzing it. This is very time consuming and it would be highly valuable to have a checklist method that could be administered in population based studies and national language screening programs. Based on utterances produced in 3 to 5 year old children's narratives from three pictures stories, a set of model sentences were developed for Danish, English and Slovakian. The model sentences reflect the complexity level of linguistic constructions, and developmental ordering of narrative quality. In the checklist format, the child produces a narrative based on a short picture story and the educators/parents then mark after each picture which model sentence in the check list the child had just produced. The narrative check list was administered by educators evaluating 4.000 Danish preschool children - and in a small pilot study the checklist was also administered to parents - and results were compared to those of smaller scale studies conducted in the US and Slovakia. The results revealed that it is possible to develop model sentences which at a complexity level match highly with the children's actual productions; furthermore, the model sentences are sensitive to linguistic and narrative development across age groups and the scores are correlated with other language measures. The results of the comparisons, along with a reliability study of educators' and parent's scoring indicates that the checklist method is suitable for research and assessment.

Self reported child input frequency information

Rune Jorgensen¹, Ivan Iashine¹, Werner Vach², ¹University of Southern Denmark, ²University of Freiburg

Expecting that input influences early language acquisition, makes it highly relevant to investigate word frequency in child language input. Traditionally, the frequency of words is assessed using spontaneous speech samples, which is expensive and labor intensive. An alternative, simple approach may be based on self reported word frequency. We have asked the parents of 10.000 children (age range 1-3 years of age) to complete an internet-based questionnaire which included 723 items. The parents were asked for each item to estimate frequency as 'every day', '2-4 times a week', or 'less frequent'. 1244 parents (649 of boys and 595 of girls) responded.

The results have been compared to both the Danish CDI data (2398 infants and 3714 toddlers) and a large spontaneous speech data sample. The items were grouped into nouns, verbs, adjectives and the remaining. Within each group, the relationship between items' median CDI age (i.e. the age at which 50% of the children are reported to produce the item) and "usage" frequency was investigated. Increased "usage" frequency was associated with decline in the median CDI age, as expected. On average, an increase of "every day" "usage" frequency by 10% predicted a decline for median CDI age of 1.07 [0.96; 1.17], 0.79 [0.64; 0.94], 1.05 [0.79; 1.32] and 1.76 [1.93; 1.59] months, for nouns, verbs, adjectives and the remaining items respectively. Comparisons of the Danish CDI-data with spontaneous speech data, indicate that self reported word frequency has interesting potentials for studying input. Additional comparisons with spontaneous speech data are planned.

New approaches to utilizing the parent checklist format for more advanced grammatical and pragmatic development

Werner Vach¹, Philip Dale², ¹University of Freiburg, ²University of New Mexico

Upward extensions of the CDI-based measures face new challenges due to the complexity of language development after 30 months. In a cross-linguistic collaboration to refine and extend the initial CDI-III to additional aspects of language, we are exploring alternative question formats for grammatical and pragmatic development.

For grammatical development, we now distinguish two formats conflated in previous work: (A) sentence pairs which contrast two fully grammatical forms, one more complex than the other; and (B) sentence pairs which contrast a correct and incorrect form.

Examples:

- A. Turn on the light
Turn on the light so I can see
- B. I like read stories
I like to read stories

We hypothesize that these categories reflect different aspects of grammatical development, such as use of holistic vs analytic strategies, involvement of semantic factors, and information-processing load. Pragmatics is inherently connected to the context, and competence is usually demonstrated over a series of utterances; thus presentation of linguistic forms in isolation cannot be a valid measure. We have selected a set of frequently-occurring social situations, and ask parents to report on their child's ability to act appropriately.

Example:

- Some children want to play with your child on the playground, but your child does not want to.
Your child tells the other children that he/she does not want to play

NEVER – SOMETIMES – OFTEN - ALWAYS

In work in progress, we are obtaining data on these formats in order to compare their developmental trajectory and relationship to other measures of grammatical and pragmatic development.

**SATELLITE 2
AFTERNOON SYMPOSIA
AMPHITHEATERS E•F•G•H**

14:30 – 16:45
Amphitheater E • Satellite 2
Symposium Session 6 • E

DEVELOPMENT OF CHILDREN'S SYMBOLIC GESTURES

Convener Elena Nicoladis, *University of Alberta*

Description:

Infants can produce symbolic gestures even before they begin to speak (Acredolo & Goodwyn, 1988). The use of gestures can drop off as children start to learn words with the same referents (Goodwyn, Acredolo, & Brown, 2000). These results have led some researchers to argue that young children can learn symbols in either the gestural or oral modalities and only later do hearing children come to prefer words. The early gesture advantage could be due, in part, to the possible physical resemblance between the gesture and the referent, or iconicity (Goodwyn et al., 2000).

In this symposium, we present four papers addressing the development of children's use and comprehension of symbolic gestures. The first paper addresses the developmental course of gesture use. The authors conclude that the frequency of use can be linked to children's developing oral language. The second paper tests whether young children are sensitive to the iconicity of gestures. Surprisingly, children become increasingly sensitive to iconicity between 18 and 26 months. The third paper is a longitudinal case study of the acquisition of gestures as object labels. The authors argue that the child interpreted the gestures as associates of actions rather than as object labels. The fourth paper shows that 26-month old children can learn gestures as object labels in the context of word + gesture pairing.

Together, these papers raise questions about how symbolic gestures and words are related over the course of development and how/when iconicity plays a role in children's acquisition of gestures.

Preverbal Pragmatists: The developmental trajectory of preverbal children's symbolic gestures in enriched gesturing environments

Claire Vallotton, Kalli Decker, Ashley Karsten, Jessica Topor, Michelle Scott, *Michigan State University*

Symbolic gestures are used by typically developing preverbal children as a normal part of everyday communication. Recently, use of symbolic gestures has been promoted as a parenting and childcare practice, creating enriched gesturing environments; yet the developmental course of children's acquisition and use of these gestures in everyday contexts has not previously been documented. This paper addresses two central questions:

What is the developmental course of symbolic gesture acquisition?

What is the developmental course of symbolic gesturing frequency?

Methods. First, a case study documents the timing of one child's learning of new symbolic gestures and new words from 6 to 18 months. Second, we follow a group of 22 children (5 to 28 months) in a childcare environment with enriched gesture use. We code symbolic gesture use from videotaped episodes of child-caregiver interaction, capturing acquisition of new gestures and frequency of gesture use in daily routines.

Results. Learning new gestures is slow at first, followed by a gesture acquisition spurt beginning between 12 and 14 months, then a period of slower gesture acquisition as oral words increase. A clear increase and decrease in the frequency of children's use of symbolic gestures is influenced by the age of exposure. Children continue to use symbolic gestures after the decline in exceptional circumstances including oral word difficulty, emotional upset, and second language acquisition. The increase and decrease of acquisition rate and frequency of use indicate that children are pragmatic users of symbolic gestures preceding and transitioning to oral language.

Recognition of iconicity in symbolic gestures emerges gradually over development

Laura Namy, *Emory University*

Many of children's earliest symbolic gesture are iconic in nature, resembling the referents to which they refer. A child requesting juice may enact a drinking gesture. A child indicating a bird may flap her hands like wings. Yet some of the earliest and most common symbolic gestures, such as the sign for "more" (closed hands, fingers and thumb touching, tapping the two hand together) are not transparently related to their meanings.

Indeed, research on early sign language acquisition suggests that iconicity appears to proffer no apparent advantage in the acquisition process. My recent work suggests that an appreciation of the iconic resemblance between a sign and its referent emerges only gradually over the course of development. A forced-choice symbol-to-referent mapping task revealed that although 26-month-old infants display an advantage for learning iconic over arbitrary gestures as labels for object, 18-month-olds display no such advantage, readily learning both iconic and arbitrary gestures with equal facility. A subsequent study revealed that 14- and 18-month-olds fail to recognize the relation between an iconic gesture and its referent if the gesture has not been explicitly used as an object label, whereas 22- and 26-month-olds spontaneously recognize that the gesture resembles some aspects of the referent object. Take together, these findings suggest that the ability to recognize the resemblance between a symbol and its referent emerges gradually over the course of the first two years and cannot account for children's early receptivity to symbolic gestures as a form of symbolic reference.

A longitudinal case study of the acquisition of symbolic gestures as object labels

Elena Nicoladis, Jennifer St. Jean, Paula Marentette, *University of Alberta*

Previous literature has shown that 18-month olds can equally well understand arbitrary and iconic gestures as labels for objects (e.g., Namy & Waxman, 2004). The prediction for the present longitudinal case study was that arbitrary and iconic baby signs would initially be comprehended equally well. As she got older, she might become more sensitive to iconicity (e.g., Sheehan, Namy, & Mills, 2007).

A single child was taught 8 baby signs as labels for objects from the age of 9 months to 2;10 through exposure to two baby signs per week, 5 minutes per day over the two-year period. At the end of every week, the child's comprehension of the two baby signs was tested.

The results showed that the child learned her first symbolic gestures (i.e., scored above chance on the comprehension task) at 2;6. After that point, there was no difference between iconic and arbitrary gestures. At 2;6, we tested how she extended iconic baby signs to novel objects; she extended the signs equally often to objects that performed the same action as the original as to objects that were the same kind.

These results are consistent with cross-sectional studies we have done with other children. We argue that children learning spoken language(s) do not distinguish between a kind and action interpretation for gestures. The child's long-term failure to comprehend symbolic gestures as labels for objects was due to her lack of distinction between kind and action.

Get by with a little help from a word: multimodal input facilitates 26-month-olds' ability to learn symbolic gestures as labels

Makeba Parramore Wilbourn, Jacqueline Prince Sims, *Duke University*

Early in development, toddlers' interpret both symbolic gestures and words as labels for objects. However with experience, toddlers come to focus on words, not gestures, as labels. And while this focus or specialization towards words may be advantageous, it is also limiting in that it is difficult to override. Previous research has shown that 26-month-olds require additional training to override this specialization and to learn gestural labels. In considering various types of cues that may assist 26-month-olds in learning gestural labels, multimodal input (i.e., gesture-accompanied speech) presented as a viable candidate. Research has shown that symbolic gestures simultaneously paired with words facilitate toddlers' early word learning by allowing richer encoding and enhanced memory for both labels. Thus, we predicted that pairing a familiar type of label (word) with an unfamiliar type of label (gesture) would highlight the relevance of the symbolic gestures.

Method. Thirty-three 26-month-olds were repeatedly exposed to a multimodal object label (i.e., "blicket"+ ASL sign, YELLOW) and then tested on their ability to map and extend both the multimodal label and the gestural label alone to familiar and novel objects.

Results. Toddlers were significantly more likely to select the target object when requested with either the multimodal or gestural label for both mapping and extension trials. And while most toddlers learned the symbolic gesture, results revealed that the toddlers' reported vocabulary size significantly predicted their ability to learn the symbolic gestures. Findings will be further discussed regarding the influence of multimodal input on early symbolic and vocabulary development.

14:30 – 16:45
Amphitheater F • Satellite 2
Symposium Session 6 • F

LANGUAGE AND LITERACY DEVELOPMENT THROUGH CHILDHOOD AND ADOLESCENCE: CROSS-LINGUISTIC AND CROSS-MODAL PERSPECTIVES ON COMPLEX SYNTAX

Convener Judy Reilly, *San Diego State University*
Discussant Ruth Berman, *University of Tel Aviv*

Description:

By age five, children have some knowledge of most of the linguistic structures of their language, but language use in a five-year-old differs significantly from that of a ten- or fifteen-year-old. Defining literacy broadly to

include a facility with different genres (e.g., narrative and informative texts) and modalities (speaking and writing), later language and literacy development are characterized by learning to proficiently recruit and combine a range of linguistic structures for different discourse purposes. Using a common methodology, in this symposium we investigate later language development and literacy in children and adolescents, speakers of English, French, Hebrew, and Spanish. Since a critical feature of later development is the increasing use of hierarchically complex syntactic structures, each of the four papers takes a different language and a different perspective on this theme: Paper 1 targets clause combining in low and high SES French-speaking children and adolescents in spoken and written narratives and expository texts; Paper 2 looks at the development of syntactic depth in noun phrases and clause packaging in Spanish spoken narratives; Paper 3 focuses on the development of conjuncts in Hebrew written narratives and expository texts; and Paper 4 compares French and English spoken and written narratives of typically developing (TD) children and adolescents with those with Language Impairment (LI). In looking across ages, discourse genres, modalities, and languages, as well as across populations (LI-TD), we gain a better picture of the cognitive, linguistic, and neural factors that influence later language and literacy development.

Clause combining across modality and text types

Florence Chenu¹, Harriet Jisa^{1,2}, Audrey Mazur-Palandre¹, ¹Université Lyon 2 - CNRS, ²Institut Universitaire de France

Producing monologic texts requires rapid processing of linguistic resources to access lexical items, to monitor referential continuity, and to ensure overall text coherence. In addition, individual propositions must be elaborated into clause packages. Our developmental analysis examines the clause-combining strategies employed by 160 French-speaking monolingual children, adolescents, and adults from two socio-economic strata in producing two types of text – narrative and expository – and in two modalities – spoken and written. Spoken and written language production operate under radically different time constraints. The spoken modality forces speakers to plan and produce rapidly, while the written modality provides writers with more planning time. Our preliminary results indicate that this difference in time constraints is reflected in the clause-combining strategies observed in the texts, with written texts showing, for example, more non-finite subordination and a wider variety of relative clauses than the spoken texts. We also observe developmental differences, with the younger children showing less differentiation in syntactic structures in the two modalities than the older groups, as well as SES differences. Our methodology allows for the comparison of each participant's spoken and written texts, as well as comparisons between differing orders of production: half of the participants produced the texts in the spoken then written order, while the other half produced in the written then spoken order. We will illustrate a priming effect in the order written before spoken, with the written-first order impacting the structures used in both the written and spoken texts.

The development of syntactic depth in Spanish spoken narratives

Liliana Tolchinsky¹, Melina Aparici², Nayme Salas³, ¹Universitat de Barcelona, Barcelona, ²Universitat Autònoma de Barcelona, Barcelona, ³Bangor University

An increase in the level of syntactic complexity is a distinctive feature of later language development. It is diagnostic of discourse organization and writing quality and a major indicator of language delay and impairment. The present study assesses the development of syntactic depth in spoken narratives. We examined two types of syntactic units: Noun Phrases (NPs) and sentences (S), and one discourse unit: Clause Packages (CPs), i.e., groups of clauses syntactically and thematically linked. For NPs, syntactic depth was established in terms of the number of nodes (prepositional phrases and relative clauses) within the unit; in the case of sentences and CPs, we counted the number of subordinate and other embedded clauses. We predicted that, with age, the level of complexity in all three types of units would increase, but that such increase would be evident earlier in the sentences and CPs and only later in the NPs. To test these predictions 80 Spanish spoken personal-experience narratives produced by 9-, 12-, and 16-year-olds, compared with adults, were analyzed for syntactic depth in the three types of units. As expected, hierarchical complexity increased with age in both syntactic and discourse units; however, sentences and CPs showing two levels of subordination characterized many narratives of the 9-year-olds, whereas NPs including more than two nodes appear only after age 12. Unlike other domains of connectivity in which local linkage developmentally precedes global linkage, in syntactic depth, global complexity at sentence and discourse levels precedes local complexity at NP level.

The entry to complex syntax: Conjuncts as a strategy in developing text construction

Dorit Ravid, Ruth Berman, Tel Aviv University

Complex, hierarchical syntax is the hallmark of mature, literate language usage. Previous research focuses predominantly on the combined-clause level. This study concerns text-embedded use of **conjuncts** as a syntactic construction that has received little developmental attention. Conjuncts are defined as clusters of lexical items, phrases, or clauses conjoined together and attached to a single syntactic unit (e.g., the underlined strings in: *He sat down on the floor and started to cry; I felt sad, lonely, and upset, Talking over problems and trying to solve them is important to friendship*). Our hypothesis was that distribution of such constructions would reflect a U-shaped development, largely lacking in texts produced by younger

schoolchildren, rising in pre-adolescence, but decreasing in adolescence and adulthood in favor of more advanced strategies for syntactic combining. To test this prediction, we analyzed all conjuncts in 160 Hebrew-language personal experience narratives and expository texts written by 4th, 7th, and 11th graders, compared with those from adults. As expected, we found a qualitative as well as quantitative spurt in conjunct production in adolescence, expressed by increased numbers of conjoined elements in more varied types of syntactic environments. Conjuncts were also more common in expository than in narrative texts, a discourse genre of higher processing demands. Our findings point to conjunct constructions as an important facet of syntactic acquisition, constituting an interim strategy in the shift from linear to hierarchical syntax in later, school-age language; conjuncts incorporate diverse information in a single, multileveled unit rather than by merely juxtaposing or stringing elements linearly.

Spoken and Written Narratives in English and French Speaking Children with Language Impairment

Jun O'Hara¹, Stephanie Chaminaud², Josie Bernicot², Joel Uze³, Beverly Wulfeck¹, Thierry Olive², Monik Favart², Mark Appelbaum⁴, Judy Reilly¹, ¹*San Diego State University*, ²*Université de Poitiers*, ³*Centre Hospitalier Henri Laborit*, ⁴*University of California at San Diego*

Children with Language Impairment (LI) show significant delays in spoken language development. The few studies on writing note continued problems with morphology; and these are primarily in English. In contrast to the impoverished and irregular morphology of English, French morphology is rich; but often silent, posing challenges for writing. Here, we focus on spoken and written narratives of 32 American and 16 French children and adolescents with LI (ages 7-16) and their controls (TD). We focused on three issues: 1) Whether early problems with morphology persist and manifest in writing; 2) How performance differs in French and English; and 3) The role of complex syntax in narratives. Participants produced both spoken and written texts. Coding: 1) Linguistic structure: morphological errors; frequency and types of complex syntax; 2) Narrative structure (setting, initiating event, problem and resolution); 3) Spelling. Despite morphological differences in English and French, both LI groups made more morphological and lexical errors than controls. For complex syntax, both younger groups (ages 7-11) with LI, used both fewer types and fewer tokens than controls. However, in the older groups (ages 12-16) both English and French LI groups used complex sentences as frequently, and with comparable diversity to the TD groups. For the LI groups, frequent use of complex subordinators explicitly signal the relation between elements, providing a coherent organizational structure for their texts. The juxtaposition of morphological errors and overall text coherence show an uneven developmental profile, common to both English and French adolescents with Language Impairment.

14:30 – 16:45

Amphitheater G • Satellite 2

Symposium Session 6 • G

IDENTIFYING THE AGENT: HOW CHILDREN LEARN AND USE SEMANTIC ROLES

Convener Caroline Rowland, *University of Liverpool*

Description:

A central issue in language acquisition research concerns how children learn general semantic roles such as Agent and Patient, and what linguistic and cognitive principles and biases (if any) underlie this learning. The four papers in this symposium address the issue of how children develop adultlike knowledge of the semantic role of agent, using both experimental (papers 1 and 3) and modelling (papers 2 and 4) perspectives. We address the following themes: a) How might general semantic roles be learnt from specific examples of verb argument usage; b) can perceptual information be used to mark agency and map entities into language-specific sentence structures; c) do children and adults have an (innate or learned) bias to interpret the first named noun as a causal agent and d) do children make errors in their comprehension of intransitive and transitive passives that stem from immature knowledge of the relationship between syntactic structure and semantic role assignment in English. The ultimate aim will be to provide the authors and audience with a forum to discuss what mechanisms allow children to learn semantic roles, what mechanisms are implicated in the development of abstract, adult like knowledge, and whether errors can be seen as stemming from the same mechanisms that are implicated in the development of abstraction in the first place.

Comprehension of intransitive argument structure: The first-noun-as-agent bias

Claire Noble¹, Anna Theakston², Elena Lieven^{1,2,3}, ¹*Max Planck Child Study Centre*, ²*University of Manchester*, ³*Max Planck Institute for Evolutionary Anthropology*

Evidence suggests that English-speaking children may be unable to associate conjoined agent intransitives (e.g. *“the bunny and the duck are glorp-ing”*) with non-causal event scenes before the age of 3 (Naigles & Kako, 1993; Noble et al, under review). This study uses a pointing methodology to test whether this is due to a bias to interpret the first named noun as a causal agent, based on analogies to other constructions they hear in the input (e.g. transitives and datives).

Children aged 3 and 4 years watched two simultaneous animations, one depicting a non-causal action and one a causal action. In the test condition, children were presented with conjoined agent intransitive sentences in which the first named noun was the agent of the non-matching causal action, and sentences in which the first named noun was the patient of the non-matching causal action. In the baseline condition children heard the novel verb in isolation.

When the first named noun was the agent, only children in the older age group pointed to the matching non-causal scene significantly more in the test condition than in the baseline condition. In contrast, when the first named noun was the patient, children in both age groups pointed to the matching non-causal scene significantly more in the test condition than in the baseline condition. The results suggest that 3-year-old-English-speaking children may have a verb general bias to interpret the first-named noun as a causal agent when inferring the meaning of conjoined agent intransitives.

Learning agents from child-directed speech: A computational perspective

Afra Alishahi¹, Suzanne Stevenson², ¹Saarland University, ²University of Toronto

A usage-based account of language acquisition claims that children gradually learn general semantic roles such as Agent and Theme without drawing on innate linguistic knowledge or principles. However, the detailed mechanisms of how children acquire this complex relational knowledge, which links predicate-argument structure to syntactic expression, are not well understood. We propose a probabilistic usage-based model that gives a detailed account of the ability to learn general semantic roles from specific examples of verb argument usage. The model learns probabilistic associations between the semantic properties of the argument of an event, the semantic properties of the verb, and the syntactic position the argument appears in. Over time, common properties of the arguments that appear in the same syntactic position in a construction are generalized to form a semantic profile that represents a general conception of the role associated with a particular grammatical position. These profiles go through a gradual generalization process, where they initially reflect the properties of specific verb arguments, and become more general as the model receives more input. Our experimental results show that the model can form intuitive profiles for general roles such as Agent, Theme and Destination in various constructions. The model is able to distinguish the arguments of different types of verbs when those arguments occur in the same syntactic position, such as the Subject as Agent in "she danced" as opposed to a Theme in "she fell". Specifically, properties of typical Agents, such as animacy and sentience, are probabilistically associated with the subject position and with the semantics of verbs that take an Agent, such as cause and change. Thus, the notion of Agent is a probabilistic one that avoids specifying necessary or sufficient properties, and that is learnable from verb usage alone.

The first-noun-as-agent bias: Using eye tracking to investigate how children and adults process transitive sentences

Caroline Rowland¹, Kirsten Abbot-Smith², Heather Ferguson², ¹University of Liverpool, ²University of Kent

The idea that the language parser is biased to interpret the first noun of a sentence as the agent has a long history in psycholinguistics (see e.g. Bever, 1970). However, the evidence does not clearly indicate whether adults do, in fact, have this initial tendency to map the first noun onto the agent (see Ferreira, 2003; Dabrowska & Street, 2006 vs. Knoeferle, Crocker, Scheepers & Pickering, 2005). Nor do we know whether this "first noun as agent" strategy is an integral part of young children's sentence processing strategies and if, so, how they overcome this bias to enable them to interpret all sentences (e.g. passives) accurately as they develop.

In the present study, we used eye tracking and a forced-choice comprehension paradigm (where the task was to choose which of two visual referents matched a spoken sentence) to investigate whether children (aged 2 years and 3½ years) and adults use a first noun as agent strategy when interpreting active and passive transitive sentences (e.g. *the girl glorped the boy/ the boy was glorped by the girl*). Preliminary results suggest that adults have a tendency to look at the agent referent as soon as they hear the first noun, but can use the disambiguating cues provided further downstream in the sentence (e.g. *by the girl*) to switch their looking preferences if need be. The children's data is currently being collected and will allow us to examine the role of the first noun as agent strategy in the developmental process of learning to interpret English transitive sentences.

Using perceptual agency to guide syntax acquisition: A connectionist model

Franklin Chang, University of Liverpool

Children can recognize causality and animacy from motion features alone (Scholl & Tremoulet, 2000). Can this perceptual information be used to mark agency and can we use this information to map entities into language-specific sentence structures? To examine these questions, a connectionist model of syntax acquisition (Chang, 2009) was taught to describe 3D spontaneous and caused motion scenes in English and Korean (e.g., "The cone pushed the ball to the block").

The model learned from message-sentence pairs. One part of the message was a set of spatial indexes (Leslie, et al., 1998) that were linked to concepts in the scene (e.g., block). The other part of the message was the event-semantics which encoded perceptual features of the scene. One feature was distance between objects (patients are closer to goals than to agents at the end of actions). Another feature was approach

velocity (agents approach the patient before they initiate their action). Another feature was contact (caused motion differs from spontaneous motion in that the object in motion is contacted by the agent). The model was able to acquire both languages equally well. Moving entities have richer inputs and are less likely to be omitted in production. Since agent subjects typically move less than patient objects, the model can explain higher subject omission in development (Valian, 1991). Furthermore, this predicts that agents of intransitive spontaneous motion constructions should be less likely to be omitted than the agents of cause-motion constructions and there is evidence supporting this claim (L. Bloom, 1991)

14:30 – 16:45

Amphitheater H • Satellite 2

Symposium Session 6 • H

VERBAL AND NONVERBAL MODALITIES CONTRIBUTE TO BUILDING SOCIAL INTERACTION AND THE LEXICON IN AT-RISK AND ATYPICALLY DEVELOPING CHILDREN

Convener Alessandra Sansavini¹, Manuela Lavelli², ¹University of Bologna, ²University of Verona
Discussant Virginia Volterra, *Institute of Cognitive Sciences and Technologies, Italy*

Description:

This symposium, assuming a neuroconstructivist approach to studying linguistic impairments (LI), aims to discuss how the verbal and non verbal modalities contribute to building social interaction and the lexicon in at-risk (ARD) and atypically developing (AD) children: i.e. at risk for LI because they have an older sibling with autism (high risk; HR-ASD) or because born preterm (BP), and delayed in language because of Down Syndrome (DS) or because of a specific LI (SLI). Different tools, such as observations of parent-infant interaction and/or a lexical test and the parental questionnaire MacArthur-Bates CDI were used to investigate the communicative and linguistic abilities of ARD and AD children compared to typically developing (TD) children.

The papers contribute to an understanding of differences and similarities among ARD, AD, and TD children with respect to: a) relationships among gestures and words in child's early language development and child's verbal and gestural strategies in coping with lexicon (HR-ASD, BP, DS, SLI, TD); b) relationships between child's and mother's utterances (vocal and gestural) and mother's communicative strategies supporting child's linguistic abilities (HR-ASD, DS, SLI, TD). The comparison among the obtained results in ARD, AD, and TD children will allow to understand the dynamic complexity of early language development and underscore how: a) verbal and non verbal abilities contribute to building social interaction and the lexicon; b) mothers' and children's responses are reciprocally affected at the verbal and non verbal level and mother's vocal and gestural strategies tune on child's communicative and linguistic modalities. Methodological issues and clinical implications of these findings are also discussed.

Fit and fine-tuning in interactions between mothers and infants at high vs. Low risk for autism spectrum disorders

Jana Iverson, Nina Leezenbaum, Derrecka Butler, Karen Jakubowski, *University of Pittsburgh*

Research examining parental responsiveness and its relationship to communicative and language development typically conceptualizes responsiveness as dichotomous variable and/or as a characteristic of the caregiver. However, this approach obscures an important issue, namely that caregivers and infants are complex, developing systems with their own characteristics and developmental histories. We examine this issue in analyses of mother-infant interactions collected as part of a longitudinal study of infants at heightened risk for autism spectrum disorders (ASD) because they have an affected older sibling (high-risk infants; HR) and comparison later-born infants with no family history of ASD (low-risk; LR). As part of the larger study, 18 HR and 18 LR infants were videotaped at home with their mothers at 13 and 18 months of age. At both ages, communication rates (per 10 min) were lower for HR than LR infants ($Mdn_{HR13} = 6.6$, $Mdn_{LR13} = 13.5$, $p = .10$; $Mdn_{HR18} = 11.76$, $Mdn_{LR18} = 20.84$, $p = .02$); and relative to LR infants, HR infants produced fewer developmentally advanced gestures (showing and pointing). These differences were mirrored in maternal responses to infant communication: mothers of HR infants produced fewer verbal and more nonverbal responses to infant communications. In addition, relative to LR mothers, a higher proportion of HR mothers' communication focused on directing infant attention. Findings will be discussed in terms of the dynamic nature of responsiveness, and methodological implications of this view will be considered.

Early lexical processes in extremely preterm infants

Alessandra Sansavini, Annalisa Guarini, Silvia Savini, Cristina Fabbri, *University of Bologna*

Recent studies have shown that lexical development can be affected by preterm birth with delays with respect to typically developing children. However, preterm children's early lexical processes have not been specifically investigated. We addressed this issue by examining infant's verbal and non verbal strategies during standardized test evaluating lexical comprehension and production of nouns and predicates (PinG). Children's

lexical production was also evaluated using the MacArthur-Bates CDI. Twenty-five monolingual Italian children born preterm with an extremely low gestational age (≤ 28 weeks) and no major cerebral damage, and a comparison group of 25 monolingual healthy Italian full-terms were assessed and videotaped at 24 months (corrected age for preterm children). Compared to full-terms, preterm children produced significantly fewer correct responses in the PinG test in comprehension as well as in production of nouns and predicates (p values $< .05$). Error analyses revealed that when preterm children did not know the correct response, produced more non responses, while full-terms produced more responses semantically related to the correct target. The analysis of gestures accompanying infants' responses revealed further peculiarities of each group. In addition, the MB-CDI showed a higher percentage of infants at risk for delayed lexical development (vocabulary $< 10^{\circ}$ percentile) in the preterm than in the full-term group. Our findings show that extremely preterm birth affects the development of both lexical comprehension and production and suggest that these infants have less advanced verbal and non verbal strategies to support the building of the lexicon.

Interacting through acting: Action, gesture and word in the construction of meaning in mother and child with Down syndrome

Olga Capirci¹, Maria Cristina Caselli¹, Emiddia Longobardi², Martina Recchia¹, Arianna Bello³, ¹*Institute of Cognitive Sciences and Technologies*, ²*University of Roma La Sapienza*, ³*University of Parma*

Few studies have explored the relationship between shared attention, action with objects, gesture, and language in children with developmental disorders. The present study compares the communicative interactions of 10 mother-child with DS dyads (mean chronological age 4;1 years; mean developmental age 2;4 years) and 10 mother- typically-developing (TD) child dyads matched for developmental age and lexical comprehension. Children's word comprehension and gestural production were also evaluated using the MacArthur-Bates CDI and a standardized lexical test (PinG). All sessions were videotaped and transcribed in order to analyze how mothers direct children's attention and action and the role action and gestures play in the construction of meanings. Results showed that mothers of children with DS and TD used significantly more directives to control action than attention behavior, and use predominantly a bimodal communication (gesture+word) to direct child's behavior. A negative correlation was found between mother's utterances with gesture and child's word comprehension ($\rho = -.76$ $p .01$) and production ($\rho = -.79$ $p .006$), measured by the CDI in the DS group, while this correlation was positive in TD group ($\rho = .65$ $p .04$ and $\rho = .63$ $p .05$). Similarities and differences that characterize the maternal interactive style of the two groups are also discussed in relation to children's gesture and spoken abilities during PinG administration. Results suggest that language development arises from and builds on children's non-verbal understanding of events, their "world of experience", a world embedded in social interaction, in which caregivers both direct attention to aspects of the ongoing events and tutor actions on it.

Gestures and speech during shared picture-book reading with preschoolers with specific language impairment

Manuela Lavelli¹, Chiara Barachetti¹, Laura Justice², ¹*University of Verona*, ²*Ohio State University*

Several studies have shown children with specific language impairment (SLI) to be less conversationally responsive than typically-developing (TD) children; however, it is not clear whether these children present a "gesture advantage" as found in other children with atypical development. This study examined (a) the relationship between gesture and speech in children with SLI as compared with TD children during shared book-reading with their mothers, (b) the effectiveness of maternal communicative strategies to elicit conversational responsiveness in children with SLI. Fourteen preschoolers with SLI, 14 age-matched TD children, and 14 MLU-matched TD children were videotaped during two sessions of shared picture-book reading with their mothers at home. Each child and maternal communicative act was coded on the basis of modality (Vocal, Gestural, Bimodal); each maternal question according to the level of provided support; and each child's answer according to linguistic and content adequacy. Children with SLI, as compared to younger TD children matched by linguistic competence, produced significantly fewer Vocal utterances than age-matched TD children. No differences were found in maternal communicative modalities among the three groups. Results from sequential analysis reveal that when maternal questions were accompanied by gestures, they had a higher probability of eliciting answers from children with SLI and MLU-matched children, regardless of the answer's adequacy. Interestingly, only maternal questions containing a main clue about the requested information were significantly followed by acceptable answers from children with SLI. These initial results suggest that bimodal and highly supportive maternal questions facilitate the conversational participation of children with SLI.

PLENARY SYMPOSIUM
ISACL CENTRAL AMPHITHEATER

08:30 – 09:45
IASCL CENTRAL Amphitheater
Student Award Symposium

Acquiring a first-language in adolescence

Naja Ferjan Ramirez, Amy M. Lieberman, Rachel I. Mayberry, *University of California at San Diego*

Abstract.

This study describes language acquisition in three deaf 16-year olds, who have, due to deafness and anomalies in upbringing, just begun to acquire American Sign Language, their first-language (L1). Adolescents' vocabularies are child-like and their utterances are short and simple, suggesting that the early stages of L1 learning are age-independent. The subsequent slowing of language development indicates maturational limits on L1 acquisition begun in adolescence.

Rule learning is constrained when multiple interpretations are possible

Elena Kulaguina, Rushen Shi, *Université du Québec à Montréal*

Abstract:

Infants' abstraction of a syntactic rule to novel instances was examined in an experiment without semantic information, where at least two interpretations were possible: one requiring morphological markings and another without this requirement. Our experiments showed that the infants' rule learning was constrained and reflected the nature of the training input.

Joint Attention and Vocabulary Development: A cross-cultural, observational study of Mozambican infants from 12- to 18-months

J. Douglas Mastin, *Tilburg University*

Abstract:

This paper analyzes the correlation between *naturally observed* joint-attention activities and vocabulary development of rural and urban Mozambican infants. We find the frequency of joint-attention activities observed at 13-months are significant predictors of *receptive language* scores in the rural setting at 18-months, whereas dyadic interactions predict urban *expressive language* scores.

Lexical Tonality Affects Speech Perception and Word Learning by Bilingual Children

Laura Morett¹, Seok Hui Tan², ¹*University of California at Santa Cruz*, ²*National University of Singapore*

Abstract:

This study investigates how preschool-aged children bilingual in English plus Mandarin or another atonal language interpret lexical and non-lexical tone. The results reveal that Mandarin-English bilinguals can discriminate between tonemes and learn tonal words more effectively than atonal bilinguals, demonstrating that tone awareness affects word learning and lexical tone perception.

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SATELLITE 1
MORNING SYMPOSIA
AMPHITHEATERS A•B•C•D

10:15 – 12:30
Amphitheater A • Satellite 1
Symposium Session 7 • A

EARLY ADJECTIVES IN INPUT AND OUTPUT: A CROSS-LINGUISTIC LONGITUDINAL STUDY

Convener Wolfgang Dressler, *Austrian Academy of Sciences*
Discussant Dorit Ravid, *Tel-Aviv University*

Description:

The fact that adjectives lag behind nouns and verbs in child language has been repeatedly noted in different studies. Research shows that adjectives heavily depend on nouns in processing and acquisition, and that lexicons in general, and the early lexicon in particular, contain fewer adjectives than other content words. The proposed symposium focuses on the first year of adjectives in five structurally diverse languages – Dutch, French, German, Hebrew, and Turkish. We hypothesize that the emergence of the intrinsically relational adjective category crucially hinges on the consolidation of syntax and semantics in children. To test this hypothesis, we investigated adjective frequency and diversity in form, function and meaning using longitudinal spontaneous speech samples of ten children aged 1;8-2;8 (two/language), and their caregivers. The four papers present the conceptual framework, methodology, and results of the morpho-syntactic and semantic analyses. The findings demonstrate that across the five languages, adjective usage shifted from pre-syntactic environments to participation in predicative and attributive constructions. In all parameters (syntactic, morphological and semantic), we saw parallel incremental, graded progression from less to more complex structures. Frequency, diversity and complexity of adjectives in the input influenced patterns in child output. The observed common acquisitional patterns lead us to conclude that, despite major morphological differences in the languages studied, the emergence of the adjective category is driven by syntactic and semantic development.

Conceptual framework and research questions

Wolfgang Dressler¹, Dorit Ravid², Marianne Kilani-Schoch³, ¹*Austrian Academy of Sciences*, ²*Tel Aviv University*, ³*University of Lausanne*

Adjectives are a secondary lexical and grammatical category in a number of senses. Semantically, adjectives adjust their meaning to that of a head-noun. Syntactically, they are typically governed by nouns, as indicated by the two syntactic positions they occupy – predicate heads and NP modifiers. In many languages adjectives agree with head nouns in inflectional properties (number, gender, case). Their less robust status is also indicated by fuzzy boundaries with other categories (particularly adverbs). Adjectives show great crosslinguistic variation, especially in morphology.

The proposed symposium reports the results of a collaborative cross-linguistic project investigating the early development of adjective form, function and meaning in five structurally diverse languages – Dutch, German, French, Hebrew, and Turkish.

Our hypotheses are: (1) Due to their secondary cognitive and semantic status adjectives emerge later than other content words; (2) acquisition of adjectives depends on the consolidation of syntax; (3) the predicative function, closer to presyntactic usages, emerges and shows lemma diversification earlier than the attributive function; (4) cross-linguistic differences are likely to be observed mainly in the acquisition of adjective morphology; (5) as elsewhere, acquisition of semantics proceeds from concrete to more abstract properties; (6) and frequency and diversity of adjectives in child output reflect patterns in the input

Methodology

Ayhan Aksu-Koc¹, Steven Gillis², Bracha Nir³, Aris Xanthos⁴, ¹*Bogazici University*, ²*University of Antwerp*, ³*Haifa University*, ⁴*University of Lausanne*

The data consist of spontaneous speech samples of 10 monolingual children (two/language) and their caregivers, recorded for 1hour/month between ages 1;8-2;8, transcribed and morphologically coded according to CHILDES. The five project languages contrast in terms of adjectival position in attributive constructions (pre and/or postnominal), the syntactic position where adjectives show inflectional agreement, and degree of agreement in number, gender and case.

To compare the syntactic, morphological and semantic dimensions of adjective acquisition systematically from a crosslinguistic perspective, in a single theoretical and methodological framework, the following procedure was employed. Each instance of an adjective, both lemmas and tokens, in child and caregiver speech was coded for *morphological form* (*inflectional*: number, gender, case, definiteness, degree of comparison, diminutive, possessive; and *derivational*: denominal, deverbal, reduplicative, resultative, pattern), for *syntactic*

position (non-syntactic: single word, telegraphic phrase; syntactic: predicative, attributive, nominalized, adverbial, particle-like; external: procedural, address form), for *NP complexity* (compound, head of predicate, with modifier), and for *semantic class* (spatial, temporal, evaluative, quantitative, behavioral, modal, color, age, conformity, physical property, internal state, physical state, ordinal numbers, other). Frequencies of types and tokens of adjectives were obtained for each sample. Growth curve analyses and regressions of the development of the (non-)(pre-)syntactic categories, predicative/attributive uses of adjectives, the development of morphology, and relative distribution of semantic classes were carried out. Correlations between the development of the adjective forms, functions and semantic classes were obtained. The frequencies in child speech were compared to those in the adult data.

Syntactic and morphological analyses and results

Katharina Korecky-Kröll¹, Sabine Laaha¹, Iris Leibovitch², ¹Austrian Academy of Sciences, ²Tel Aviv University

The nature of the adjective category had more impact on age and pace of acquisition than crosslinguistic differences. Adjectives were acquired only after the emergence of noun and verb inflections, pronouns, determiners, prepositions and complex argument structures, lending support to the first two hypotheses. Results on syntax show that adjectives first appear as single words and later as telegraphic phrases in nonsyntactic contexts. Uses in syntactic contexts, first predicative and then attributive, start around 2;0. Marked attributive functions (e.g. restrictive) still lack in the corpora. As to morphology, adjective inflectional development lags behind syntactic development. Agreement inflection emerges once adjectives start appearing in syntactic contexts, then agreement errors accompany the consolidation of syntactic complexity. Syntax-dependent inflectional development precedes derivational morphology and compounding. Semantic categories of adjectives begin to diversify with age.

The frequency and diversity of adjectives in the input is important but only partially reflected in child-speech since semantic, pragmatic and cognitive factors play a role in what the child takes from the input.

Overall, results reveal parallel acquisitional patterns across the five languages and support our hypotheses of syntactically and semantically driven adjectival development. In a cross-linguistic perspective, typological patterns are limited to phenomena such as late initial reliance on particular word orders in Hebrew, early emergence of adverbial usage in Dutch and German, pragmatically motivated preference for prenominal position of attributive adjectives in French and late emergence due to lack of inflection on adjectives in contrast to the very rich inflection on nouns and verbs in Turkish.

Semantic categories in early adjective lexicons

Elena Tribushinina¹, Ronit Levie², ¹University of Antwerp, ²Tel Aviv University

Prior research indicates that semantic categories of adjectives in child language mirror distributions in the input. At the same time, English-speaking toddlers were shown to over-use adjectives denoting physical properties and to under-use adjectives with more abstract and, therefore, less accessible meanings. Our study aimed to determine whether these findings are cross-linguistically valid and to establish a range of factors influencing the development of adjective semantics in relation to other facets of adjective acquisition (form, function).

The results demonstrate that across the investigated languages, children heavily rely on adjectives denoting perceptually salient properties (e.g. size, color, temperature). Developmentally, the proportion of physical-property terms drops, whereas abstract adjectives become increasingly frequent and diverse. EVALUATION and CONFORMITY are the first abstract categories to emerge, which is related to their crucial communicative functions – evaluation and comparison/contrast. The last category to enter child language are adjectives denoting internal states whose understanding requires a developed theory of mind.

Within semantic classes, there is a progression from referent-modifying (predicative) uses to referent-identifying (attributive) uses associated with children's increasing ability to integrate adjectival and nominal concepts. Furthermore, there is some indication that diversification of semantic types may stimulate the syntactic development of adjectives. Adjective categories in child speech reflect language-specific properties of the input, such as a higher frequency of modal adjectives in Hebrew and of the pragmatically used *petit* 'small' in French. We conclude that adjective acquisition is determined by distributions in the input, as well as by the conceptual complexity and communicative functions of adjectives.

10:15 – 12:30
 Amphitheater B • Satellite 1
 Symposium Session 7 • B

PROFILES OF PRAGMATIC LANGUAGE IMPAIRMENT IN CHILDREN WITH AUTISM SPECTRUM DISORDERS

Convener Peter de Villiers, *Smith College*

Description:

A core diagnostic behavior for Autism Spectrum Disorders (ASD) is impairment of verbal and non-verbal communication, but children on the autism spectrum present with a wide range of cognitive, linguistic, and social functioning. A subset of verbal children with ASD may display language profiles similar to SLI (Tager-Flusberg, 2007). But even children with ASD who have normal range IQs and good vocabulary and syntactic knowledge frequently experience problems with pragmatic aspects of language, such as conversational understanding and narration (Paul, 2007).

This symposium addresses the variability of impairment in pragmatic language across children on the autism spectrum. The presentations focus on three primary domains of pragmatics: expressing and understanding shared reference in the use of pronominal forms; skills in narration; and the understanding of conversational implicatures. The goal is to highlight those aspects of pragmatics that may be more or less impaired in ASD and to relate those differential impairments to the social, linguistic, and cognitive strengths and weaknesses of the children. In addition, the symposium addresses the heterogeneity of the domains of pragmatics, in particular the ways in which they may or may not rely on the reading of mental states, on contextual inferences, or on more formal linguistic properties. In attempting to specify any characteristic profile (or profiles) of pragmatic skills in children with ASD, researchers must take into account the different formal and social-interactional aspects of pragmatic domains, as well as the dependence of those communication skills on other linguistic or cognitive skills of the children.

Pragmatic abilities in narrative production: A cross-disorder comparison

Courtenay Norbury¹, Tracy Gemmell², Rhea Paul³, ¹*University of London*, ²*Winnebago County Special Education Cooperative*, ³*Yale Child Study Center*

Background. Narrative requires integration of both language and socio-pragmatic abilities and, as such, is vulnerable in ASD. However, the variable language phenotype in ASD has made it difficult to disentangle the relative contributions (a) socio-pragmatic deficits and (b) formal language deficits that may be evident in other developmental disorders. Our study addresses this issue.

Methods. Children with ASD (n = 25), specific language impairments (LI, n = 23), and typical development (TD, n = 27) narrated a wordless picture book. Groups were matched for age and non-verbal ability; ASD and TD groups were matched on standardised language tests. Three aspects of narrative production were examined: story grammar, proportion of pragmatic anomalies and proportion of utterances referring to internal states.

Results. Despite normal scores on language tests, children in the ASD group scored significantly lower than TD peers on linguistic complexity and diversity. ASD and LI peers did not differ. The clinical groups had similar story grammar scores, both significantly lower than TD peers. There were no group differences in proportion of pragmatic errors. Significant differences in internal state language were found, but only the LI group was significantly low; ASD and TD groups did not differ.

Conclusion. Despite adequate formal language abilities, children with ASD produce simple narratives that lack semantic richness and omit important elements of story grammar, similar to peers with LI. Children with ASD did not produce disproportionate pragmatic errors. The ability to use internal state language appears contingent on general language levels, rather than autistic status.

Talking pronouns not referring to them: pragmatic limitation of children with ASD in pronoun production in narratives

Rama Novogrodsky, *Boston University*

Pronouns are used in narratives to maintain a character's identity when it is not interrupted by other characters' activities. Tager-Flusberg (1995) found that children with ASD produced ambiguous pronouns with no lexical NPs preceding them. However, Arnold, Bennetto and Diehl (2009) reported no difference between participants with ASD and controls production of pronouns with an interpretable reference. The current study investigated pronoun production in two different tasks: story-generation and story retelling.

Participants: 27 children with ASD (6;1-14;3) and 18 typically-developing (TD) children (5;11-14;4), matched for age and verbal IQ.

Method: Children told the story from the book "Frog, where are you?", and retold the "Bus Story" (Renfrew, 1991). Productions of third-person pronouns (singular and plural) were coded. Two blind judges identified pronouns with ambiguous referents.

Results: Children with ASD produced significantly more ambiguous pronouns in the "Frog stories". The ASD group produced the same number of pronouns as the TD group, but a greater percentage of them were referentially ambiguous (39% vs 17%, p = .03). Use of ambiguous pronouns decreased in the TD group after the age of nine, but this developmental pattern was not present in the ASD group. Similar results were

observed for the “Bus Story” retellings.

Conclusion: These results confirm a pragmatic deficit in productive pronoun use of children with ASD. Observation of differences between children with ASD and TD controls may depend on the number of characters and the complexity of the sequence of events in a narrative.

Him or him: pronoun comprehension in ASD

Rebecca Nappa, Joshua Hartshorne, Jesse Snedeker, *Harvard University*

A critical component of pragmatics is determining which noun phrases in a discourse pick out the same referent. Unlike some pragmatic skills, this ability is not clearly dependant on understanding the speaker’s mental state. For example, we tend to resolve pronouns to referents that are central in the discourse (1) or were previously in subject position (2):

(1) Jacob and Michael went to the park. Jacob₁ goes to the park every day. He₁ likes swings.

(2) Jacob₁ went to the park with Michael. He₁ likes swings.

Pragmatic deficits in ASD are often attributed to deficits in theory of mind (ToM), thus it is unclear whether children with ASD will have specific deficits in pronoun comprehension. We tested children with ASD (ages 5-11) and age and IQ-matched TD controls with utterances containing discourse-focus (1) and order-of-mention (2) cues, and unambiguous pronouns, e.g. (1) with “Emily” as subject. Both groups performed well on unambiguous pronouns (ASD=97%, TD=98%). On ambiguous pronouns children with ASD performed worse than TD controls (73% vs. 89% for discourse-focus; 55% vs. 87% for order-of-mention). In the discourse-focus condition, the group difference disappeared when syntactic abilities were factored out. But in the order-of-mention condition, these differences remained.

Thus, when a single referent is the focus of the discourse there is no deficit in pronoun comprehension in children with ASD. However, they have a specific deficit in using order-of-mention to select between two recently mentioned referents. We consider explanations based on ToM and executive function.

Conversational implicatures in ASD: some are impaired but others are not

Peter de Villiers, Jill de Villiers, *Smith College*

In conversational implicatures the listener uses the referential, linguistic and social-interactive context to infer the meaning of utterances (Grice, 1975, 1989). In relevance implicatures the central meaning in a conversational exchange is left unsaid and the observer has to fill it in from the topic under discussion and the speakers’ likely communicative intentions (Sperber & Wilson, 1986). Similarly, whether number words mean “exactly x”, “at least x”, or “at most x” also depends on the referential context (Mussolino, 2004). Recent studies suggest some quantitative implicatures are unimpaired in adults with ASD (Pijnacker et al, 2009), but relevance implicatures are particularly difficult for them (de Villiers et al, 2009).

We studied the understanding of relevance implicatures and quantitative implicatures by 18 high-functioning children with ASD and 14 TD controls matched for age (9 to 17, mean 12;3) and IQ. The children were given brief picture-supported narrative scenarios and had to explain what the speaker meant by key utterances involving a relevance implicature or a number word.

Children with ASD were significantly impaired relative to TD controls in understanding relevance implicatures (61.1% vs 88.4% correct, $p < .01$), but not in their interpretation of number words from context (88.6% vs 92.4%). The performance of the children with HFA on relevance implicatures was predicted by their ToM understanding, but their number word interpretation was predicted by non-verbal IQ, not by ToM. We explain the differential results in terms of Relevance Theory and proposed semantic and properties of conversational implicatures.

10:15 – 12:30

Amphitheater C • Satellite 1

Symposium Session 7 • C

DEVELOPMENT OF LANGUAGE AND LITERACY SKILLS IN FRENCH IMMERSION

Convener Helene Deacon, *Dalhousie University, Halifax*

Discussant Xi Chen, *OISE/University of Toronto, Toronto*

Description:

This symposium reports the first year results of a three-year literacy project in a French immersion program. Participants included 99 Grade 1 children, about half speaking a language other than English at home. Upon entry into the program, struggling readers were identified using English screening measures and those in the treatment group received an explicit English phonological awareness instruction. At the end of Grade 1, all children were administered English and French literacy measures.

The four papers address several important issues in the French immersion context. Study 1 examined the effects of early identification and early intervention in French immersion, where assessment of reading risk is generally not attempted until Grades 2 or 3 (Keep, 1993). The results were encouraging---the treatment group outperformed the control group on English and French literacy measures. Study 2 compared the literacy

development of children who spoke a language other than English at home with their peers. The two groups of children demonstrated similar developmental trajectories on both English and French literacy skills. Thus, attending French immersion programs did not delay the English literacy development of children with limited exposure to English. Study 3 and 4 examined transfer of literacy skills between English and French. Study 3 revealed that Grade 1 children were able to use English lexical knowledge to acquire French words with English cognates, and this ability predicted French vocabulary. Study 4 evaluated transfer of orthographic processing. It sought to extend the transfer results reported in previous research to younger French-English bilinguals.

The effectiveness of phonological awareness training for struggling readers in early French immersion programs

Nancy Wise, *University of Toronto & The York Region District School Board*

This longitudinal study examines the effectiveness of phonological awareness training on the reading development of Grade 1 French immersion students who are considered to be at risk for later reading difficulties. For three consecutive years, at-risk readers will be identified immediately upon entry into the program on the basis of their performance on English measures of word reading and phonological awareness. At-risk readers from intact classes are randomly assigned to treatment and control conditions. Each year, the treatment group is provided with 18 weeks of systematic and explicit phonological awareness instruction on a withdrawal basis, while the control group is withdrawn for vocabulary-building activities. Both groups receive instruction in English, a language in which all of the children have oral proficiency upon entry. In the first year of the study, 8 students comprised the treatment group and 11 comprised the control group. We anticipate that participants will total approximately 60 children who have just enrolled in the early total immersion program, all of whom have little to no French language background. Preliminary results indicate that significant gains were found in English blending, French elision, blending, and word reading skills of the treatment group. Findings tentatively suggest that an English phonologically-based intervention can effectively remediate phonological awareness deficits and facilitate English and French reading achievement for early French immersion students who are struggling to acquire reading skills. This study suggests that it may not be necessary to wait for children's French language proficiency to develop before initiating evidence-based instructional interventions.

English and French literacy development in children from English-speaking and diverse language backgrounds

Karen Au-Yeung, Xi Chen, *OISE/University of Toronto*

For many years, French immersion students came predominantly from English-speaking families (Genesee, 1987). Changes in Canadian demographics, particularly in large urban centres, have given rise to linguistically diverse student populations (Swain & Lapkin, 2005). However, little is known about the English and French literacy development of these children, as compared to their peers whose home language is English. The present longitudinal study examined this issue. Forty children from diverse first language backgrounds (e.g. Russian, Hebrew, Chinese, etc.), as well as 41 children whose home language was English, were given English literacy measures including phonological awareness, rapid naming, word reading, and vocabulary upon entry into a Grade 1 French Immersion program. Both groups were tested again at the end of Grade 1 on the same English measures and similar French measures. Children from diverse first language backgrounds made more gains in English expressive vocabulary, thus reducing the gap with their peers, despite the fact that they had reduced exposure to English at home. The two groups of children demonstrated similar developmental trajectories in other English reading skills, and they also performed similarly on French literacy measures at the posttest. Furthermore, similar predictors of English and French word reading were found in the two groups of children. The study showed that attending French immersion programs did not delay the English literacy development of children who spoke a language other than English at home. Moreover, it showed that children regardless of their language background progressed similarly in French literacy development.

Exploring cognate awareness in first grade French immersion children

Adrian Pasquarella¹, Xi Chen¹, Jin Xue², ¹OISE/University of Toronto, ²Beijing International Studies University

This study examined cognate awareness in grade 1 children in a French-Immersion school. Cognates are words in different languages that are of a common historical origin and are similar in spelling and meaning. Previous research has shown that cognate awareness facilitates vocabulary development in bilingual children (e.g. Nagy, Garcia, Durgunoglu & Hancin-Bhatt, 1990). However, all previous studies have involved children who were Spanish-English bilinguals and who were in Grade 4 and above. Our study extended this research to first graders in French immersion. Seventy-four Grade 1 children completed a cognate awareness measure requiring them to judge whether a French word presented in both oral and written form had an English cognate (not presented). There were three types of items, French words that had the same spelling as English cognates (e.g. dragon), French words that had different spellings as English cognates (e.g. parc), and false friends, which refer to words that have the same spelling across English and French but are not cognates (e.g. cent). Measures of vocabulary, word reading, and morphological awareness were also administered in French

and English. We found that children were aware of cognates as early as Grade 1, although they scored lower on cognates with different spellings than the ones with the same spelling. Our results also showed that cognate awareness was significantly related to French vocabulary above the contributions of other reading related variables. The challenges children face in identifying cognates, and the role of cognate awareness in French vocabulary development are discussed.

Understanding the Basis of the Potential Transfer of Orthographic Processing to Reading in Young Bilinguals

Eva Commissaire¹, Helene Deacon², ¹Université Lille3, ²Dalhousie University

There is recent evidence that orthographic processing, or the sensitivity to letter-patterns within a given language transfers to reading across languages, at least in the case when these languages share the same units of representation (Deacon, Wade-Woolley, & Kirby, 2009). This conclusion is somewhat contentious because it is the only published demonstration of transfer of orthographic processing to reading (of which we are aware). We designed a study to confirm the findings of this research with a group of young French immersion students. We did so in a rigorous manner, by including both lexical (using real words) and sub-lexical (using non-words) level orthographic processing tasks. Our sub-lexical measure is of particular interest; it includes regularities that are specific to English or to French, as well as those that are shared between the two languages. We also included phonological awareness and vocabulary tasks as control measures. Analyses of the relationship between each of these measures of orthographic processing and reading, both within and across the children's two languages, will extend the current knowledge base in several ways.

10:15 – 12:30

Amphitheater D • Satellite 1

Symposium Session 7 • D

DEVELOPING THE CDI-III FOR DIFFERENT LANGUAGES: SPECIFIC CONSIDERATIONS AND PRELIMINARY NORMS FOR EUSKERA, SPANISH AND SWEDISH

Convener Donna Jackson-Maldonado, *Universidad Autónoma de Querétaro*
Discussant Barbara Conboy, *University of Redlands*

Description:

The MacArthur-Bates Communicative Development Inventories (MB-CDI) have been developed for over 35 languages across the world. Several languages have both Long and Short Forms for children between the ages of 8 and 30 months. It has shown that the forms could be used with older children, particularly from low SES groups and children with language delays or disorders. A few languages have begun developing an upward extension of the formats to cover the 30 to 48 month age range. The English version, or CDI-III has been most useful in the assessment of children as 3 years is a particularly important age to determine language delay and disorder.

A big issue in the development of the CDI's for multiple languages has been what criteria should be followed to assure that the forms are language and culture specific. Although the format itself can carry over from language to language, the items need to be based on developmental components for each language. How to select words and structures for the development of each CDI has mostly been discussed informally. This symposium will take the discussion to a more formal level by proposing the systems that were used in the development of the Euskera, Mexican Spanish and Swedish versions of the CDI-III for children between 30 and 47 months of age. It will include the mechanisms for selecting the words using the Lex program for Spanish and frequency analysis based on the Euskera and Swedish norms. Pilot studies and results will be exposed and norming data will be given.

Towards a CDI-III for Swedish children aged 3-4 years

Mårten Eriksson, *University of Gävle*

This talk reports on the development of a new parent report form on children's language designed for children aged 2;6 to 4 (or 5) years. The present work has been conducted in cooperation with American, Danish and German researchers and concerns the Swedish version. Selection of items was based on several considerations including word frequency data from younger children, examples of long sentences given from younger children as well as previous research. The first Swedish version of the CDI-III is just being tested in cooperation with preschools and around 100 parents are expected to complete the form. The form comprises 8 main sections. A vocabulary section of 72 words focus on mainly on verbs (for actions, cognitions, and emotions), adjectives reflecting emotions, superordinate nouns and nouns for time and finally question words. Other sections concern a general judgement of communicative skills, pronunciation, pragmatic skills, use of prepositions and subordinate clauses and meta-linguistic awareness. Pairwise comparisons of sentences with a simplified and a more complex alternative incorporating connecting verbs, verb inflections, auxiliaries, word order, and negations, are used in another section. This last section will be validated in the preschools. Teacher

training students will tell each child individually a set of stories with the most complex sentences included. The child will be asked to retell each story. This will be recorded and compared with the parent report. Results from this comparison will guide in both the selection of specific items and to inform us about the validity of pairwise comparisons in general.

A CDI-III for Euskera-speaking children between 30 and 44 months

María José Ezeizabarrena, Iñaki García, Margareta Almgren, Andoni Barreña, *Universidad del País Vasco, Mondragon Uniberstisitea, Hizkuntzaren Jabekuntza eta Erabilera, Universidad de Salamanca*

At present, there is an Euskera adaptation of the Long Forms of the MacArthur-Bates Communicative Development Inventory (MB-CDI) for children between 8 and 30 months of age. The forms have been normed on the Euskera population. This presentation will address the Euskera adaptation of the MBCDI-III (KGNZ-3) for an older sample of children between 30 and 44 months of age. The selection of the items was carried out to avoid basal and ceiling effects. Words were selected from the norms of the Long Version of the Euskera CDI. Data was taken for 3 levels of frequencies from less than 40% to above 60%. Different types of morphological items were included: nominal and verbal conjugations and sentence complexity. Two pilot studies were carried out to discard initial words and develop the final version with 120 words, 29 structures and 10 questions about language use. This presentation will give details of how the form was developed based on the first word selection and pilot study data. Finally, data from the preliminary norms will be presented based on two month periods across the full age range. Developmental stages for each section will be exposed

A CDI-III for Spanish-speaking children between 30 and 47 months of age

Donna Jackson-Maldonado, *Universidad Autónoma de Querétaro*

A Mexican Spanish version of the MacArthur-Bates Communicative Development Inventories (MB-CDI) is now available in both Long and Short Forms for children between the ages of 8 and 30 months of age. Norms are published for the Long Forms and are under review for the Short Forms. The need for an upper extension of the forms has been shown as several institutions have requested them for research and clinical purposes. Based on that need, a CDI-III is being developed for Spanish-speaking children. Many tests have been developed that are translations of English instruments. It is most important to adapt tests linguistically and culturally. The mechanisms that have been used for the adaption have rarely been discussed or published. This presentation will explain steps that were taken to insure linguistic and cultural relevance in the development of the CDI-II. First, the Lex Program that contains the data from the Spanish norming study and generates word frequency by age was used for initial word selection for the first pilot study. Also, data from other CDI-III's, story books and educational programs were consulted. The final form consists of 110 words. Sections of language structure were created based on data from language samples and published materials. Finally, a new section about language use was developed. Results from 2 pilot studies, the structure of the final version and preliminary results will be given in the symposium. Emphasis will be placed on how to develop such instruments.

SATELLITE 2
MORNING SYMPOSIA
AMPHITHEATERS F•G•H

10:15 – 12:30
Amphitheater F • Satellite 2
Symposium Session 7 • F

DETECTING AND INTERPRETING AGREEMENT MORPHOLOGY: CROSS-LINGUISTIC ISSUES

Convener Ana Pérez-Leroux, *University of Toronto*
Discussant Mihaela Pirvulescu, *University of Toronto*

Description:

Agreement markers are at the core of what children must learn when acquiring a language. The traditional research paradigm on the acquisition of agreement has focused on emergence, onset of productive use, and development target levels of use in obligatory contexts. A new literature has emerged considering children's sensitivity to agreement in receptive contexts, both in terms of sensitivity to grammaticality/ungrammaticality and their ability to extract semantic information in contexts when agreement features provide non-redundant information about the identity of a referent. Recent studies have focused on a puzzling production/comprehension asymmetry that emerges in subject-verb agreement, where children seem to be failing to use agreement features in comprehension at ages where these are already mastered in production (English, Johnson et al., 2005; de Villiers & Johnson 2007; Spanish, Perez-Leroux, 2005; Xhosa, Gxilishe et

al., 2009; and German, Brandt-Kobebe & Höhle 2010). Explanations given to date for the asymmetry include lack of access to number representation in the grammar of young children, the formal status of uninterpretable vs. interpretable features, morphophonological factors, and children's treatment of semantic implicatures. The proposed symposium seeks to compare these alternative explanations. The four contributions also aim to extend the empirical base on children's interpretation of agreement features with new cross-linguistic data on French, Portuguese and German, triangulating across methodologies (picture choice vs. preferential looking, real vs. pseudoverbs) and constructions (subject agreement and object clitics).

German children's sensitivity to agreement violations are revealed by looking patterns
Oda-Christina Brandt-Kobebe, Barbara Höhle, *Universität Potsdam*

The acquisition of subject-verb agreement (SV-agreement) has mostly been examined using spontaneous speech data, which does not reveal children's receptive competence. Grammaticality judgments could reveal such competence but are often difficult even for school aged children due to metalinguistic knowledge required. An alternative way to measure children's sensitivity to the correct use of functional morphemes is tracking their eye-gaze, as young children's looking patterns can be influenced by the grammaticality of a sentence.

In the present study we examined German children's sensitivity to SV-agreement (3 years: n=15; 5 years: n=16) using a Tobii-Eyetracker. During each trial, two pictures of inanimate object were presented as target and distractor (e.g. a ball and a shoe). Simultaneously, the children heard simple SVO-sentences in which the subject was either agreeing with the inflected verb or not (e.g. *The dog delivers / *deliver the shoe*). Looking behavior in both grammaticality conditions was compared in a time window 600 - 900 ms after the presentation of the verbal inflection, which marks the grammaticality of a sentence. The 5-year olds displayed a higher proportion of looks to the target picture when presented with a grammatical compared to an ungrammatical sentence ($p=.017$). The 3-year olds showed fewer looks to the distractor picture in the ungrammatical trials ($p=.049$). The differences in looking patterns demonstrate that sentence processing is affected by SV-agreement violations and that German children are sensitive to these violations.

Is there a production/comprehension asymmetry in the acquisition of verbal number marking? Evidence from French

Geraldine Legendre¹, Isabelle Barriere², Louise Goyet³, Thierry Nazzi³, ¹*Johns Hopkins*, ²*Brooklyn College*, ³*Université Paris Descartes*

Experimental evidence has revealed that 5-year-olds are unable to identify whether the subject is plural or singular in a picture-choice task in English (Johnson et al., 2005), Spanish (Perez-Leroux, 2006), and Xhosa (Gxilishe et al., 2009) However, 3-year-olds are known to produce subject-verb agreement both spontaneously (Brown, 1973) and in elicitation tasks (Gxilishe et al., 2009).

We present evidence against broadly characterizing the problem as a production/comprehension asymmetry because comprehension of verbal agreement has been found in French at 30 months in a set of three experiments using the same visual stimuli, and comparable verbal stimuli: Preferential Looking with real verbs (test vs. baseline, $F(1, 19) = 9.09, p = .007$; main effect of number: $F(1, 19) = 5.77, p = .027$; no interaction); Pointing with real verbs (children pointed at the matching video 61.93% of the time ($p = .004$, 2-tailed t-test); Pointing with pseudoverbs (children matched the verbal stimuli to the appropriate visual stimuli 61.21 % of the time ($p=.003$, 2-tailed t-test).

We hypothesize that the grammar of agreement is in place as early as age 2;5 cross-linguistically but its processing is facilitated by the special phonology of the French subject agreement marker. Prefixation and resyllabification result in the simultaneous processing of the grammatical and lexical material. Parsing off number is necessary to enable lexical access. In the other languages, grammatical and lexical processing are separated given the incremental nature of word recognition, with the additional handicap of crucial grammatical information in word-final position in English and Spanish.

Interpreting subject agreement in a rich agreement language: Data from Brazilian Portuguese
Letania Ferreira¹, Ana Pérez-Leroux², ¹*Augustana College*, ²*University of Toronto*

Does inflectional strength play a role on the difficulties children have in interpreting number features in subject agreement? English-speaking preschoolers do not discriminate number on the basis of agreement (Johnson et al 2005). This is true also of Spanish-speaking children, although Spanish is a morphologically uniform prodrop language (Pérez-Leroux 2005). However, Miller (2007) demonstrated that children acquiring dialects with variable final -s realization have general delays in their acquisition of nominal number.

We test whether comprehension deficits also occur in Brazilian Portuguese, a morphologically uniform prodrop language where, unlike in Spanish, there is no consonantal lenition processes. Third person plural is differentiated from the unmarked singular by a verb-final nasal (*come/comem* 'eats/eat', *esta/está* 'is/are') 29 children aged 4-6 participated in a picture choice study examining: sensitivity to final nasal contrasts, number comprehension by agreement only (prodrop), and number comprehension in subjects and agreement. The results indicate Portuguese children have a comprehension deficit, and a reliable advantage of the morphologically marked plural across conditions. In the overt subject condition, we found significant effects of number and a number by group interaction ($p=.001$ and $p=.034$), with worse performance for singulars,

particularly for the younger children. In the prodrop condition, performance with plural was high (~80%) but performance with singular was at chance (~50%) ($p < .000$). Neither age nor age by number interaction reached significance. Interestingly, there was no correlation between performance in the phonetic discrimination task and number comprehension. These findings point to morphology rather than phonology as the source of developmental difficulties.

French object clitics in comprehension

Mihaela Pirvulescu, Ana Pérez-Leroux, Nelleke Strik, Yves Roberge, *University of Toronto*

Children's ability to recover the content of agreement phi-features has been assessed through comprehension tasks in several typologically different languages. The results show that in some languages there is a delay in comprehension of agreement markers with respect to production (English, Spanish, Xhosa). Current research on the status of pronominal clitics assesses them as bare bundle of features entering into an agreement relation with a host (Mavrogiorgos, 2006). They are considered different from strong complement pronouns in being phi min/max rather than Dmin/max (Roberts 2009). If this is the case, they should be vulnerable in receptive tasks.

We examine children's comprehension of French object clitics in a group of four year-olds (mean age 4,06). Using a picture-choice task (de Villiers et al. 2008) children were tested for sensitivity to number and gender features in the object clitic (*Show me the picture where the girl is drawing it-fem; the flower-fem/the truck-masc*). Results show 70% general accuracy. The errors are equally distributed for number and gender, but children were the least accurate with feminine sentences (40%) followed by singular (60%), plural (80%) and masculine (100%).

These results suggest that French children are vulnerable to errors in comprehension of pronominal object clitics. This contrasts with production, where there are few feature mismatch problems, but a substantial delay in the production of object clitics, which remain optional at the age of 3. This asymmetry suggests that (at least) in child grammar object clitics function as optionally produced agreement markers.

10:15 – 12:30

Amphitheater G • Satellite 2

Symposium Session 7 • G

WORD SEGMENTATION IN INFANTS: DISTRIBUTIONAL CUES, SPEECH CUES AND TOP-DOWN PROCESSING

Convener Rushen Shi, *Université du Québec à Montréal*

Description:

This symposium focuses on mechanisms and factors that impact infant word segmentation. The studies in the talks all used preferential looking methods. Polka, Curtin & Adada used artificial languages to test influence of native language rhythmic structures on word segmentation. They manipulated statistical cues independently of rhythmic cues. English- and French-learning 8-month-olds showed different prosodic biases for word segmentation, reflecting different native language experience. Nazzi, Nishibayashi & Goyet suggest that French-learning infants use both transitional probability and syllabic cues for word segmentation. They systematically manipulated TP of their stimuli. They show that French 8-month-olds were able to segment mono-syllabic forms, and that segmentation of syllabic targets was affected by TP. Johnson, Seidl & Tyler consider bottom-up vs. top-down cues to word segmentation. In their study, utterance edge cues enabled English-learning 6-month-olds to segment words. Infants' own names also assisted segmentation. They suggest that edge cues are simpler to operate than statistical segmentation, and are responsible for earliest word segmentation. Babineau & Shi ask if statistical segmentation is subject to constraints. When presented with variable liaisons supporting subsyllabic units, infants segmented the subsyllabic targets (against syllabic integrity) only by 24 months, while 20-month-olds showed syllabic parsing despite statistical cues to subsyllabic units. Their study also shows the effect of prior liaison knowledge in older infants' processing. In sum, the talks offer a chance to discuss major issues in infant word segmentation including the onset of segmentation, constraints, native language influence, and bottom-up vs. top-down processes.

Developmental differences in the use of native-language prosody for speech segmentation: Evidence from infant learners of Canadian English and Canadian French

Linda Polka¹, Suzanne Curtin², Shani Abada¹, ¹*McGill University*, ²*University of Calgary*

The claim that language-specific rhythmic biases guide word segmentation has been supported by research using natural speech. To further assess this view we examined segmentation abilities of monolingual Canadian English- and French-learning 8-month-olds and adults using controlled speech materials in which statistical cues were manipulated independently of language-appropriate stress cues. Infants were familiarized to an artificially constructed continuous stream of naturally produced syllables for 2 minutes. Two streams (English; French) consisting of six trisyllabic (CVCVCV) strings were created from nine syllables (permissible in both languages). Each syllable had a .5 probability of proceeding or following the two other

syllables within a string; each string contained a stressed syllable in initial, medial, or final syllable position; only three syllables occurred as stressed syllables. Following familiarization (with the native language stream), infants were tested on equally emphasized trisyllabic strings (again with native speech stimuli) corresponding to either initial stress or medial stress or final stress sequences in the familiarization stream along with control strings (native language syllables that never co-occurred in the familiarization). Listening times were compared across the 3 types of syllables strings. Findings show that English infants appear to make use of a trochaic template, similar to English adults. French infants appear to be influenced by prosody but do not consistently apply an iambic template, even though French adults favor iambic forms when tested with the same stimuli. Thus, language experience guides segmentation along different developmental paths towards different segmentation strategies

Syllabic- and TP-based segmentation in French-learning 8-month-olds

Thierry Nazzi, Louise Goyet, Léo-Lyuki Nishibayashi, *Université Paris Descartes – CNRS*

Two cues are playing a crucial role in early word form segmentation: TPs/transitional probabilities (Saffran et al., 1996; Johnson & Tyler, 2010) and rhythmic units (Jusczyk et al., 1999; Nazzi et al., 2006). The present study explores the interaction in the use of TPs and syllabic units for segmentation in French-learning 8-month-olds. In two experiments, infants were familiarized with passages (sentences). In each, one target syllable was repeated. In Experiment 1, that syllable (e.g., di), appeared as the onset of a word (*diva*) and as the offset (*radis*) of another word. In Experiment 2, the target syllables appeared as the onset of 4 words (*divan*, *dizain*, *dîner*, *dito*) and as the offset of 4 other words (*caddie*, *bandit*, *taudis*, *radis*). Hence, within-word TP information was higher in Experiment 1 than in Experiment 2. Infants were tested with lists of target syllables versus new syllables. Infants recognized the target syllables in Experiment 2 ($p = .03$) but not in Experiment 1 ($p = .86$), suggesting that higher within-word TPs prevented the segmentation of the target syllable as a separate unit. Interestingly, the effect found in Experiment 2 was a novelty preference. However, a familiarity effect was found in a control experiment in which the target syllables were embedded in the passages as monosyllabic words ($p = .001$). This difference could be explained by a sensibility to differences in coarticulation within and across words. The present study brings support to both TP- and rhythm-based theories of word segmentation bootstrapping.

The Chicken and egg problem in early word segmentation: Investigating the role of top-down and bottom-up cues

Elizabeth K. Johnson¹, Amanda Seidl², Michael D. Tyler³, ¹*University of Toronto*, ²*Purdue University*, ³*University of Western Sydney*

How do infants learn to extract words from speech before they know what words typically sound like in their native language? One possibility is that first words could be extracted by tracking transitional probabilities between syllables irrespective of prosodic boundaries. In this study we considered an alternative possibility; infants' first words might be extracted from the edges of major prosodic constituents. We presented English-learning 6-month-olds with passages containing target words located either utterance-medially or along utterance edges. Using the Headturn Preference Procedure, all infants were then tested on their ability to recognize these words in isolation. Only infants who heard passages containing target words flanked by utterance boundaries showed a statistically significant difference in their looking times to familiar versus unfamiliar test items. Additional experiments showed that the word forms 6-month-olds extract from speech are acoustically detailed, that both utterance-initial and utterance-final positions promote word extraction and that an additional advantage is obtained if a word occurs in both positions. A similar additive effect was found for words marked by both top down (target words flanked by the infant's own name) and bottom up cues (target names flanked by utterance edges). In summary, the current study presents evidence that the speech signal contains bottom-up prosodic information that supports the onset of word segmentation abilities in infancy. We are currently undertaking a corpus study to test how effective such a strategy would be for extracting words from infant-directed speech.

Syllable-integrity bias and statistical segmentation in infants

Mireille Babineau, Rushen Shi, *Université du Québec à Montréal*

We investigate statistical segmentation and the syllable-integrity constraint on segmentation. French liaisons offer a unique opportunity for studying this question. Liaisons involves the surfacing of an underlying consonant of certain frequent words -- this consonant behaves phonetically as the onset of the following vowel-initial word (e.g., "*les amis*" realized as [le][zami], resulting in a subsyllabic unit for "*amis*", against syllabic integrity). Segmentation of liaisons was assessed in a preferential looking task. In experiment 1, French-learning 24- and 20-month-olds first heard sentences containing a pseudo-noun, *onche* or *èque*, in four liaison contexts, e.g., *onche* as [t]onche, [z]onche, [r]onche, [n]onche. Test stimuli were isolated *onche* versus *èque* (distributional parse), or *zonche* versus *zèque* (syllabic parse; matching one of the surfaced forms during familiarization). Results: 24-month-olds showed a preference in the vowel-initial (distributional parsing) testing condition only. 20-month-olds, however, showed a syllable-integrity bias (syllabic parse), despite distributional support for subsyllabic segmentation. In experiment 2, 24- and 30-month-olds were familiarized with one liaison context (only syllabic cue, no statistical cue), e.g., *onche* as [z]onche. Test stimuli were as in

Experiment 1. Infants showed no consonant-initial segmentation, resembling adults' performance in previous experiments, suggesting the influence of liaison knowledge.

Conclusion: 20-month-olds maintain a syllable-integrity bias despite statistical cues supporting subsyllabic segmentation, i.e., statistical segmentation is constrained by the syllable-integrity bias. By 24 months, infants become capable of using statistics to segment subsyllabic units, which leads to liaison understanding. This knowledge in turn influences their subsyllabic liaison segmentation involving novel nouns when statistical cues are absent.

10:15 – 12:30

Amphitheater H • Satellite 2

Symposium Session 7 • H

HOW TO MAP FORM TO MEANING: TESTING EMERGENTIST PERSPECTIVES

Convener Caroline Rowland, *University of Liverpool*

Description:

A central task in acquiring a language is learning the way in which the structure of a sentence determines its meaning (the form-function mapping problem). In recent years, emergentist explanations of how children learn the relationship between sentence structure and meaning have attracted a great deal of interest (e.g. the competition model of MacWhinney 2005; the usage-based model of Tomasello, 2000). These theories are predicated on the idea that children learn the relationship between sentence structure and meaning (or, put another way, learn a construction; Goldberg, 2006) by paying attention to consistent, reliable cues and commonalities in the language that they hear.

The four papers in this symposium present corpus-based, experimental and modelling work on three different languages (English, Italian and Cantonese) to test emergentist claims about how children learn form-function mappings. We focus on the following themes: a) what syntactic, morphological and semantic cues might children use to learn how their language represents syntactic structure, b) how do these cues differ across languages and are these differences reflected in the developmental pattern, c) in what ways do children's representations differ from the adult prototype in the event semantics that they portray and what does this tell us about the learning mechanism, and d) is there evidence for verb-specific learning or learning that reflects the distributional characteristics of the input that children receive. The goal of the symposium is to provide the authors and audience with a forum to discuss whether the predictions of emergentist theories can explain the developmental pattern and, thus, what mechanisms may be implicated in the development of abstract, adult like knowledge.

The semantics of early transitive utterances: A corpus study

Anna Theakston¹, Rob Maslen², Elena Lieven³, Michael Tomasello³, ¹*University of Manchester*, ²*Max Planck Child Study Centre*, ³*Max Planck Institute for Evolutionary Anthropology*

Acquiring the transitive construction means learning not only its syntactic form, but also the wide range of event types it can encode. The broad semantic scope of the construction makes it potentially difficult to learn, and raises questions regarding the nature of children's early transitive representations and whether they are organised according to an adult-like prototype. In this study, we focus on event semantics and consider the extent to which early transitives display the semantics associated with high transitivity and/or inalienable transitivity, display patterns of preferred argument structure (PAS) in their subject and object referent types, and differentiate their subjects and objects in terms of animacy. We examine Subject-Verb-Object and Verb-Object utterances in densely collected naturalistic data from one child (Thomas) between 2;0-3;0. The data show that the event semantics underpinning early transitive utterances do not straightforwardly fit prototype (high or inalienable) notions of transitivity, but rather may reflect sensitivity to animacy and intentionality in a way that mirrors the input. There is not a close relation with the input in the types of subject and object referents used, nor a close adherence to PAS before 2;7, but both earlier and later acquired verbs show a simultaneous move towards PAS patterns in selection of referent type at 2;9. We conclude that children's knowledge of the transitive construction continues to undergo significant development between 2;0 and 3;0, reflecting the gradual abstraction and integration of the SVO and VO constructions, verb semantics, discourse pragmatics, and the interactions between these factors.

Universal processing biases versus cue cost and competition: The acquisition of transitive sentences in Italian

Kirsten Abbot-Smith¹, Ludovica Serratrice², ¹*University of Kent*, ²*University of Manchester*

Some 'universalists' claim that children initially interpret the first 'argument' (noun or pronoun) of a sentence as the agent (or 'do-er') of an action. Emergentists argue acquisition order is determined by formal 'cues' to the agent. These 'cues' can include word order (e.g. whether the agent comes before or after the verb) or case-marking (e.g. English 'he' indicates the agent) The emergentist view claims that learnability of a cue depends on 'cue validity' (the product of input frequency and cue reliability), its working memory 'cost', and competition between cues. Italian, where the agent is frequently omitted is problematic for both theories. Study 1 analysed 13229 utterances in Italian child-directed-speech (CDS) to calculate cue validities for word order and case-

marking. In study 2, Italian preschoolers heard novel verbs in the three most frequent word orders in CDS. They had to choose between two video clips (e.g. horse acting on cat versus cat acting on horse). Contrary to universalist claims children did not reliably interpret the first argument as the agent until 4 ½. In line with emergentist views, they relied on the 'low cost' case cue, but only when it did not compete with the highly valid word order cue.

Cues to the acquisition of semantic roles: New evidence from Cantonese datives

Angel Chan¹, Caroline Rowland², ¹Hong Kong Polytechnic University, ²University of Liverpool

Emergentist approaches to the form-meaning mapping problem such as the competition model (Bates & MacWhinney, 1987) predict that the ease with which children learn a syntactic structure should depend on the availability and reliability of the relevant cues in the language that the children hear. In the present study we investigated whether the low availability and low reliability of word order cues would delay children's acquisition of the dative. We tested children's ability to assign semantic roles (recipient, theme) in Cantonese datives with the verb *give* (*bei2*). The canonical word order for Cantonese *give*-datives is verb-theme-recipient (e.g. *give the teddy [theme] the rabbit [recipient]*), but widespread argument ellipsis and variable word order means that, in fact, only 30% of the *give* (*bei2*) datives that children hear have the canonical theme-recipient word order (see Chan, 2010). The most frequent *give* dative that children actually hear has an omitted theme noun (i.e. the children hear *give-N[recipient]*; e.g. *give the rabbit[recipient]*).

We employed a forced-choice pointing paradigm to investigate how 3-year-old Cantonese children (mean age 3;5) and adults assigned the semantic roles of theme and recipient correctly in *give* (*bei2*) double object datives (datives with the word order: *bei2-N[theme]-N[recipient]*) and datives with one argument omitted (*bei2-N*). With the *bei2-N-N* datives, adults consistently chose the picture that indicated they had assigned the theme role to the first noun and the recipient role to the second noun, following the canonical word order. With the omitted argument datives (*bei2-N*), the adults followed the most frequent pattern of their language and assigned the recipient role to the overt noun (even though the theme interpretation would also be grammatical). The children, however, were at chance with both structures, although they were capable of interpreting serial verb constructions with real dative verbs (*sung3-N-bei2-N*) and novel verbs (*tam1-N-bei2-N*). We conclude that widespread argument ellipsis delayed the children's learning of the adult like word order constraints of the *give* (*bei2*) dative, consistent with the prediction of the competition model.

A usage-based acquisition model of argument productivity in Subject-Verb-Object constructions

Paul Ibbotson¹, Daniel Freudenthal², Anna Theakston³, Elena Lieven^{1,3,4}, Michael Tomasello⁴, ¹Max Planck Child Study Centre, ²University of Liverpool, ³University of Manchester, ⁴MPI-EVA

The flexibility with which children use their first verbs is taken to be a key indicator of how their grammatical competence is developing. There is some debate as to whether young children begin acquiring their grammar as 'conservative learners' or whether they are more 'avid generalisers'. The alternative views have implications for how abstractly linguistic knowledge is represented and at what age of development. Using corpus data we test the usage-based hypothesis that the variability in English-speaking children's verb-specific patterns of use is strongly predicted by the variability they hear. Specifically, we build a computational model that uses child directed speech as its input to create verb-specific developmental trajectories for subject- and object-slot variability in SVO constructions. With minimal model architecture (cumulative sampling) we account for the verb-specific developmental trajectory of productivity in subject and object slots in children's SVO constructions. The rate at which productivity increases in these slots is what would be expected if children were cumulatively storing (viz. remembering) verb-specific argument productivity attested in the input. Children are learning the disposition of specific verbs to combine with subjects and objects from the semantic and pragmatic contexts in which that verb is used. The implications are that (i) the variability in the argument slots grows as a function of the instances of variability they are exposed to and (ii) the verb-specific nature of this learning suggests that children's early SVO representations are lexically based.

SATELLITE 1
AFTERNOON SYMPOSIA
AMPHITHEATERS A•B•C•D

14:30 – 16:45

Amphitheater A • Satellite 1

Symposium Session 8 • A

ACQUISITION OF MORPHOLOGY AND SYNTAX IN HEARING-IMPAIRED CHILDREN

Convener Eva Wimmer, *University of Bremen, Bremen*

To date little is known about the acquisition of language in children with a bilateral sensorineural hearing impairment since birth, although about 1/1000 newborns in western industrial countries are affected. During the first years considered as 'critical' for language acquisition, many affected children have none or only restricted access to spoken language input – despite hearing aids or cochlear implant (CI). Especially the acquisition of inflectional affixes is likely to be affected because these affixes are often realized on unstressed syllables and/or by coronal consonants, and are therefore difficult to perceive by children with a hearing impairment. Therefore one would expect morphosyntactic development in hearing impaired children not to proceed normally.

Only recently, (psycho-)linguistic research has started to take language acquisition in these children into focus. Recent studies have found specific morphosyntactic impairments in hard-of-hearing children (with CI and hearing aids) while reporting a large inter-subject variation in their data sets without clear predictors for a successful language acquisition.

The symposium aims at bringing together researchers currently working on the acquisition of morphology and syntax in hard-of-hearing children. Specific issues for discussion that should address the problem of data variation include:

- the effect of individual factors (e.g. age, age of diagnosis, degree of hearing loss)
- the role of perceptual salience of morphosyntactic elements
- the role of grammatical complexity
- research methods and cross-language differences.

The acquisition of finite verb morphology in hearing impaired children

Eva Wimmer¹, Martina Penke², Johannes Hennies³, Monika Rothweiler¹, Markus Hess³, ¹*University of Bremen*, ²*Ghent University*, ³*University Medical Center Hamburg-Eppendorf*

Research question: For children with a sensorineural hearing impairment (HI) inflectional affixes are particularly difficult to perceive (despite hearing aids) because they are often realized by coronal consonants (e.g. in German *-s* or *-t* for finiteness inflections). We investigated whether the acquisition of verb morphology is affected in German children with a moderate HI – a population whose grammatical development is not well investigated to date.

Method: A group of 10 German 3-to 4-year old HI toddlers with a moderate bilateral hearing loss (40-92dB) and 10 age-matched hearing peers were asked to describe the action in 30 short video scenes to elicit utterances in 2nd and 3rd person singular and 3rd person plural contexts (i.e. verbal suffixes *-s(t)*, *-t* and *-n*, *n* = 10 each). All target verb forms were controlled for phonological complexity.

Results: The data indicate that 29% of the affixes *-s(t)* and *-t* were not realized correctly in obligatory contexts by the HI group in contrast to the control subjects (no errors). Whenever the affixes *-st* and *-t* are used, they are applied correctly (97%). These results and findings of a picture-naming and a phoneme discrimination test suggest that the children's tendency to avoid the agreement markers *-st* and *-t* in obligatory contexts is due to specific difficulties in perceiving these coronal consonants.

Conclusion: Our findings indicate that the production of inflectional morphology is selectively affected even in children with moderate HI. However, this seems to be caused by a problem in perceiving and processing the relevant phonemes used as inflectional affixes rather than by a morpho-syntactic deficit.

Finite verb morphology in spontaneous speech of cochlear-implanted children and hearing-aided children with moderate to severe hearing loss

Annemiek Hammer¹, Martine Coene⁴, Johan Rooryck¹, Paul Govaerts⁴, ¹*Leiden University Centre for Linguistics*, ²*Vrije Universiteit Amsterdam*, ³*The Eargroup, Antwerp-Deurne*, ⁴*University of Antwerp*

Purpose: This study investigates the role of speech perception and perceptual morpheme saliency in the development of finite verb morphology. We examined this development in two hearing-impaired populations: Cochlear-Implanted children with profound hearing loss (CI children) and hearing-aided children with a Moderate - Severe Hearing Loss (MSHL children).

Method: Spontaneous language samples have been collected from 48 CI children and 31 MSHL children, aged between 4 and 7. Standardized language testing was used to compare both populations with their Typically Developing peers. Measures involve Mean Length of Utterance (MLU), finite verb production and verbal agreement errors. The latter includes the omission of the finite verb in obligatory contexts and subject-verb agreement errors.

Results: The CI and MSHL children show an increase in MLU and finite verb production over the years. Interestingly, CI children tend to perform better on finite verb production than their MSHL peers. CI and MSHL children decrease their finite verb omission in obligatory contexts, but not the number of subject-verb agreement errors. Such errors are not observed for the TD children from age 4 onwards.

Conclusion: This study shows that CI and MSHL children catch up with their TD peers on MLU and finite verb production. However, CI and MSHL children persistently produce more verbal agreement errors as compared their TD peers. The results of this study underline the importance of sufficient auditory speech input in the acquisition of finite verb morphology. Nevertheless, no direct role is observed for perceptual morpheme saliency in this development.

Analysis of spontaneous language in congenitally hearing impaired adults: an additional perspective to understand the acquisition of morphosyntax in hearing impaired children

Elke Huysmans¹, Jan De Jong², J.M. Festen¹, Theo Goverts¹, ¹VU University Medical Center, ²University of Amsterdam

Purpose: Studies on language performance of hard-of-hearing children report a large inter-subject variation. The effect of hearing impairment on language acquisition in individual children is masked by maturational differences. Studying language performance in *adulthood*, when maturation of language competence is complete, offers an additional perspective on the *long term effects* of moderate to severe congenital hearing impairment (MCHI).

Method: We studied the language performance in Dutch of 10 normal hearing adults and 20 adults with MSCHI, using the CELF-4^{NL} test and elicited spontaneous language. The samples of spontaneous language were analysed using 37 parameters of the STAP-method for analysis of spontaneous language.

Results: Data analysis shows a difference between the two groups in the pattern of errors made in language production: MSCHI subjects make more verb-subject agreement errors, determiner errors and errors concerning adverbs. The CELF-4^{NL} scores did not reveal inter-group-differences as found in the analyses of spontaneous language.

Conclusion: Studying spontaneous language is a sensitive method to pinpoint long term effects of congenital hearing impairment. The results of our study give a language-specific description of aspects which are vulnerable when language is acquired with an inferior auditory input. This information leads to more specific insights in the role of perceptual saliency of morphosyntactic elements and in the role of grammatical complexity in language acquisition in MSCHI children. Furthermore, the results may be used to add focus in speech therapy for young hearing impaired children, in order to prevent permanent weaknesses in language performance.

Producing active and passive voice: effects of age, hearing impairment and noise in adults

Mirko Hanke¹, Cornelia Hamann¹, Esther Ruigendijk¹, ¹University of Oldenburg

To date very little is known about the effects of a noisy environment on the speaking process in people with hearing impairment. We conducted a study to investigate cognitive effects of fluctuating, language-like noise on speakers while they were producing sentences of varying syntactic complexity. Our hypotheses are that noise impacts cognitive processes necessary for planning, formulating, and monitoring speech, and that hearing-impaired speakers might be affected stronger by noise than people without impairment. We tested 24 speakers aged between 29 and 59 with and without hearing impairment, priming active and passive structures in a picture description task under different background noise conditions.

Our data yield two significant interactions: first, we see that spontaneous variation between active and passive utterances following an active prime decreases in noise in the group of speakers with hearing impairment. Second, while the tendency to reuse the passive structure after a passive prime increases with age in the group of subjects without hearing impairment, this increase is significantly less pronounced in the hearing-impaired subjects.

Fluctuating noise might lead to an arousal boost, helping hearing-impaired subjects to temporarily reduce cognitive interference by earlier primes. This effect is counteracted by ageing effects. Older subjects with hearing impairment rely to a larger extent on the more canonical active structure.

We believe the modulation of priming effects by hearing status, age and importantly external factors like noise is highly interesting, because it allows us to observe the interaction of structural and more general cognitive constraints in the speaking process.

14:30 – 16:45
 Amphitheater B • Satellite 1
 Symposium Session 8 • B

LANGUAGE ACQUISITION AND DEVELOPMENT IN INTERNATIONALLY ADOPTED CHILDREN

Convener Fred Genesee, *McGill University*

Description:

IA children are unique language learners: they experience abrupt termination in first language acquisition and delayed onset in acquisition of their new language, at a time when the neurocognitive substrates for language-learning are becoming fine-tuned. These experiences are thought to be important risk factors for later language acquisition. Evidence from numerous studies shows that many IA children, although not all, exhibit normal general development post-adoption and, thus, are a good population for studying the possibility that there are early age and cognitive constraints on language acquisition. The main goal of this symposium is to examine the language acquisition of IA children from diverse linguistic and theoretical perspectives. The first presentation will report longitudinal data on the vocabulary development of infants/toddlers English-speaking Chinese adoptees and will review the main factors impacting their development. The second presentation will examine the impact of age and cognitive maturation on language production in IA children from China (and Russia). The third presentation will present the results of a study of the morphological development of 19-22 months English-speaking IA children from China to examine if their development is like that of children learning English as a first language or children learning English as a second language, or is unique. The fourth presentation will summarize and discuss the results of young school-age French-speaking IA children on an extensive battery of language tests and consider the possible role of age-related differences in verbal memory ability on lags in language acquisition demonstrated by IA in comparison to non-adopted children.

Early and later language development in children adopted from China as infants/toddlers

Karen Pollock, Stephanie Yan, University of Alberta

Children adopted internationally undergo an abrupt shift in linguistic environment, typically with little or no continued exposure to the first language. The long term effects of this unique pattern of language acquisition are largely unknown. Several studies have documented the rapid acquisition of English by children adopted from China under two years of age (e.g., Tan & Yang, 2005). However, recent studies have questioned whether or not these positive outcomes are maintained when children are faced with more complex language demands during the school-age years (e.g., Scott, 2009). The present study presents both early and later language development data from the same group of 70 children adopted from China as infants/toddlers (mean age at adoption = 13.76 months).

Early data included expressive vocabulary size and mean length of the 3 longest utterances (ML3) from MCDI parent reports at 3 month intervals. Data from 12 and 24 months post-adoption were converted to developmental quotients (age equivalent/chronological age X 100). Later data included the General Communication Composite score (GCC) from CCC-2 parent reports when the children were 5-10 yrs of age and in Kindergarten through Grade 4. GCC scores were moderately negatively correlated (-.305) with age at adoption and positively correlated with Vocabulary-DQ at 24 months post-adoption (.420) and ML3-DQ at 24 months post-adoption (.555), but not with either measure at 12 months post-adoption. These findings suggest that substantial individual variation exists at 12 months post-adoption, but that delays at 24 months post-adoption may be clinically useful indicators of later language difficulties.

Divergent paths: Effects of age of arrival on course of language development in internationally-adopted children

Jesse Snedeker¹, Carissa Shafto², Joy Geren¹, ¹Harvard University, ²University of Louisville

What role does biological maturation play in language acquisition? How do older learners differ from younger learners? At what point in development does the child's age of acquisition begin to influence the course of language development? To explore these questions we have been examining the acquisition of English in internationally-adopted children. Parental reports (CDI) and speech samples were collected from 48 preschoolers, within the first year after they were adopted from China or Eastern Europe. Children who were adopted at two or three showed the same developmental patterns in language production as monolingual infants (matched for vocabulary size). Early on, their vocabularies were dominated by nouns and social words and the proportion of predicates and closed-class words increased with age. Thus shifts in lexical composition appear in older learners and are unlikely to reflect the development of new conceptual resources. Children who were adopted at four or five deviated from this pattern, acquiring fewer nouns and more predicates in the early stages of acquisition. Effects of the child's birth language on English acquisition were limited to older preschoolers, suggesting that they employ different strategies in word learning. Measures of syntactic complexity were also shaped by age. While complexity correlated with vocabulary in all groups, older preschoolers showed greater mastery of free-standing function words and less mastery of grammatical affixes than vocabulary-matched controls. In concert with previous findings (e.g., Meisel, 2009), our results suggest that the manner in which children acquire languages begins changing as early as four years of age.

Development of English grammatical morphology in internationally adopted children from ChinaLara Pierce, Fred Genesee, *McGill University*

Internationally adopted (IA) children encounter unique language-learning circumstances (i.e. abrupt discontinuation of the birth language at a young age) that share similarities and differences with those of both first language (L1) and second language (L2) learners. While most studies of IA children have focused on whether, and how quickly, monolingual norms are met, few have directly examined developmental patterns of specific language elements (but see Pollock, Price, & Fulmer, 2003; Rosinsky-Grunhut & Tracy, 2005, for exceptions). This is important because patterns can vary even if outcomes are similar, and this can reveal early age effects on language acquisition.

The present study examined acquisition of English grammatical morphology in 5 IA children (mean age = 10.6 months at first session) adopted from China into English speaking families. Spontaneous speech samples were collected at 9, 15, 21, 27, and 34 months post-adoption and analyzed for percent correct morpheme use, percent of children at mastery (90% in obligatory context), and type of errors produced (omission or commission) for each morpheme at each session. Results were compared to those of typical L1 and child-L2 learners reported in the literature (e.g. Paradis, Rice, & Crago, 2008).

Like both L1 and child-L2 learners, IA children produced tense-marking before non-tense marking morphemes. Like L1-learners, *BE* was acquired in synchrony with other tense-marking morphemes; however more commission errors were produced than might be expected from typical L1 learners. This suggests that language acquisition patterns of IA children are a hybrid of L1 and L2 learners.

Language abilities of internationally-adopted children from China during the early school years: Evidence for early age effects?Audrey Delcenserie, Fred Genesee, Karine Gauthier, *McGill University*

Studies of IA children from China report that they quickly attain age-appropriate levels of competence in their new language. However, Gauthier and Genesee (in press) found that while 4-5 year old Chinese adoptees scored within the normal range on standardized language tests, they scored significantly lower than carefully matched controls on receptive language and expressive vocabulary. The present study examined whether the lags exhibited by Gauthier and Genesee's adoptees would persist into the school years and, as well, the role of age-related differences in verbal memory as a possible explanation of the differences between the IA and control children. Twenty-seven French-speaking adoptees ($M=7;10$ years) were compared to 27 monolingual non-adopted children learning French matched for age, gender, and SES on non-verbal intelligence, behavior difficulties, expressive and receptive vocabulary, reading, word definitions, receptive grammar, and sentence recall (a measure of verbal memory).

The groups did not differ on IQ and behavior difficulties, but the adoptees scored significantly lower on receptive grammar, expressive vocabulary, and word definitions. They scored within the typical range on all of these tests. In contrast, they scored significantly lower than the controls on sentence recall and below test norms. Sentence recall was the best predictor of their scores on all other language tests, and there was no significant improvement in their scores on sentence recall at 4-5, as tested by Gauthier and Genesee, and 7-8 years of age. It is argued that age-related differences in verbal memory may account for the group differences in language development.

14:30 – 16:45

Amphitheater C • Satellite 1

Symposium Session 8 • C**LINGUISTIC AND COGNITIVE ASPECTS OF EVIDENTIALITY****Convener** Ayhan Aksu-Koç, *Bogaziçi University***Discussant** Dan Slobin, *University of California***Description:**

Evidential languages have grammatical markers that express the status of one's knowledge by specifying the particular mode of access to the communicated information. One quarter of the world's languages distinguish one or more of six source types, namely vision, non-visual sense, inference, deduction, hearsay, and quotation. Research on the acquisition of evidential languages attests to early productive abilities by 3- to 4-years. Evidence from comprehension is less conclusive, suggesting a more protracted development that rests on conceptual understanding of different information sources and different points of view. The papers in this symposium report research on Japanese, Tibetan and Turkish, probing further into the relationship between expression of evidentiality and its cognitive underpinnings.

The first study investigates the processes whereby a 2- to 3-year-old differentiates between direct and indirect knowledge sources by examining the use of the Japanese hearsay-particle in early mother-child conversation. The second paper explores the match between the distribution of Turkish evidentiality markers in adult questions to 2- to 4-year-olds and children's responses, attending to effects of question type and age. The third study on Tibetan focuses on 4- to 7-year-old children's ability to ask questions using the evidential form

appropriate to the addressee's epistemic state. The last paper examines whether speaking an evidential language contributes to understanding others' mental representations by comparing theory of mind skills of 3- to 5-year-olds speaking Turkish or German, a non-evidential language. Altogether the papers underscore the fact that understanding evidentiality has a pragmatic dimension with conceptual correlates that develop over time.

Developing sensitivity to the sources of knowledge: The use of the Japanese hearsay particle *tte* in mother-child conversation

Tomoko Matsui¹, Taeko Yamamoto², ¹Kyoto University, ²Meijigakuin University

It has been suggested that children's understanding of evidential expressions, including the Japanese hearsay particle *tte*, closely relates to their conceptual understanding of direct vs. indirect sources of knowledge (Matsui & Fitneva 2009). The results of the study reported in Matsui, Yamamoto & McCagg (2006) confirm the trend: until about 6 years of age, Japanese children's comprehension of the hearsay particle is rather fragile. However, provided that Japanese children start *using* the particle before age of two, it is reasonable to assume that some inchoate understanding of sources of the perceptual information (if not the sources of *knowledge*) seems to be operating in the children's mind.

The current study examines the use of the Japanese hearsay particle *tte* in mother-child conversation, in order to shed light on the process in which a child comes to distinguish between direct and indirect sources of information. The conversation at two particular points of development, namely, six weeks from the child's second and third birthday, are analyzed and contrasted in detail, to demonstrate how a child develops conceptual understanding of the sources of knowledge through the unique linguistic and cultural experience of everyday conversation. The analysis of the child's use of the hearsay particle revealed that at the age of two years, the child already had an inchoate sense of the source of information, although unlike typical adult use of the particle, the child used the hearsay particle to quote utterances of imaginary characters more frequently than utterances of other human beings.

Evidentials in adult-child conversations in Turkish

Stanka Fitneva¹, Gökçe Aydoğdu², ¹Queens University, ²Bilkent University

Evidentials are grammatical source-of-knowledge markers. In questions, they convey the speaker's expectations about the evidentiary basis of the addressee's answer. For example, in Turkish questions, the evidentials *-DI* and *-mİş* express that the speaker anticipates information that has been respectively directly and indirectly acquired by the addressee. The present study examined whether the distribution of Turkish evidentials in adults' questions to 2- to 4-year-old children varies with the semantics of the question and the age of the child. Based on recent research into the role of questions on the evaluation of the reliability of sentences (Fitneva, 2008), we predicted that questions like *who* and *where* would be more likely to integrate the direct evidential *-DI* and *why* questions the indirect evidential *-mİş*. The study also examined the distribution of evidentials in children's responses to the adults' questions. There were about twice as many *-DI* questions as *-mİş* questions. Nevertheless, consistent with our hypothesis, *why* questions were always formed with *-mİş*. When responses contained evidentials, they overwhelmingly repeated the evidentials in the questions. However, mismatches were significantly more common for responses to *-mİş* than *-DI* questions: Children were more likely to bring forth direct evidence when the adult anticipated indirect evidence than indirect evidence when the adult anticipated direct evidence. None of analyses revealed age effects. These findings contribute to understanding the establishment and functioning of evidentiary standards in early adult-child communication.

Acquisition of the reflection principle in evidentials in Tibetan questions

ay Garfield¹, Jill de Villiers¹, Kalsang Kalsang¹, Caroline Sluyter¹, Tashi Dolma², ¹Smith College, ²Central University of Tibetan Studies

Evidential marking is a feature of virtually every Tibetan assertion or question. The major classes of evidential in Tibetan are ego, direct, indirect, and neutral. Here we considered children's mastery of the Reflection Principle for questions in Tibetan. In a question, one uses the evidential that one expects the interlocutor to use in his/her reply, namely the evidential felicitous for the interlocutor's epistemic state. This requires understanding of the other's epistemic state beyond the self-knowledge required in ordinary evidential use. To study the reflection principle, two scripts were constructed containing two puppet protagonists each in a different epistemic state. The child's task was to ask a puppet a question about an event in the story, and we recorded which evidential the child used in the question. Each child heard and saw acted out two protocols for a total of 10 ego, 9 direct, 7 indirect, 4 neutral contexts.

We asked: Do children apply the reflection principle at all in this age range, in that use of it requires reading others' epistemic state, not their own? If so, in what order do children master the evidentials in questions? We tested 11 native speakers of Tibetan in refugee communities in India, aged 4-7-years. The children were highly accurate for ego evidentials, quite good at direct evidentials, but not successful for indirect or neutral evidentials. This order of acquisition parallels data we have from production and comprehension studies of the evidential types in Tibetan acquisition.

Does the evidential system relate to the development of Theory of Mind?

Hale Ögel-Balaban¹, Uta Kraus², Ayhan Aksu-Koç³, Günther Köhnken⁴, Beate Wagener⁴, ¹*Istanbul Bilgi University & Middle East Technical University*, ²*Julius Maximilians Universitaet*, ³*Bogaziçi University*, ⁴*Christian-Albrechts Universitaet zu Kiel*

Turkish evidentiality markers specify a four-way distinction on the mode of access to information. *-DI* indicates that the speaker has direct access to knowledge through perceiving all phases of the asserted event. *-mİş* signifies access to information about the event through inference from physical evidence. *-(I)mİş* indicates indirect access to knowledge through the linguistic report of another. Lastly, *-DIr* expresses that the speaker inferred the information from his/her own knowledge about facts. Research has indicated that learners of Turkish acquire the use of evidential forms between 2;0 – 3;6 years, marking first direct experience, then inference from physical evidence, followed by reported speech and inference from previous knowledge. We claimed that this early development sensitizes Turkish-acquiring children to their own and others' mental representations and subjective stance towards the conveyed information. This in turn contributes further to the development of their representational and more generally, theory of mind (ToM) capacities.

We examined this claim through comparing ToM skills of 3- to 5-year-old Turkish-speaking children with those of their peers speaking German, a non-evidential language, in three tasks: 1) False content, 2) False location and 3) Appearance-reality. Results indicated that German-speaking children performed better than Turkish-speaking children in the false location task whereas performance on other tasks did not differ. The findings are equivocal regarding the claim that use of evidentiality markers improves ToM skills. Further research with different methodologies and comparing children speaking different evidential and non-evidential languages will shed more light on the issue.

14:30 – 16:45

Amphitheater D • Satellite 1

Symposium Session 8 • D

BRIDGING SYNTACTIC, SEMANTIC AND VISUAL CUES IN CHILDREN'S REFERENCE ASSIGNMENT

Convener Pirita Pyykkonen, *Saarland University*

Regardless of the growing evidence of adults' use of syntactic, semantic and visual cues and their interrelations during reference assignment, less is known about children's sensitivity to these cues during online language comprehension. Also the existing studies have failed to provide a coherent picture of the serial or parallel use of multiple cues (e.g., Arnold et al., 2007; Pyykkönen et al., 2010; Song & Fisher, 2005, 2007). The symposium brings together researchers that have employed the same methodology, namely visual world eye-tracking, in order to study the relative importance of these cues during online reference assignment. In order to provide a diverse ground for discussion, the studies in this symposium compared different types of anaphoric relationships (such as the nature of the referents for relative clauses or overt and null subject pronouns), compared and linked the findings to online findings of syntactic and semantic cues of adults reference assignment or bilingual children's comprehension as indicated by the individual abstracts. Importantly, the methodological similarity provides a good ground for data comparisons across the studies and thus it is expected that the symposium will advance the understanding of the use of different cues in children's online language comprehension.

Establishing reference online in non-canonical contexts: The case of object relative clauses

Evan Kidd, *La Trobe University & The University of Manchester*

It has long been argued that subject relative clauses (RCs) are more difficult than object RCs because of syntactic differences between the two structures (i.e., 'movement'). An alternative explanation is that object RCs are more difficult because (i) they are less frequent, and (ii) their non-canonical word order results in ambiguity of thematic role assignment (i.e., establishing reference) (Gennari & MacDonald, 2008). The current study tested these proposals using eye-tracking.

Twenty-four 4-year-old children participated in a visual world referent selection task. The children sat at a table that contained four toy animals. The children then heard two background scenes that were acted out by the experimenter (1).

(1) The dog licked this lion. The monkey pushed the other lion.

The children then heard the test sentence (2).

(2) Can you pick up the lion that the dog licked?

The object RCs were manipulated for the animacy of the head noun (+/- animate) and the discourse status of the RC subject (given, new), thus manipulating frequency (Kidd et al. 2007). The children's eye-movements to the toys were recorded in addition to their offline interpretations. An animacy by RC subject interaction ($p < .001$) showed that children experienced comparatively more difficulty with object RCs containing two lexical NPs as opposed to one lexical NP and a pronoun. We interpret this finding to indicate that the traditional difficulty associated with object RCs is attributable to the degree of ambiguity experienced in thematic role assignment (Gennari & MacDonald, 2008).

On-line processing of overt and null subject pronouns: Evidence from Italian- and Spanish-speaking bilinguals and monolingualsLudovica Serratrice¹, Antonella Sorace², ¹University of Manchester, ²University of Edinburgh

Off-line studies have shown differences between bilingual and monolingual children in their interpretation of subject pronouns in Italian (Serratrice, 2007; Sorace, Serratrice & Baldo, 2009). More specifically, bilingual children who in addition to Italian speak English are more likely to make pragmatically inappropriate choices in the interpretation of overt subjects. Interestingly, even children who speak two null-subject languages like Italian and Iberian Spanish have been found to accept more overt pronouns as co-referential with a subject antecedent, a pragmatically inappropriate choice that may be due to hitherto unexplored micro-variation between two null-subject languages like Italian and Iberian Spanish.

We report the results of two visual-world eye-tracking studies in Italian and Spanish with bilingual English-Italian children (N = 30), Spanish-Italian bilinguals (N = 30), and monolingual Italian- (N = 30) and Spanish-speaking children (N = 30) between the ages of 6 and 9. Children listened to sentences where reference to a previously mentioned antecedent was either via a null or an overt subject pronoun. At the same time they watched pictures including two potential antecedents while their eye movements were being recorded. The online data confirmed that bilingual English-Italian children are more likely to fixate on a subject antecedent as soon as they hear an overt pronoun; no differences were found between bilingual and monolinguals with respect to null pronouns. In Spanish, overt pronouns were more likely to be initially interpreted as coreferential with a subject antecedent than in Italian: no differences were found between the bilingual and the monolingual children.

Cues to pronoun resolutionJoshua K. Hartshorne, Jesse Snedeker, *Harvard University*

Some pronoun-resolution cues apply widely: in many contexts, pronouns refer to the first-mentioned entity in the previous sentence (first-mention bias):

(1) Mary₁ went to the store with Sally₂. She₁ bought ice cream.

Others are narrower in scope. In sentences like (2), pronoun resolution systematically depends on the verb (implicit-causality bias). Experiencer-object verbs (frighten) give rise to subject resolutions (Mary) whereas experiencer-subject verbs (fear) give rise to object resolutions (Sally). Changing the location of the connective because (3) reverses this effect: experiencer-object verbs now elicit object resolutions and experiencer-subject verbs, subject resolutions.

(2) Mary VERBs Sally because she...

(3) Because Mary VERBs Sally, she...

The first-mention bias might be learned prior to implicit causality because first-mention is more widely-applicable and thus occurs more often. The reverse should be true if pronoun resolution is an emergent property of discourse interpretation or if cue reliability is more critical than cue frequency.

Adults and 5yos listened to like (2) as they viewed accompanying illustrations and their eye movements were tracked. These sentences were completed with neutral continuations (is such a silly girl), after which participants were asked to point at her. Like adults, children were pointed to the subject (Mary) more in sentences with experiencer-subject relative to experiencer-object verbs ($p < .05$). This effect reversed in sentence frame 3 ($p < .05$). Eye-tracking measures revealed compatible results.

Thus, at an age at which evidence for the first-mention bias is inconclusive (Arnold et al., 2007; Song & Fisher, 2007), children showed clear sensitivity to implicit causality.

Children's and adults' visually situated pronoun resolutionPirita Pyykkonen¹, Juhani Jarvikivi², ¹Saarland University, ²MPI Nijmegen

Visual world eye-tracking experiments (STAY/AWAY) with 4-year-olds and adults in German studied whether the visual presence/absence of referents (1) modulate pronoun resolution/assignment; and (2) affect structurally more prominent than less prominent entities similarly. Videos depicted characters participating in transitive actions (e.g., kick) and then walking away from each other during spoken SVO/OVS sentences. In STAY both characters remained on the screen and were present during the sentence with an ambiguous pronoun (er 'he'); in AWAY one character left the screen and was absent. Both characters then (re)appeared on the screen and participants were asked to determine who carried out the action mentioned in the sentence. Final assignments and eye movements were analyzed (reported $p < .05$).

STAY. Final assignments showed a subject preference for adults and children in both word orders, and no effect of order-of-mention. Eye movements showed that it appeared early on for adults and later, 600ms after pronoun onset, for children, who temporarily considered the first-mentioned character.

AWAY. Adults preferred subject antecedents regardless of their presence/absence. However, presence/absence modulated children's preferences: while subjects were preferred, whether they were present or absent, objects were selected less often when absent than when present. Eye movements showed this pattern only late; instead, children fixated objects more when they were visually present.

The study showed that visual presence/absence of referents modulates children's, but not adults', ambiguous pronoun resolution. Children require more visual support for their reference assignment. Importantly, the effect of visual absence was stronger for linguistically less than more salient entities.

SATELLITE 2
AFTERNOON SYMPOSIA
AMPHITHEATERS F•G•H

14:30 – 16:45

Amphitheater F • Satellite 2
Symposium Session 8 • F

MORPHOLOGY IN TYPICAL AND DISORDERED ACQUISITION: CROSS-LINGUISTIC EVIDENCE FOR THE INVOLVEMENT OF MORPHOLOGY IN LITERACY PROCESSES

Conveners Rachel Schiff¹, Dorit Ravid², ¹Bar Ilan University
Discussant Dorit Ravid, Tel-Aviv University

Description:

Morphology is known to organize the spoken and written mental lexicons of adult language users to different extents in languages with richer and sparser morphologies. The proposed symposium examines the role of explicit morphological knowledge and awareness in literacy processes in developmental perspective. Thus, we investigate inflectional and derivational morphology in elementary school-level children speaking English, French, and Hebrew, with special focus on disordered populations – unexpected poor comprehenders, children with Specific Language Impairment, and children with Developmental Dyslexia.

Two studies in English-speaking children (one cross-sectional, one longitudinal) showed that derivational morphology structure had a clear effect on children's ability to read and to understand uncommon words, and that poor comprehenders performed more poorly than average comprehenders on derived forms. These results highlight the importance of sensitivity to English morphology in children's reading of isolated words, on the one hand, and text comprehension, on the other. Two cross-sectional studies of morphologically richer languages underscore these findings. The study on French showed that children with SLI had poorer comprehension and (even more markedly) poorer production of complex derived forms than typically developing peers – indicating their delay in mastering morphological principles. The Hebrew study showed that elementary school children with Developmental Dyslexia were consistently poorer on inflectional morphology tasks than typically developing peers, especially when challenged by irregular morphology and complex syntax. Together, the symposium studies testify to the involvement of morphology in developing language and literacy.

Children's strategies in reading and understanding complex words

Kathryn Francis, H  l  ne Deacon, Dalhousie University

The purpose of this study was to investigate whether morphological structure influenced children's reading and understanding of derived words. First, we investigated the impacts of the frequency of the base of a word (such as *question* in *questionable*) and the number of members of the word family (such as *questioning*, *questionable*, and *questioned* for the base *question*) on word reading. We asked 43 children in grades 3 and 32 children grade 5 to read a set of derived words with low surface frequencies (for example, *questionable*) that varied in their base frequency and in their family size. We found that, of the two variables, base frequency was the clearest unique predictor of children's word reading accuracy. We then investigated the influence of base frequency on children's ability to understand a subset of 24 of the same derived words. We found that children in both grades were more accurate in choosing the meaning of derived words with high frequency bases in comparison to words with low frequency bases. These results suggest that morphological structure has a clear effect on children's ability to read and to understand uncommon words. These results are discussed in the context of theories of the development of children's sensitivity to morphological structure in their reading.

Plural agreement marking in Hebrew-speaking children with developmental dyslexia compared with normally developing peers

Rachel Schiff¹, Dorit Ravid², ¹Bar Ilan University, ²Tel Aviv University

The study investigates children's developing ability to judge Hebrew adjective agreement with plural nouns in the context of irregular morphology and complex syntax. Participants were 300 Hebrew-speaking children and adolescents in five age levels (8-9, 11-12, 13-14, 16-17, and university students), each level consisting of two groups — 30 normally developing participants and 30 with developmental dyslexia. Two experiments on judgment of plural adjective agreement are reported. In both experiments, task sentences were subdivided by head noun gender (masculine or feminine), and noun morphology (regular or irregular suffix, changing or non-changing stems). In addition, Experiment 1 examined the effect of adjective syntactic position - predicative vs.

attributive, while Experiment 2 investigated interference in a compound structure by competing plural nouns differing in semantics (human or non-human) and gender. Measures were accuracy and reaction time. Results indicated increase in correct scores and decline in RTs with age and schooling. Correct scores were higher and RTs shorter when adjectives agreed with nouns with regular morphology (suffix and stem) and human (agent) semantics. Syntactic complexity (predicative position and competition within the compound) yielded lower scores and higher RTs. The dyslexic participants scored lower than normally-developing peers, and their RTs were significantly longer, especially in the presence of irregular suffixes and changing stems, conflicting gender in the compound, semantic non-agency and predicative position. Results thus indicate the interface of morphological, syntactic and semantic factors in the acquisition of adjective plural agreement, and suggest the involvement of grammatical deficits in developmental dyslexia.

Morphological awareness in French children with Specific Language Impairment: Suffix comprehension and production

S  verine Casalis¹, Lucie Macchi¹, Fran  oise Boidein², ¹Universit   de Lille 3 Charles de Gaulle, ²Hopital Saint Vincent de Paul

The study examines morphological awareness in French-speaking children with Specific Language Impairment. French is a morphologically rich language. Whereas it is recognized that children with SLI mostly have both phonological and syntactical impairments, less is known about their ability to manipulate morphemes. Morphological awareness was explored through both comprehension of suffixes (Study 1) and production of derived forms (Study 2). Performance of children with SLI groups was compared to performance of two matched control groups: the first was based on chronological age; the second was based on language-age development (as assessed by vocabulary and syntactical comprehension). In addition, reading level was assessed.

In study 1, participants were 46 SLI children and 92 control children. Results indicated that children with SLI were poorer than chronological-age-matched children on derivational tasks, but performed at the same level as language-age-matched children.

In study 2, 25 children with SLI – 10 to 12 year-old readers - participated in the study. Results showed that children with SLI performed lower than chronological-age-matched children on all of the production tasks. In contrast to the results of study 1, children with SLI were also found to perform below the language-age-matched group.

This pattern of results clearly establishes a strong delay in mastering morphological principles in French, with a more marked deficit in production as compared to comprehension. This points the necessity to train this linguistic domain in order to help children to increase vocabulary and comprehension in both oral and written language.

Metalinguistic awareness in English poor comprehenders: A longitudinal study

Xiuli Tong¹, H  l  ne Deacon², Kate Cain³, ¹University of Western Sydney, ²Dalhousie University, ³Lancaster University

There is growing interest in a relatively recently identified group of struggling readers: children with poor reading comprehension despite adequate word reading. This longitudinal study examined the performance of such unexpected poor comprehenders on key reading-related skills across grades 2 to 4: phonological awareness, morphological awareness and orthographic processing. We used a regression technique to identify three groups of grade 4 readers: unexpected poor comprehenders, expected average comprehenders, and unexpected good comprehenders. The three groups were matched on word reading accuracy, word reading speed, vocabulary knowledge, nonverbal cognitive ability, and age at grade 4. We then examined performance on the three reading-related skills across grades 2 to 4. Across all three years, the groups performed similarly on tasks of orthographic processing. There was some evidence of poorer performance by the unexpected poor comprehenders at grade 2 in phonological awareness as compared with that of the other two groups. In terms of morphological awareness, unexpected poor comprehenders performed more poorly than expected average comprehenders in some specific aspects of morphological awareness, i.e., derived forms at grade 2, 3 and 4. Our findings suggest that both phonological awareness and, perhaps most prominently, morphological awareness are factors influencing difficulties in reading comprehension in English. Further, we underscore the consistency and diversity of language and cognitive deficits in poor comprehenders.

14:30 – 16:45
 Amphitheater G • Satellite 2
 Symposium Session 8 • G

FLUENCY AS A MARKER OF EXPRESSIVE LANGUAGE DEVELOPMENT SKILL IN CHILDREN

Convener &

Discussant Frank Wijnen, *Utrecht University, Utrecht, Netherlands*

Description:

Psycholinguistic analyses of speech disfluency have contributed much to our knowledge of the adult language production process. While childhood disfluency has attracted extensive clinical interest, studies relating it to fundamental processes of language development and processing have so far been relatively scarce. The present symposium aims to draw together various lines of research connecting insights gleaned from disfluency patterns to language development, both in typical and atypical populations. The hypothesis shared by all contributors is that disfluency provides a window on the development of utterance formulation abilities, and can thus help identify areas of processing difficulty in language, independent of level of grammatical and lexical development. Consequently, analysis of disfluency contributes to clarifying the nature of the developmental processes that shape language production skills. Additionally, it is useful in the characterization of language delays or impairments, even those that are subtle.

We ask : (1) how does sentence formulation in children differ from that in adults? We describe the temporal dynamics of planning, mainly: the moments at which formulation takes place as well as the nature and extent of advance planning units.

(2) How can (changing patterns of) disfluency be related to the acquisition of linguistic knowledge? Acquiring new knowledge (e.g. verbs and their argument structures) can be expected to engender the assembly of new planning routines.

(3) How can disfluency elucidate the deficit(s) underlying atypical language development, as seen in children with SLI?

(4) Can we identify cortical substrates for language production using disfluency characteristics?

The significance of revisions in grammatical development

Matthew Rispoli, Pamela Hadley, *University of Illinois at Urbana-Champaign*

Gradual Morphosyntactic Learning (GML: Hadley, Rispoli, Fitzgerald & Bahnsen, in press) is a new explanation for the protracted course of mastering the English tense/agreement system. Children learn morphosyntax from input, but this early knowledge is insufficient for the integration of tense/agreement morphemes into sentence production. Morphosyntactic knowledge integrates as production shifts from item-based constructions to grammatically encoded sentences. The shift is given momentum by verb lexicon growth and the increasing diversity of messages children attempt to produce. The challenge for GML is documenting this shift independently of measures of morphosyntactic development.

Sentence disruptions, specifically *revisions*, provide evidence for this hypothesis. Revisions are rapid replacements of members of equivalent lexical categories or morphosyntactic restructurings that occur mid-stream in production. We have shown in prior work that revising increases with level of grammatical development and age. GML posits that revisions increase with verb lexicon size as children produce more sentences with lower frequency verbs, spurring grammatical encoding. GML predicts that stalls, disruptions without alteration of sentence content, will be unrelated.

We report data from 40 children, observed longitudinally from 21 to 30 months at 3-month intervals, focusing on the frequency of revisions and stalls, in relation to the growth of the verb lexicon. We test whether the frequencies of revisions and stalls at 30 months is predicted by verb lexicon size at 21 months and linear growth from 21 to 27 months. This study contributes to a more comprehensive understanding of morphosyntactic development, underscoring the significance of sentence disruption phenomena in explanation.

Morphosyntactic development and speech disruptions in Dutch school-age children with SLI

Rob Zwitserlood¹, Frank Wijnen¹, Ludo Verhoeven², Marjolijn van Weerdenburg², ¹*Utrecht University*, ²*Radboud University*

Our project investigates post-initial trajectories of grammatical development in children with SLI, focusing on verbal morphosyntax and associated features such as argument omission. Another goal is to chart speech disfluency in relation to grammatical development. Following the literature, we assume that the amount and distribution of disfluency reflect the processing demands posed by incorporating grammatical features in spoken utterances. Patterns of developmental disfluency can help identify grammatical features that are difficult for children with SLI, and the trajectories by which these difficulties are overcome or compensated for. In a longitudinal design, narratives were elicited from 30 children with SLI at ages 6, 7 and 8. The transcripts were analyzed on a range of morphosyntactic measures, including MLU, sentence complexity, verb argument structure, verb inflection, pronouns and determiners, and word order. Disfluencies (stalls and revisions) were analyzed for type, frequency and distribution.

Results indicate that for some morphosyntactic measures no growth was seen, for others stagnation was found at age 7 while only complex sentences increased at age 8. The children rely on a restricted morphosyntactic repertoire, within which grammatical errors decrease steadily, verb related errors earlier than other types of errors. Whole-word repetition frequency showed a U-shaped trend over age. Silent pauses decreased from age 6-7; revisions – mostly lexical repairs – increased from age 7-8. Stalls occur increasingly at utterance onsets, and before clauses and phrases. Our preliminary conclusion is that a virtual stagnation in morphosyntax is balanced against an improvement in speech fluency and lexical expressivity.

On the surface and hidden below: spoken fluency and brain activation in children with typical and impaired language skills

Nan Bernstein Ratner, Mara Steinberg, Madison Berl, William D. Gaillard, *University of Maryland, College Park*

Interactions between linguistic demand and fluency in children are well-documented in typical acquisition, stuttering and specific language-impairment. Linguistic demand tends to increase disfluency, and can be seen as an on-line measure of language encoding effort. We have extended our work by studying fluency in narratives (“Frog stories”) produced by 26 pairs of children with left hemisphere location-related epilepsy (CWE) but normal brain structure and typical peers, ages 4-12 years. CWE, particularly those having a longer seizure history, showed subtle but statistically robust depression in expressive language skills accompanied by a corresponding increase in disfluency.

CWE and typical peers underwent fMRI scans as part of a larger initiative examining potential reorganization of cortical substrates of language function in CWE. Across both groups, additional cortical regions, outside the traditional language network, were consistently activated in the least fluent children during language comprehension tasks. Differences in lateralization of activation in the cerebellum were also observed between most and least fluent children.

Results strengthen our findings from prior research that fluency is a proxy marker of language production skill in children. Fluency may have potential to aid diagnosis of language delay/impairment using a measure that is independent of the typology of the language being learned or known age norms for skill assessment in less well-studied languages. Moreover, common activation patterns in children correlated with speech fluency measures; this permits us to begin to identify brain regions that appear to support more and less efficient patterns of syntactic and lexical integration in children’s language.

The development of sentence planning: an experimental approach

Dana McDaniel¹, Cecile McKee², Merrill Garrett², ¹*University of Southern Maine*, ²*University of Arizona*

The problem we address is sentence planning in 3-8 year-olds and adults. We measure planning via patterns of non-fluency in studies with and without modeling. Participants in the study without modeling observed stories and then directed a blindfolded experimenter to pick up one of two identical toys in each story. Participants in the imitation study repeated a puppet’s request for a toy after each story. Both studies tested the same four types of relative clauses (varying gap position and depth of embedding). We analyzed time to utterance onset; frequency, duration, and distribution of filled and unfilled pauses; and use of optional functional elements. There were reliable effects of structural complexity on non-fluency patterns in both experiments, with some informative shifts across methods. For example, *unfilled* pauses distributed similarly across age groups, structures, and methods. But *filled* pauses (primarily, *um*) differed. In the elicited production study, adults preferred filled pauses before utterance onset; children also used them in the locations preferred for unfilled pauses. In the imitation study, the incidence of filled pauses sharply declined: Adults and older children produced almost none; young children’s pattern was more similar to that of the elicited production study. Our findings indicate similar planning processes for children and adults, but different degrees of advance planning. Adults tend to plan the whole message before beginning an utterance, and they do little message-level planning for imitation of a model. Young children do message-level planning mid-utterance and are less able to take advantage of a modeled utterance.

14:30 – 16:45
 Amphitheater H • Satellite 2
 Symposium Session 8 • H

PSYCHOLOGICAL SIGNIFICANCE AND TYPOLOGY OF PHONOLOGICAL TEMPLATES IN EARLY WORD LEARNING

Convener Marilyn Vihman, *University of York*
Discussant Lise Menn, *University of Colorado*

Description:

Although recent word-learning studies have countered the idea of holistic early word representations, 'whole word phonology' has a long tradition within production studies and has itself received support from experimental work based on untrained word form recognition. Early word forms, which differ across individuals, are partially based on what has already become familiar through (a) babbling practice and (b) matching to selected adult words that resemble the child's babbling. Child templates, which we take to reflect the extraction of implicit patterns through distributional learning over early word forms, consist of one or more systematic structures involving set prosodic positions to be filled from a limited segmental repertoire. In these templatic structures some aspects of target words, such as unstressed syllables or codas, may be represented in a way that has little relation to the adult form, supporting the suggestion that for production children are drawing on whole-word-based internal representations alongside their more detailed memory of adult targets. These templates fade as the child's vocabulary grows, sometimes with repeated cycles of template use as new challenges are taken on (codas, clusters, longer utterances).

This symposium is designed to explore: (i) the psychological reality of templates in children's processing of speech through experimental studies of the effects of production templates on both new word learning and familiar word recognition; (ii) the range and effects of typological variation as seen in templates arising in two languages that are rhythmically distinct from English, on which most early work was based: Arabic and French.

Phonological templates in French

Sophie Wauquier, Naomi Yamaguchi, *Université Paris 8*

Continuity between babbling and early word forms, which is now widely accepted, lays the foundation for later word patterns or templates that are individual by child yet with strong similarities across different ambient languages. Yet cross-linguistic studies reveal typological differences. English, German and Estonian children often settle on CVC templates, for example, while French children do not – despite the occurrence in French input of many high frequency CVC words such as *coq*, *dame*, *robe*, *soupe*, *vache*. We assume that templatic patterns are influenced by French rhythm and its CV.CV syllabification (cf., for example, *la robe en coton* '(the) cotton dress' [la.rɔ̃.bɑ̃.kɔ̃.tɔ̃]). Our goal is to establish the extent to which typological – and particularly rhythmic – constraints influence French templatic patterns.

Based on 12 monthly recordings from each of six monolingual French children (from a mean age of 19 months), we focus on the reorganizational processes that lead from individual templates to the emergence of more adult-like structures and stable segmental, syllabic and prosodic representations. We find a strong preference for open-syllable structures in the early word templates, with both codas and clusters reserved for a later stage. The earliest templates are generally monosyllabic CV, derived from the final (accented) syllable of the target; this then develops into either a reduplicated disyllable or a VCV pattern, in which the onset vowel may derive from the determiner that is virtually always present in French input. Despite individual differences, these data reflect strong central tendencies not seen in Germanic languages.

Phonological templates in Lebanese Arabic

Ghada Khattab, Jalal Al-Tamimi, *Newcastle University*

Few studies have focused on Arabic child phonology, which provides an interesting contrast to English and French. In input to children, disyllables dominate content words, both iambic and trochaic stress patterns are common, and segmental length of both vowels and consonants plays a key role in the grammar, with consonant gemination most characteristic of word-medial position. An analysis of Arabic child word forms can indicate which aspects of the adult language are sufficiently salient to be expressed in production templates. This study follows the phonological development of six Lebanese-Arabic speaking children through monthly recordings of spontaneous mother-child interactions (9 months to three years). Here we focus on the children's templates at the end of the single-word period.

We find a strong preference for disyllabic structures with a medial geminate in all of the children. While some word forms are based on targets with geminates, the majority exhibit adaptations of other structures to fit into the CoVCCV patterns. These include (i) shifting length from a neighbouring vowel (CVVCV → CoVCCV) and (ii) realising monosyllables as disyllables. The salience of medial geminates is apparent from the children's treatment of word-initial consonants. In medial-geminate words onset consonants are often subject to omission or reduction, regardless of stress; alternatively, 'support' syllables are used to help maintain them. Individual children differ with respect to the order of emergence of early mono- and trisyllabic structures as well as in the types of consonants that dominate early words.

The effect of production templates on word learning and word recognition

Tamar Keren-Portnoy¹, Rory DePaolis², Marilyn Vihman¹, Amy Bidgood¹, Michelle McGillion¹, ¹University of York, ²James Madison University, ³Université Paris 8, ⁴University of Newcastle

Templates in early child phonology can be taken to be responses to challenges encountered in production, such as difficulties in speech planning and articulation. But do they influence the way children process language, affecting memory for new word forms and the recognition of known words? Thirty-eight two-year-olds were first recorded at home in naturalistic play with a parent. Once their speech had been transcribed and their word forms analysed for templatic patterns, each child was tested in two tasks: (a) nonword learning (with a picture-book) and (b) familiar object identification, with mispronounced object names. Both the nonwords and the mispronunciations were chosen to fit either the child's idiosyncratic word template (IN forms) or another child's potential template (OUT forms). All real words used as stimuli were familiar to the child; nonword OUT forms were within the child's repertoire. All patterns were used whenever possible as IN forms for some children, OUT forms for others.

Preliminary results from about half of the children tested reveal clear effects of production templates on language processing. (a) *Word learning*: Children are better at learning the form-meaning pairing in the case of IN forms (based on referent identification only, not production). (b) *Word recognition*: Although there is no significant difference between the proportion of correct vs. incorrect responses for IN vs. OUT form mispronunciations, response time is significantly shorter for IN forms when only correct responses are analyzed.

POSTER SESSION 1

16:45 – 18:30
IASCL Central - Foyer
Poster Session 1

BILINGUAL FIRST LANGUAGE ACQUISITION

- 01** *Do deaf bilingual children have phonological awareness (PA) of Quebec sign language (LSQ)? A comparative study of PA in three bilingual deaf populations*
Anne-Marie Parisot, Julie Rinfret, UQAM

Although phonology is often associated with sound, it has been suggested that sign languages (SLs) are phonologically organized linguistic systems. The phoneme, that is the smallest linguistic unit without meaning, has been studied in different SLs. Several models have been proposed to account for SL phonology structure. Aside from the interest that SL phonology presents from a descriptive point of view, we will address the following questions: Does the concept of phonological awareness (PA) apply to signers of LSQ? In other words, do LSQ signers can consciously manipulate the minimal units as described by theoretical models of SL phonology? The objective of our study is to provide a statistical account of LSQ PA in deaf children (n=18), teenagers (n=17) and adults (n=21). Five tests (identification, categorization, permutation, composition, analysis) were administered, on a computer, to three groups of deaf subjects (elementary pupils, teenagers students, adults) and to a group of hearing adults (n=20). The measures calculated were accuracy (all groups) and response time (teenagers, adults). We will present the results of the statistical analysis (Student-t, nonparametric) of the data collected in light of the following questions: 1) Do all deaf subjects have PA of LSQ? 2) Do hearing subjects can manipulate LSQ units without linguistic skills in LSQ? 3) Do all deaf groups have an equivalent mastery of the different types of tasks? 4) Do they have an equivalent mastery of the different categories of phonemes? 5) Are they sensitive to the phonological distance for each of the phoneme categories?

- 02** *Caregiver-child interaction in early bilingual development: An analysis of a bilingual toddler's responses to questions*
Janice Nakamura, International Christian University

In acquiring two languages from birth, it is common for one language to develop faster than the other. This individual case study discusses how asymmetrical bilingual development, manifested in the way a bilingual child responded to questions, may have been caused by input factors. Question and response sequences from bi-monthly video recordings between a bilingual toddler, Issa, and his mother in the English context and with his grandmother in the Japanese context from ages 1;3 to 2;3 were analyzed. The results indicate that Issa produced appropriate verbal responses to 26.7 percent of questions in English but only 16.8 percent in Japanese. Contrasting interrogative styles were seen to have affected response rates. In the English context, predictable test questions, which were most frequently asked, elicited the most responses. Conversely, real questions seeking actual information, most frequently asked in the Japanese context, had a low response rate. Child-related factors were also seen to have affected Issa's responses. Although he was probably aware that questions required an immediate response, the high rate of non-responses in Japanese (50 percent compared to 23.5 percent in the English context at age 2;3) suggests that Issa was not paying equal attention to questions in both languages but practiced instead some form of selective processing of input that resulted in slower development of his Japanese. These findings indicate that early bilingual acquisition is a mutually-driven process, determined not only by the linguistic input offered by caregivers but also by the child's readiness and willingness to attend to it.

- 03** *Code-switching with Grandma: Input effects on a bilingual preschooler*
Suzanne Quay, International Christian University

While most studies of bilingual first language acquisition have focused on the young child's exposure to two languages from parents, this study explores the effects of mixed language input from a bilingual grandmother. To what extent did her speech style influence the young child's use of his two languages? The family had decided to expose the child from birth to as much Chinese as possible given that the family lived in an English-speaking community in Canada. From birth to age five, it was estimated that the mother spoke 90% Chinese and 10% English, while the father spoke 60% Chinese and 40% English to their son. It was assumed that the grandparents on both sides would speak predominantly Chinese. The video-recordings made weekly at the paternal grandmother's house where she took care of the child for two full days a week from ages three to five showed otherwise. It was found that one-fifth of the total utterances produced by the grandmother involved inter-sentential as well as intra-sentential code-switching, a proportion matched by the grandson. Both had similar patterns of inter-sentential code-switches, but their patterns of intra-sentential code-mixes were different. The grandson mixed more often after English utterances than Chinese ones. The results suggest that the child is sensitive to his grandmother's language choice and accommodates to her English language

switches in spite of being more dominant in Chinese at this period in his bilingual development. The implications of these results are discussed from a quantitative and qualitative perspective.

- 04** ***Acquisition of Mandarin relative clauses by Mandarin-English bilingual children***
 Ruiting Jia, Johanne Paradis, *University of Alberta*

Studies on language acquisition of immigrant children have indicated that some grammatical features of minority language (L1) may undergo attrition or suffer incomplete acquisition with respect to the comprehension or production (Polinsky 2008; Montrul 2008). However, few of them include both a comprehension and production experiment within the same study to investigate whether children can display attrition/incomplete acquisition in one domain but not the other. The current study attempts to fill this gap by examining both the comprehension and production of Mandarin relative clauses by Mandarin (L1)-English (L2) minority children. Fifteen Mandarin-English bilingual children (mean age of 7;8) and fifteen Mandarin monolingual children (mean age of 7;7) participated in this study. The comprehension experiment measured their accuracy and response time of each test item. The production performance was evaluated within four test scenarios. The data were analyzed by using linear mixed modelling methods in R (Baayen 2008). The results revealed that in comprehension, the Mandarin-English children were not significantly different from their Mandarin monolingual peers with respect to accuracy of response and reaction time to both subject-type and object-type Mandarin relative clauses. However, in production, the Mandarin-English children were often unable to provide the target Mandarin relative clauses, whereas their monolingual peers could provide the target responses nearly all the time. Therefore, the findings suggested that the production ability of a minority language is a more vulnerable area than comprehension ability, and it will be argued that incomplete acquisition of L1 could be a main explanation for this result.

- 05** ***Structural Similarity elicits codemixing in German-English Bilingual Children vs. German-Russian Bilingual Children***

Antje Endesfelder Quick, Elena Lieven, Michael Tomasello, *Max-Planck-Institute for Evolutionary Anthropology*

Both cross-linguistic priming methodologies and research on code-mixed utterances has been concerned with the nature of the underlying syntactic representations of bilinguals. The present paper investigated code-mixing at the morphosyntactic level (NP) by comparing 16 German-English (G-E) and 32 German-Russian (G-R) bilingual children between the ages of 3;6 to 5;6. Using a priming paradigm and a monolingual interlocutor in each language, we attempted to elicit mixed NPs from these children by introducing four novel objects labelling them with novel nouns in German and either English or Russian. Results showed that G-E bilingual children produced mixed NPs significantly more often than G-R bilinguals, providing support for the importance of structural similarity in this type of mixing (Wald (1) = 7.32, $p < .007$). These mixed answers consisted of a German determiner and an English noun. A second finding was that child who were reported as code-mixing at home were significantly more likely to provide answers while children who did not code-mix remained silent. A possible explanation is that the more similar the two languages are the more mixing seems to occur. English and German NPs overlap in form (determiner plus noun), and function (referential). However, between Russian and German NPs only function overlaps but not forms, since Russian has no determiners and gender is marked on the noun. These results are similar to cross-linguistic priming results, which have suggested that structures that are similar across the languages are stored as a shared representation.

- 06** ***First Words, First Steps of Language: Language-Specific Trajectories Have Roots in First Words***

Lauren Friedman, Erika Hoff, *Florida Atlantic University*

Previous studies of bilingual children suggest that the trajectory of early linguistic development is language specific. This study seeks to determine if language specific trajectories have roots in children's first words. Parent reports of the age at which 107 bilingual children produced their first words in English and in Spanish were obtained from parents who had recorded that information in baby books. At 22 and 30 months, vocabulary size was assessed in both languages using the MacArthur-Bates inventories. Estimates of children's relative exposure to English and Spanish at home were obtained from caregivers in an extensive interview about home language use. Age of first word in English was a significant predictor of English vocabulary score at 22 and 30 months ($r = -.41$ and $-.42$, $ps < .01$) and was unrelated to Spanish vocabulary at either time point. Age of first word in Spanish was a significant predictor of Spanish vocabulary score at 22 months only ($r = -.37$, $p < .05$), and was unrelated to English vocabulary score at either time point. Importantly, the significance of the relation of age of English first word to later vocabulary and the language specificity of that relation held even when the variance attributable to input was removed. This finding extends the evidence of language-specific developmental trajectories in bilingual children to the beginning of productive language and supports bootstrapping models in which early learning supports the further acquisition of language.

- 07** ***Crosslinguistic influence in the acquisition of ser and estar by Spanish-English bilinguals***

Carmen Silva-Corvalán, *University of Southern California*

This poster addresses the proposal that crosslinguistic influence occurs when there is structural overlap in the two languages and one of the languages offers multiple options for a particular construction; influence would occur regardless of levels of dominance/proficiency and would affect the language with multiple options. This

proposal is examined through a study of *ser* and *estar* 'be' in the speech of two bilingual siblings who have been exposed to unequal amounts of Spanish and English, and have attained different levels of proficiency in Spanish. *Ser* and *estar* overlap with English *be* in many of their uses, and their choice in predicate adjectives depends upon lexical-syntactic and pragmatic factors. This language issue provides a nice test case for the examination of crosslinguistic influence and the possible differential effects of the influence in relation to levels of language dominance/proficiency. This is the first study that considers the acquisition by two bilinguals of *ser* and *estar* (as copulas and as auxiliaries) in longitudinal data obtained in a variety of natural discourse situations. I have analyzed 885 examples of copulas in the siblings' data between the ages of 1;6 and 3;4 (year;month). Controlling both by age and MLUw, the children's acquisitional path is compared. Most non-target constructions occur in predicate adjectives, i.e., contexts with weak cue reliability, and in idiomatic expressions involving copulas. I conclude that levels of dominance/proficiency resulting from different degrees of reduced input need to be taken into account in the explanation of the nature and extent of crosslinguistic influence.

- 08 ***A case study of speech rhythm acquisition in a Cantonese-English bilingual child***
Donald White, Peggy Mok, *The Chinese University of Hong Kong*

This longitudinal case study investigates the speech rhythm development of a Cantonese-English balanced bilingual child acquiring both languages simultaneously from birth. Languages are traditionally grouped into distinct rhythmic categories: stress-timing (English) and syllable-timing (Cantonese). Recent studies have shown that bilingual children acquiring rhythmically dissimilar languages exhibit speech rhythm patterns that are distinct from their monolingual peers. The present study employs both quantitative and qualitative data to investigate how the rhythmic patterns of a Cantonese-English bilingual child developed longitudinally. Several acoustic rhythmic metrics of syllabic, consonantal and vocalic durational variability (Varco and PVIs) and Percent V are used to quantify the child's rhythm at two ages: 3;0.15 and 4;2.0. A total of 80 utterances—20 utterances per language and per age—are compared between languages and ages. Further comparisons are made with similar data from monolingual English and monolingual Cantonese children. The child's rhythmic patterns differ from her monolingual peers in that both cross-linguistic interactions (vowels) and separation (syllables) between her two languages can be observed. The differences between her two languages also increase with age. Qualitatively, this study investigates the bilingual child's word borrowing from English to Cantonese, and the structure of the syllables uttered by the child. Eight English words uttered separately in English and Cantonese contexts on the same day are examined closely for differences in stress placement and duration. These eight examples are consistent with the quantitative results, both of which show phonological adaptation and interaction at the prosodic level.

- 09 ***Do children block learning from accented-speakers? The roles of social and phonetic information***
Erica Beck, *University of Michigan*

Bilingual children are often faced with an interesting problem in word learning: they often hear speech from a non-native speaking parent, who may use non-target structure or pronunciation. This study examines whether children are able to block word learning based on accent in order to focus on input from native speakers. English monolinguals and German-English bilinguals, aged 5 to 8, heard names of novel objects during a familiarization phase from a native and non-native speaker of English. They were then asked to identify the previously named objects when presented with the labels. The bilinguals also had a German language condition spoken by the same German speaker. All children were expected to show a preference for native speakers of English over a German-accented speaker of English, and bilinguals were expected to show a stronger preference learning in German compared to the German accented English condition. The monolinguals performed as predicted, showing a strong preference for learning from a native speaker of English. Bilinguals, however, showed an overwhelming preference for learning in the German-accented and German language conditions, despite the fact that they were all described as English dominant by their parents. Bilinguals were overall worse at learning in both English conditions than the monolinguals. The results are discussed in terms of theories about how context and social information may interact to affect blocking as well as frequency-based accounts of learning. Additionally, issues of working memory in word learning will be discussed in relation to the results of the bilingual subjects.

CHILD SECOND LANGUAGE ACQUISITION

- 10 ***Differing effects of individual child-level variables in different linguistic domains: Turkish L1 children learning L2 Dutch***
Anne Baker¹, Elma Blom¹, Jan de Jong¹, Antje Orgassa², Fred Weerman¹, ¹*University of Amsterdam*,
²*Radboud University*

In a study of Turkish L1-Dutch L2 children, data were collected on verbal inflection and determiner selection. Verbal inflection is a well known problematic area for Dutch-speaking children with specific language impairment (SLI); on the other hand, determiner selection is a well known bottleneck for Dutch L2 learners. Forty L2 children participated: 20 typically developing (TD) children and 20 children with SLI. The expected L2 and SLI effects in terms of problematic areas were found, but there was considerable variation within the two groups, prompting the present study, which investigates whether individual child-level variables affected the

SLI and TD groups differently. Data from a parental questionnaire were analyzed in relation to children's performance in the two linguistic areas. The child-level variables were: age of L2 onset, length of L2 exposure and language dominance (L1/L2). A mixed linear regression analysis revealed that: (1) L2 children with SLI made more errors than their L2 TD peers with determiner selection and verb inflection; (2) Dutch-dominant children in both groups had an advantage in determiner selection; (3) for verb inflection, TD children made fewer errors after more months of exposure whereas this effect was not shown in the SLI group. In conclusion, the results show differing effects of external child-level factors for L2 children with and without SLI. While TD children benefit from additional input in learning verb morphology, children with SLI do not. For determiner selection, the advantage of L2 dominance was visible in both groups, without affecting the group difference.

- 11 ***From bare to non-bare: Factors affecting the development of mandarin nominals***
Hsiang-Hua (Melanie) Chang, *Oakland University*

Children's production of bare nominals is universal, regardless of their acceptability in the language (Brown 1973, Radford 1990, Wexler 1994, Guasti 2000). When acquiring languages disallowing bare nominals, children will develop from the bare to the non-bare stage. However, Mandarin nominals can appear bare in various positions with all kinds of interpretations in particular contexts. Thus, what are the factors contributing to the emergence of non-bare nominals?

According to the properties of Mandarin, we predict that (i) aspect markers (no tense markers in Mandarin) will prompt the use of non-bare nominals; (ii) the first place for non-bare nominals to appear will be the object position, which allows more types of non-bare nominals. (iii) The interpretation that non-bare nominals most frequently associated with will be the predicative interpretation.

Methodology: Spontaneous speech data of a girl (2;0-2;6) and a boy (2;10-3;3) were analyzed in GoldVarb 2001, a multivariate analysis software (Robinson, Lawrence, and Tagliamonte 2001). The dependent variable is the form of nominals, bare or non-bare.

Results: Age, MLU, interpretation, verb type, aspect marker, and sentence type have significant effects. According to the factor weights, non-bare nominals are favored in the older age, in recordings with longer MLUs, with predicative interpretation, in sentences with resultative verbs and copulas. Unexpectedly, non-bare nominals prefer appearing without aspect markers, which may be due to aspect omission in child Mandarin. The non-significance of syntactic position is also unexpected, which is possibly due to the complexity of the restriction that the syntactic positions pose on the nominals.

- 12 ***A longitudinal study on vowel development of Mandarin-English bilingual children***
Jing Yang, Robert Fox, *The Ohio State University*

The present study was undertaken to examine how a sequential bilingual child develops the vowel system for a second language and how the vowel systems of both the first language and second language change over the time of acquisition. A 3½ year old native Mandarin boy was recorded through picture-naming task every month over 12-month period. The first recording was conducted two weeks after enrollment in a daycare program. The recording materials included one set of disyllabic Mandarin words containing the Mandarin vowels [a, o, ɔ, i, u, y, ɥ] and one set of monosyllabic English words containing the English vowels [i, ɪ, e, ɛ, æ, u, ʊ, ɒ, ɔ, ɔ̃, ɔ̄]. The first two formants of all recorded vowels were analyzed using TF32 with a wide 600 Hz bandwidth filter. Formant measures were made at the 35%, 50% and 65% points in each vowel. Using three measurement points allows a characterization of the position of the vowel within the acoustic vowel space as well as formant dynamics. Based on the first four months of recording, a significant change of the English vowel space was observed as a function of increased exposure to English. In particular, the vowels [ɪ ʊ] migrated from a corner position in the vowel space (inappropriate for English) to positions normally expected for native English speakers. The Mandarin vowel space showed little or no change over the course of four months (and, thus, no evidence of negative bilingualism for the first language).

- 13 ***Nonword repetition and receptive vocabulary in bilingual kindergartners: Concurrent correlations in a longitudinal study***

Todd A. Gibson, D. Kimbrough Oller, Linda Jarmulowicz, *University of Memphis*

Nonword repetition (NWR) tasks have been found to correlate significantly with measures of receptive vocabulary, and vigorous debate exists as to why. In some explanations, vocabulary growth drives increased precision of phonological representations, which improves children's production of nonsense words. To inform the debate, we explored how level of vocabulary knowledge might impact the magnitude of the NWR/vocabulary correlation. The study was based on data acquired before the study was designed, which limited the effect of possible theoretical biases. Ninety-seven monolingual (ML) English-speaking kindergartners were given NWR and receptive vocabulary measures in English; 141 Spanish-English bilingual (BL) children were given the same tests plus their Spanish equivalents. Tests were administered within two months of beginning kindergarten and again roughly six months later. ML children were categorized into high/low vocabulary groups. BL children were categorized as one of the following: high English/Spanish vocabularies, low English/Spanish vocabularies, high English/low Spanish, or low English/high Spanish. Results indicated a near 0 correlation between NWR and vocabulary when children had minimal target language knowledge. As knowledge increased, correlations increased. However, some groups with high vocabulary knowledge had near 0 NWR/vocabulary correlations. We propose that children show two

thresholds at different points of vocabulary knowledge. First, a minimum threshold level of vocabulary is achieved, and vocabulary knowledge aids NWR performance. Later when vocabulary exceeds a second threshold, the contribution of vocabulary knowledge to NWR appears to lose its differentiation capacity, and all children at that level can use vocabulary knowledge to similar extents to support NWR.

- 14 ***Acquisition of Spanish as a Second language by Mexican Deaf Children***
 Antoinette Hawayek de Ezcurdia², Giuseppe Cappelli¹, Riccardo Del Gratta¹, Edy Lopez², Ricardo Rincón²,
¹ILC -CNR, Italy, ²UAM, Mexico
- In the process of acquisition of oral languages, perception of speech is a prerequisite to acquire abstract properties of language. Deaf children, however, cannot perceive acoustic signals that are transformed into linguistic representations, consequently, cannot acquire oral languages naturally. In Mexico, deaf children are integrated into regular schools, with neither interpreters nor programs for teaching Spanish as a second language. We present advances in the creation of a bilingual Mexican Sign Language (MSL)-Spanish/Spanish-MSL dictionary that will be an important tool for the acquisition of Spanish as a second language. The Spanish-MSL section is an enumerated dictionary containing outcomes from the semi-automatic elaboration of school textbooks performed by the AyDA analyzer. This section allows students with little proficiency in Spanish to find signs for word-forms, without knowing the lemma they correspond to. The MSL-Spanish section is designed to hold the "alphabets" of MSL. To create the inventories necessary to access signs, we have analyzed the four traditional parameters of signed languages. The inventory of the entities of each parameter constitute by itself an "alphabet" that guides the retrieval of each sign. These sections are bridged via videos tagged with Spanish word and signs parameters. The dictionary represents a tool for learning Spanish and the technology developed for retrieving signs can be used for other sign language dictionary. Additionally, the search engine includes statistical information about if and how sign parameters are related each other. Discovered relations can be important for both improving the search engine and the underlying linguistic theory.
- 15 ***The acquisition of lexical routines in letter writing by learners of English as a second language***
 Rosa M^a Jiménez Catalán, *University of La Rioja*
- Second language learners have to acquire the sounds, grammar and vocabulary of the target language as well as the pragmatic knowledge appropriate to the situation and the nature of the task. Letter writing offers an ideal scenery where lexical development, lexical routines, politeness, gender and literacy in a second language interplay in a natural way. However, studies that focus on this connection are almost inexistent. This study looks at salutations and closings as examples of lexical routines and markers of politeness (Laver, 1981; Holmes, 1995; Mills, 2002) in letter writing. Our aims are to (i) identify the formulae used by L2 English learners in a writing task; (ii) to trace L2 lexical development patterns in this specific semantic field; (iii) to explore the effect of gender on the use of salutations and closings. During three subsequent school years 214 English learners (10 to 12) wrote a letter in English. Salutations and closings were collected, counted and classified following letter writing conventions. The analysis of the data reveals (i) a higher number of salutations and closings as learners' age increases; (ii) patterns in the use of salutations and closings such as: the use of two alternative formulae within the same opening or closing, a decrease in learners' tendency to burst into the body of the letter without any salutation; and the presence of a great number of idiosyncratic variants regarding the spelling of some formulae; and (iii) girls outperform boys in the use of salutations and closings.
- 16 ***Individual variations in the English vocabulary status among Hong Kong learners of English with varying socio-economic status (SES)***
 Kwok Shing Wong, *Hong Kong Institute of Education*
- Accumulated research has shown that children's oral vocabulary status is closely linked with their grammar development in the early years and their future reading success in English. Alarmingly, a large vocabulary gap was noted in learners across socio-economic groups in the US prior to their entry to kindergarten, giving rise to the possibility of the Matthew Effects on learners from disadvantaged backgrounds. In Hong Kong, importance is attached to early English exposure, but the quantity and quality of English language input varies widely across kindergartens in the territory. Children from low-income families may be disadvantaged twice because of their restricted access to high quality English language input both at home and at school. This study sought to examine the English vocabulary status of two groups of 4-year-old kindergarteners: those attending kindergartens serving low-income families and those attending schools serving high income groups. The children were administered the following tests twice over a six-month period: Peabody Picture Vocabulary Test, Reynell Developmental Language Scale-Cantonese, and a non-verbal IQ test. The purpose was to examine 1) the initial differences in English vocabulary status across learners of varying SES; 2) the changes in their vocabulary status overtime; and 3) the relationship between first language (L1) proficiency and second language (L2) vocabulary. Results showed that the average vocabulary status of this small sample of low SES children was three S.D. below that of high SES children. Second, no relationship was found between L1 proficiency and L2 vocabulary status perhaps due to the typological differences between the two studied languages.
- 17 ***Phonological Development and Child L2 Learners' Nonword Repetition Performance***
 Tamara Sorenson Duncan, Anne-Michelle Tessier, Johanne Paradis, *University of Alberta*
- Nonword repetition (NWR) tasks are commonly used language assessments but the extent to which these measures can be employed with child second language (L2) learners is not known. Some researchers believe

that these measures are linguistically unbiased assessments while others explain that children's performance varies depending on the language of assessment. Thus, the extent to which child L2 learners' emerging phonologies impact their NWR performance is unclear. Our research examines nonword and real-word productions from eight typically-developing children learning English as a L2. Real-word productions come from 15 minute spontaneous speech samples and nonword productions were elicited using the NWR task from the Comprehensive Test of Phonological Processing. All children had less than one year of exposure to English. The main results of this research are: (1) These child L2 learners correctly produced 68% (range: 42% - 81%) of the consonants on the NWR task, obtaining an average standard score of 6 (range: 5 – 8). The average standard score for monolingual English speakers is 10 (range: 7-13). (2) These children correctly produced 80% (range: 69% - 88%) of consonants in real-word productions. Our main conclusions are: (1) The majority of child L2 learners perform below the normal range for monolingual children on the same NWR task. (2) Child L2 learners with higher accuracy in real-word productions also have higher accuracy in nonword productions. Thus, child L2 learners' level of phonological development places limitations on their NWR performance, suggesting that clinicians should be cautious when interpreting child L2 learners' NWR scores.

- 18 ***Language and Identity: Attitudes among English-speaking Pre-school Children in Israel***
Susie Joffe, Joel Walters, Bar Ilan University

Hypotheses: This research explored the relationship between identity and language acquisition among English-speaking preschool children in Israel living in a community in which the majority of residents are English speaking immigrants. It was expected that greater length of exposure (LoE) to Hebrew would correlate with higher performance on Hebrew standardized tests, and that greater exposure to Hebrew and greater proficiency in Hebrew would correlate with positive attitudes toward Hebrew speakers, and the children's Israeli identities. Measures of performance in the area of English syntactic structures were expected to negatively correlate with LoE to Hebrew.
Methods: 24 L1 English-speaking preschool children (4-6 years old, 30.05 months average LoE) participated in several sessions in English and Hebrew. Linguistic data included standardized and non-standardized language tests in both languages. Children also participated in sociolinguistic interviews during which they discussed their attitudes toward both languages, speakers of both languages, and their ethnolinguistic identities.
Results: Length of exposure to Hebrew did not correlate with either greater Hebrew language proficiency or with positive attitudes toward Hebrew and English speakers. The children with greater proficiency in Hebrew did not report more positive attitudes toward Hebrew than those with more limited Hebrew proficiency. Length of exposure to Hebrew did correlate negatively with greater morphosyntactic errors in English.
Conclusions: English retains very strong ethnolinguistic vitality among the research participants. They demonstrated greater proficiency in English than Hebrew, and rated themselves more proficient in English. Despite expressions of negative attitudes towards Hebrew, they identify themselves as bilinguals and Israelis.

COGNITION AND LANGUAGE DEVELOPMENT

- 19 ***Arabic-English bilingual children's Phonological awareness***
Mohammed Alhuqbani Aldossari, King Fahd Security College, Riyadh

This paper examined the effect of relative language typology or language of testing on bilingual children's phonological awareness. The participants were 37 Arabic-English bilingual children and 22 English monolingual children in grades K and 1. All children received two phonological tasks (rhyme oddity and phoneme segmentation). Arabic-English bilinguals received two more phonological awareness tasks in Arabic, similar to the English ones. The English Peabody Picture Vocabulary Test (PPVT) was administered to all children. Arabic bilinguals were classified as balanced or unbalanced bilinguals based on their proficiency test scores in the English PPVT and its equivalent in Arabic (APPVT). Overall, the results on both English and Arabic phonological awareness tasks indicated no consistent differences in performance attributable to language experience (i.e. monolingual, balanced bilingual, unbalanced bilingual), even when tasks were grouped according to their cognitive demands (high analysis vs. high control). However, there were significant age-related differences across virtually the four tasks, with children in grade 1 outperforming children in grade K. The study concludes that children's ability to solve metalinguistic tasks in both Arabic and English improves with age and/or school experience regardless of task demands, bilingual experience, relative typology of the two languages (Arabic vs. English), or language of testing.

- 20 ***Are language tests usable? A population based case-control study in Finland***
Sinikka Hannus², Timo Kauppila², Janne Pitkaniemi², Kaisa Launonen², ¹City of Vantaa, Finland, ²University of Helsinki

The diagnostic criteria of SLI include language test scores that have not achieved international acceptance of their normative scores or clinical markers. More studies that evaluate the tests in smaller populations with different languages are needed. This study evaluates the language tests that Finnish speech and language therapists (SLTs) use on a daily basis. The questions were:

- Do language tests scores differentiate children with SLI from their matched controls?
- Do these tests discriminate between the two SLI diagnoses, F80.1 and F80.2?

- Are there different language ability factors based on language test scores?
 Data were collected from all children born in 1998 and 1999 diagnosed as having SLI (F80.1 or F80.2) living in one town in Finland. The size of the birth cohort was 4,553 children, 100 children with SLI. 46 children with SLI were tested and 31 of them were compared with their matched controls. 14 different language tests were used that included 39 different tasks.
 The main finding in this study was that the tests that the SLTs in Finland use when assessing the language abilities of children and discriminating the children with SLI are well usable. Also the language abilities that discriminate these children seem to be the same as found in other international studies as suspected clinical markers of SLI. More studies are needed to get accurate information on the validity of different tests

- 21 **Joint Attention & Vocabulary Development - A cross-cultural, observational study of Mozambican infants from 12- to 18-months**
 J Douglas Mastin, *Tilburg University*

This paper analyses the frequency distribution of engagement levels, joint attention activities, and their correlations to vocabulary development in different cultures. Information was collected *observationally* from 18 subjects in both rural and urban Mozambican communities, averaging 13-months at commencement. Each family was observed twice, 18 weeks apart, with a third observation planned for 2011.
 In analysis, two engagement levels were added to those of previous studies, creating: (i) *Unengaged*; (ii) *Onlooking*; (iii) *Object Interaction*; (iv) *Person Interaction*; (v) **Shared Attention** – an active version of *Onlooking* where a partner is interacting with an object/activity; (vi) *Passive Joint Attention* – where subject and partner jointly attend to an object, but the subject does not attend to the partner; (vii) *Coordinated Joint Attention* – where the subject and partner both attend to an object, each other, and complete an intention-goal sequence; (viii) **Shared Joint Attention** – similar to CJA, though lacking a completed intention-goal sequence.
 In the rural data, both *Passive* and *Coordinated Joint Attention* frequency at 12-months have a significant positive correlation ($p < 0.05$) to *receptive* language at 18-months. The urban data, on the other hand, shows that *Person Interactions* exhibit a stronger positive correlation ($p < 0.002$) to *expressive* language. Thus, triadic interactions affect word learning in rural Mozambique, and dyadic interactions affect urban Mozambique. The differences between the two cultural groups demonstrate that joint attention is not necessarily a direct predictor of vocabulary development. Possibly, these differences are instead related to family-size and socio-cultural structures in each group.

- 22 **Early predictors of comprehension and interventions to prevent reading difficulties-A longitudinal study on French-speakers at kindergarten**
 Catherine Pellenq, *Laboratoire des Sciences de l'Éducation, Grenoble*

This research seeks to identify reliable early predictors of comprehension in children from low-income families and tests the effectiveness of language training programs. Firstly, this study closely examines the relation between the cognitive and linguistic abilities at kindergarten and the later reading comprehension at first grade. 148 five-year old children, matched for age, IQ and phonological awareness, were tested 3 times: at 5, at 5.6 (beginning and end of kindergarten) and at 6.6 years old (end of first grade) on a variety of cognitive and linguistic tasks and at least on identification and comprehension measures. Secondly, this study evaluates the effects of 3 different language trainings on all these measures. Children are divided into 4 groups: one serves as a control group and the three others are experimental. In each experimental condition, specific language programs are conducted during school time, focusing either on phonological awareness, or on monitoring, or on sequential/simultaneous processing. The children are assigned in small groups, and each group is provided with one or two 20-minutes sessions a week, so that 5 to 8 hours of training are accomplished. The results reveal that vocabulary knowledge and verbal short-term memory predict reading comprehension after controlling for age, socio-economic background and gender. The effects of intervention programs are compared and show that only two of the three training programs outperform on reading comprehension. These first results on a french-speakers sample give new arguments for early intervention in low income family children, at risk for cognitive delays and comprehension difficulties.

- 23 **Learning words in familiar vs. unfamiliar frames**
 J. Salas Poblete², K. Rohlfing¹, Joublin³, ¹Bielefeld University, ²CoR-Lab, Bielefeld, ³Honda Research Institute Germany

When children are taught new words this tends to happen in what Tomasello (2003) calls joint attentional frames, i.e. social situations adapted to children's needs. In our word-learning study, we operationalize this concept of frames with the aim of manipulating them within pragmatic learning situations to investigate whether young children can engage in new frames while learning words. We investigated the effects of frames on children's lexical performance in a direct face-to-face condition and indirectly by means of a presented conversation between two adults. We conducted an interaction study teaching 60 children aged 25-28 months new words within four different pragmatic conditions: direct teaching within familiar frame, direct teaching within unfamiliar frame, indirect teaching within familiar frame and indirect teaching within unfamiliar frame. Subsequently, we conducted production and reception/transfer tests.
 A two-way MANOVA showed a significant advantage of the indirect teaching within the unfamiliar frame – but

only in production suggesting that the separation of tutor and model behavior in the presentation of new frames enhances imitation. In reception/transfer, there was no significant difference between conditions. We even observed that children in the indirect unfamiliar scenario scored worse than those in the other conditions. Our results indicate the robustness of the word-learning-mechanism and children's capacity to accept new pragmatic frames. This ability to engage in new frames shows clearly in production when imitation might suffice but does not seem to be powerful enough to permeate to the cognitively demanding reception/transfer task.

24 *Rabbits are Jumping, Balls are Bouncing: Korean Preschoolers' Use of Ontological Categories of Actors in Mapping Novel Verbs to Motion Events*

Ha Yeon Kim¹, Soon Hyung Yi², ¹New York University, ²Seoul National University

Much of the debate on how conceptual knowledge permeates the learning of new words has relied on noun acquisition of English-speaking children, limiting and biasing our understanding of lexical development. This study examined how Korean-speaking children used their knowledge about ontological categories of actors in mapping verbs to motion events. Six sets of verb-mapping tasks were administered to 180. In each task, children learned a novel verb by hearing a sentence with a nonsense verb (e.g., *this rabbit is (verb)ing*) that mapped to a motion event of an animal or an artifact actor. Children were then shown 3 motion event trials: a still image of the actor, a different motion event of the actor, and the same motion event with a different actor chosen randomly from three ontological categories: within-basic-level, superordinate-level, or cross-animate-inanimate. For each motion event, children were asked if the verb just learned could be generalized to the new event (e.g., *is this rabbit (verb)ing, or not?*).

Results showed significant age differences in children's verb mapping strategies and their use of conceptual knowledge about ontological categories in the verb learning process. Three- and four-year-olds consistently mapped novel verbs only to the same-motion event, whereas two-year-olds did not. Analyses of the actor conditions showed that only four-year-olds differentiated their verb mapping patterns based on their knowledge about actors' ontological category, particularly in the animate-inanimate condition. Results suggest that conceptual knowledge acquired in early cognitive development plays a pivotal role in verb learning for Korean children

25 *Integrative comprehension of information in speech and iconic gesture in 3-, 5-year-olds and adults*

Kazuki Sekine¹, Hannah Sowden², Sotaro Kita³, ¹National Institute of Informatics, Tokyo, ²University of Leeds, ³University of Birmingham

Integrating various types of contextual information is crucial in comprehending the speaker's intended message in everyday conversation. Gesture is an example of such contextual information. This study investigated how well three- and five-year-olds and adults integrate speech and iconic gesture, in comprehension, when the two modalities contribute unique information to the formation of a unified interpretation. When participants were shown only iconic gesture, even three-year-olds can select correct interpretations above chance. However, when they were shown both iconic gesture and speech, three-year-olds did not integrate unique information in the two modalities to arrive at a unified interpretation, but five-year-olds showed an adult-like integration ability. When children failed to integrate iconic gesture and speech, they relied on information from speech. We attribute three-year-olds' poor integration ability to their weak ability to use contextual information in communication. We conclude that speech-gesture integration gradually develops in early childhood

26 *The Interaction between Gesture and Language in Children's Descriptions of Directed Motion Events*

Areum Kim, Laura Wagner, *The Ohio State University*

Spoken language and gestures can be related in two main ways, complementary and supplementary. Complementary gestures reiterate elements already discussed in spoken language. Supplementary gestures add to spoken language, communicating unspoken ideas. Previous work has found children in the early stages of language development often use supplementary gestures in their early production (Iverson & Goldin-Meadow, 2005). In our study, we focused on children's descriptions of directed motion events. These are events that consist of path, manner, and goal (Talmy, 1985).

Sixty-seven subjects (young group: N=28, M age = 34.8 months; old group: N = 39, M age = 51.2) viewed four short videos of directed motion events containing distinctive paths, manners, and goals. After each video, the subjects were asked to describe the events that occurred by simply asking, "What happened?" Their spoken and gestural responses were videotaped and analyzed at a later time.

Preliminary analysis of children's spoken language and gestures showed that children in both age groups included manner and goal information more than path information. However, the role of gesture was different across kinds of information: with path information gestures were supplementary but with manner and goal information gestures were complementary. This pattern was found in the young age group, and unexpectedly in the old age group.

These results suggest that manner and goal are an early linguistic focus, and this focus persists through development. Moreover, linguistic challenges, in this case path information, lead children to use gesture in a supplementary fashion.

- 27 ***Young children's understanding of the relational component of noun-noun compound meaning***
Simon Snape, Andrea Krott, *University of Birmingham*

Two-year-olds start to understand that noun-noun compounds refer to two objects that are related. The present study investigated whether 2-5 year-olds encode the relational component of noun-noun compounds as an important part of the compounds' meaning or whether they rather encode the perceptual features of the objects. We introduced children to novel objects (e.g., *wug* and *binto*) and then to related pairs of these objects. The latter were referred to with compound names (e.g. *wug binto*). We then asked children to pick a referent for the compound name among an object pair combined via the same relation but with dissimilar perceptual features than the original referent (e.g., different colour; = correct generalisation) and an object pair with identical perceptual features but combined via a different relation. The generalisation phase happened either immediately after the introduction phase or on the next day. Results indicated that the ability to use relational information to make correct generalisations / selections increased significantly with age. But only five-year-olds showed significant generalisation abilities, even if the generalisation phase immediately followed the introduction phase. There was no indication that this ability was affected by the nature of the relation. In contrast, two-year-olds generalised on the basis of the objects' perceptual features. Results therefore suggest that only by age five children clearly encode the relational component of noun-noun compounds as an important part of the compounds' meaning. These results are in line with the "relational shift theory" of children's cognitive development suggested by D. Gentner

CULTURAL AND SOCIAL FACTORS

- 28 ***'I know that word before I comed to school': The Impact of the Every Child a Talker Programme in two Bristol primary schools***
Christine Screech, *University of the West of England*

Within England a social class gradient in language skills is already emerging by the time a child is two and the gap widens substantially by the time children reach statutory school age at five. Poorly developed communication skills, too, are seen to have an impact on both educational attainment, social relationships and personal development and a growing percentage of children are thought to be arriving at school displaying impoverished language. Despite these being contentious claims, following on from the Bercow Report (2008), a total of £41.2 million of government money has been made available to local authorities over a three year period to develop and support children's early language through an initiative entitled *Every Child a Talker*. A dearth of evidence on the effects of specific language interventions across settings led me to focus on evaluating the impact of the *Every Child a Talker* initiative in the reception classes of two Bristol primary schools, both in disadvantaged areas of social housing, on opposite sides of the city. The strategy had already been implemented in the nursery class. This research tracks the progress of twelve children, aged four and five, for six months across their subsequent reception year and evaluates the impact of the programme on improving language outcomes

- 29 ***The effect of using multimodal gesture on infants' vocabulary development in natural environments***
Paul Vogt, J. Douglas Mastin, *Tilburg University*

The objective of this paper is to study how usage frequencies of multimodal gestures (e.g., *pointing*, *showing*, *reaching*) used by the communication partners of infants in natural environments affects the infants' vocabulary development. The study has been carried out in a rural community in Mozambique, where 18 families were recruited with infants between 11 and 15 m.o. (average 13;1) at the start of the study. Each infant was recoded twice, with 18 weeks apart, for 45-60 minutes of free behaviour, after which an adaptation of the MBCDI infant short form was administered to primary caregivers. Thirty minutes from each video was coded for 10 different categories of multimodal gestures. Pearson's correlations showed that communication partners' use of the gestures *reaching*, *showing* and *proximal pointing* in observation 1 positively influenced the development of vocabulary understanding in observation 2 ($p < 0.01$ for reaching; $p < 0.05$ otherwise). The partners' use of *taking*, *giving* and *distal pointing* in observation 1, however, had a negative effect on the development of expressive vocabulary in observation 2 ($p < 0.05$).

The findings can be explained by realising that the gestures *reaching*, *showing* and *proximal pointing* tend to strengthen the infants' focus of (joint) attention, thus providing a healthy environment for vocabulary learning. In contrast, the gestures *taking*, *giving* and *distal pointing* tend to break the infants' focus of attention, which appear to affect word learning. Hence, this study suggests that only gestures used to strengthen infants' focus of attention assist vocabulary development, while gestures that break the attention inhibit vocabulary development.

- 30 ***Responsiveness and Assertiveness Skills of Italian and Japanese toddlers***
Luigi Girolametto¹, Serena Bonifacio², Tadashi Hamada³, Kayoko Hamada³, ¹*University of Toronto*, ²*IRCCS Burlo Garofolo, Trieste*, ³*Hamada Medical Clinic, Japan*

The purpose of this study was to investigate toddlers' early pragmatic skills (i.e., responsiveness and assertiveness) in interactions with their parents. Previous cross-cultural research has portrayed Western industrialized cultures as fostering independence in children, while the Japanese culture is typified as promoting children's accommodation to societal expectations. Thus, the working hypotheses of this study were that the Japanese children would show higher responsiveness than the Italian children and the opposite would be true of assertiveness.

The participants were 20 Japanese mothers and 20 Italian mothers and their toddlers aged 12-24 months. The two groups were matched for children's age, children's sex, and maternal education level. A 25-item parent rating scale, translated into Japanese and Italian, was used to evaluate children's assertiveness and responsiveness. Cronbach's alpha yielded high coefficients for responsiveness (.85) and assertiveness (.91). Test-retest reliability was high ($r = .90$ for assertiveness; $.86$ for responsiveness).

Two separate MANOVAs were conducted to compare the two groups of toddlers on assertive and responsive items. Italian toddlers were found to be more responsive on one item that tapped persistence in communicating. In contrast, the Japanese toddlers obtained higher ratings on four items that examined assertiveness skills. Both findings run contrary to the study predictions. One explanation for the group differences in assertiveness may reside in the parent-child interaction style. Japanese mothers have been reported to respond with positive warmth to a child's needs, even if those needs are different from the mothers' expectations. This may have indirectly fostered their children's assertiveness skills.

FIRST LANGUAGE ACQUISITION

31 ***Narrative and Vocabulary skills of Sequential Bilingual Children***

Pui Fong Kan, Danielle Kemp, *University of Colorado at Boulder*

The purpose of this study is to examine the relationship between the narrative and vocabulary skills of typically-developing sequential bilingual children. Participants were 16 children (mean age = 4;7; SD = 0;8) speaking Hmong (L1) as their Home language and learning English (L2) as a second language from preschool on. All tasks were administered in both Hmong and in English in different sessions. Children's expressive and receptive vocabulary skills were measured in both languages using comparable vocabulary measures. Their narrative skills were tested using a story-retelling task. Narratives were coded for three categories: *Appendages* (e.g., introducer, ender), *orientations* (e.g., names, relations), and *evaluations* (modifiers, internal states).

Results on the vocabulary tasks showed that children performed better in Hmong than in English [$F(1,15) = 28.39, p < 0.001$]. The narrative analysis also showed a significant language effect [$F(2,11) = 9.24, p < 0.01$]. *Orientations* were more common in English whereas *evaluations* were more frequent in Hmong. No effects of age or L2 experience were found. Correlation analysis showed that children's English vocabulary skills were positively correlated with the *evaluations* in the narratives (naming: $r = 0.7, p < 0.01$, picture identification: $r = 0.84, p < 0.001$). The results indicated that children who had greater vocabulary skills in L2 also produced more evaluations in the story in L2. The overall findings contribute to our understanding of the links between vocabulary and narrative skills in sequential bilingual children. Clinically, the data can guide narrative assessment and intervention for these children

32 ***In search for Criteria to Measure Verb Morphology Acquisition***

Natalia Gagarina¹, Sigal Uziel-Karl², Wolfgang Dressler³, ¹*Center for General Linguistics, Berlin*, ²*Ono Academic College (OAC) and Haifa University*, ³*Austrian Academy of Sciences*

Few studies address the question of when children have reached target level in their morphological proficiency. The present paper proposes a diagnostic criterion for the acquisition of verb morphology based on a statistical computation of the convergence between child production data and CDS. The longitudinal speech samples of three Russian-speaking children ages 1;9-3;0 and two Hebrew-speaking children ages 1;5-3;0 were used to test this measure. All verb containing utterances in the five children and caretakers' data were isolated, and all verbs were morphologically coded for inflectional categories. The rates of verb-tokens per tense by all verb tokens at each age (e.g., past tokens/verb tokens at age 3;0) were calculated for each child and caretaker and their proportion was compared. To find the point of convergence, the difference between the data of each child and respective caretaker was calculated by subtracting the latter's rate from that of the former and plotting it by the child's age. Based on these data, curves of the types x^k (x to the power of a negative integer number) were fitted and the numerical distance between all child and CDS data points was calculated ($p > 0.05$). The results show that the incongruity between CDS and child performance disappears when the number of finite verb forms increases and the number of imperatives and infinitives decrease. Thus, the convergence between child and CDS can best predict morphological acquisition when computed in the use of inflected tensed verbs.

33 ***Similarity and generalization in novel construction learning -- Evidence from German-speaking 3- to 8-year-olds***

Anne-Kristin Siebenborn, *Ludwig-Maximilians-Universität; Max Planck Child Study Centre, Manchester*

The present study explores the effects of different types of similarity on novel construction learning in morphology and the relationship between the memory and generalization processes involved. Studies on argument structure constructions (Casenhiser & Goldberg 2005; Childers & Tomasello 2002) and non-linguistic psychological research (Gentner & Medina 1998; Markman & Gentner 1993) imply that high formal similarity might be easier to detect than relational similarity and therefore lead to earlier generalizations of a new pattern. Before forming such generalizations children likely need to store a number of instances of the novel construction. Wonnacott, Boyd, Thomson, & Goldberg, 2010) suggest that a single instance might be insufficient for grasping the pattern.

160 German-speaking children between 3 and 8 were trained either on a novel prefix (high concrete similarity) or a verb-initial reduplication (relational similarity), both with the meaning 'pretence'. The experiment consisted of a training film, an act-out task, a comprehension and a production task. In each task, memory and generalization of the new construction were tested.

Mixed-effects logistic regression analyses revealed that children learned both novel constructions, with performance on all three tasks increasing with age. Learning was better in the prefix condition than in the reduplication condition, implying that high concrete similarity facilitates construction learning. Findings also showed that children memorize at least two instances before starting to generalize the novel construction to new cases, suggesting that storage of two or more instances might be a prerequisite for schema abstraction and subsequent generalization.

- 34 ***Do incremental changes in phonotactic probability and neighbourhood density matter?***
Holly Storkel, Junko Maekawa, Su-Yeon Lee, *University of Kansas*

Past studies of spoken language processing, memory, and learning have examined only gross distinctions between low and high phonotactic probability (i.e., the likelihood of occurrence of a sound sequence) or neighbourhood density (i.e., the number of phonologically similar words). The goal of the current studies was to examine the influence of incremental changes in phonotactic probability (Study 1) and neighbourhood density (Study 2) on word learning by 3- and 5-year-old children. For both studies, four levels of the manipulated variable were contrasted: lowest, midlow, midhigh, and highest. Results showed a stair-step relationship between phonotactic probability and word learning accuracy with minor improvements from lowest to midlow probability followed by a significant decline in accuracy for midhigh and highest probability. In contrast, a linear relationship was observed between neighbourhood density and word learning accuracy with incremental increases in density resulting in incremental improvements in accuracy. These patterns suggest that phonotactic probability and neighbourhood density influence different processes involved in word learning and suggest the need to examine the influence of incremental changes in phonotactic probability and neighbourhood density on other aspects of spoken language processing, memory, and learning

- 35 ***The Acquisition of *bidd-* 'want' in Spoken Palestinian Arabic***
Irit Meir¹, Sigal Uziel-Karl¹, Khadiji Moed², Rachel Yifat¹, ¹*University of Haifa*, ²*Ono Academic College*

The present study examines the acquisition of *bidd-* 'want' in Spoken Palestinian Arabic (SPA) from a morphological, syntactic and functional perspective. The structure of *bidd-* and its complements is morphologically complex: In the lack of infinitives, *bidd-*'s VP complement consists of a fully inflecting verb in the imperfect (*yifal*). Person inflection is realized both on *bidd-* and on the complement verb. Functionally, *bidd-* is used to indicate both volition and futurity. We used spontaneous speech samples of four SPA-speaking children, ages 2;3 – 3;5, video recorded in interaction with their family members in different situations. We selected 4 transcripts per child at intervals of two weeks apart (child utterances per transcript, N ~ 100). The samples were transcribed, coded and analyzed using the CHILDES. All verbs (children + adults) were morphologically coded, and *bidd-* was also functionally coded for volition/futurity.

The children had between 3-8 forms of *bidd-*. 54% of the forms (tokens) were 1st-sg + [verbal complement] (*biddi 'afal*), and 26% were 1st-sg negated form *biddi:sh* (with no complement). *Bidd-*'s most common complement was a verb. It was also used with a noun complement and with no complement. 91% of the uses of *bidd-* expressed volition whereas 9% marked futurity. Our findings suggest that SPA-speaking children are sensitive to the varied uses of *bidd-* in their language, using inflected forms of *bidd-* from very early on, despite the morphological complexity involved. Functionally, *bidd-* is initially used to mark volition and only later to mark futurity, as in other languages.

- 36 ***Acquisition of long distance weak quantification by French-speaking children***
Marie Labelle¹, Geneviève Lemieux-Lefebvre¹, Daniel Valois², ¹*Université du Québec à Montréal*, ²*Université de Montréal*

We tested 36 French-speaking children's understanding of long distance weak quantification using a truth-value judgement task; children were equally divided into three, four, and five-year old groups.

We presented children with sentences containing weak quantifier *beaucoup*, (many) in adverbial position (Les enfants ont beaucoup attrapé de poissons). From this position, *beaucoup* cannot scope over the subject.

Twelve transitive sentences were created, six where the direct object was indefinite, with the quantifier having scope over the object (see above), and six in which the direct object was definite, with the quantifier having scope over the verb (Les enfants ont beaucoup décoré le sapin). For each transitive sentence, two pictures

were created, one true and one false. The false context depicted many subjects, but only one object and only one relevant event. The children were asked to decide whether the sentence matched the picture, and to justify their answer. The participants' justifications were used as an indication of the constituent over which the weak quantifier was perceived as having scope.

Results show that three year-olds have a strong tendency to (incorrectly) interpret weak quantifiers as having scope over the subject, but not five-year olds. They also present a higher rate of subject quantification in false contexts than in true contexts. All children factor in the definiteness of the object in their responses, i.e. these tend not to be quantified over. We conclude that the acquisition of object-oriented scope by weak quantifier beaucoup is gradual and is achieved around age 5.

- 37 **Grammatical composition of early expressive vocabularies: evidence from Maltese-speaking children**
Daniela Gatt¹, Helen Grech¹, Barbara Dodd², ¹University of Malta, ²City University London

The current study addresses the composition of young Maltese-speaking children's vocabularies, examining the use of part-of-speech components in relation to expressive lexicon size. Analysing children's use of part-of-speech, or grammatical, categories as a function of vocabulary size allows individual differences in rate of lexical development to be controlled.

Vocabulary measures were obtained from 60 children aged between 12 and 30 months using caregiver report and naturalistic sampling. Reported measures were derived from an adaptation of the vocabulary checklist of the MacArthur-Bates Communicative Development Inventory: Words and Sentences. Sample data were obtained from children's language use during free play with their main caregiver. Data yielded by both methods were compared.

Despite the quantitative differences between data yielded by each method, similar developmental trends in vocabulary composition emerged. Both checklist and sample data showed Maltese-speaking children to shift from a preference for social words in the earliest stages of word use to a bias towards noun rather than predicate (verb and adjective) production as vocabularies expanded. These results coincide with trends reported for other languages, providing support for the universality of specific features of early vocabulary composition. Differences between reported and sampled measures of grammatical categories were also evident, shedding light on the methodological biases that are likely to impact on measures of early lexical expression. These findings highlight the necessity of employing at least two methods to measure expressive vocabulary so that the objectivity and validity of results is enhanced.

- 38 **Causative-Formation: A Comparative Perspective**
Reili Argus³, Klaus Laalo⁴, Sigal Uziel-Karl^{1,2}, ¹Haifa University, Israel, ²Ono Academic College, ³Tallinn University, ⁴University of Tampere

All children express causation between ages 2;0-2;6. However, since languages differ, they may express this conceptual distinction in different forms. The present study provides a comparative perspective on causative-formation based on analysis of naturalistic speech samples from three languages – Estonian, Finnish and Hebrew. All three languages have an analytic means for expressing causation (intransitive verb in transitive word-order (Heb) or using the light verb "make" (Heb, Finn) or "put" (Est)) and a more synthetic, language specific means (designated verb-pattern (Heb) or affixation (Finn, Est)). The present study explores which structural means children use to express causation across development, whether they prefer language-specific to more general means or vice versa and which aspects of causative-formation are shared cross-linguistically. To this end, we analyzed longitudinal speech samples of six children (two per language), ages 1;5-3;0 and their caretakers, audio-recorded at home in varied situations. All verb containing utterances (N~5,000 per language) in the databases were isolated, and causative usage was coded for its formation strategy (word-order, light verb, affixation, v-pattern) (N~200 per language). The Findings reveal that within each language, children share their causative-formation strategy. However, there is variation between languages, as not ALL children initially opt for the language-specific strategy or for the more analytic form. These findings are explained in terms of the intricate interplay between formal complexity and frequency in CDS in that when the least complex option matches CDS it is used early but when the two do not match, children adopt the least complex form first.

- 39 **Is Interaction with the Caregiver the Birthplace of Infant Gesture?**
Patricia Zukow-Goldring, UCLA

Unpacking "nonverbal interaction" has documented that assisting infants to imitate cultivates their use of cultural objects and nurtures a shared understanding of daily life. Adeptly engaging in everyday activities not only leads to "content-loaded" gestures in those settings, but eventually to producing words with corresponding meaning. The present research investigated how caregiver messages during assisted imitation might foster infants' transition from action to gesture.

Method. The longitudinal sample consisted of five English-speaking, Euro-American middle-class and six Spanish-speaking, Latino working-class families with infants of 6 months, living in the Western US. The families participated until the infant produced more than one-word at a time, around 21-26 months. We collected all caregiver actions and gestures that directed infants to engage in ongoing activities from twenty-minute monthly videos of naturalistic interaction at home.

Results. Multivariate frequency analyses revealed significant correlations between communicative level, activity complexity, and caregiver message.

Discussion. Overall, caregiver messages within activity types begin with embodying, gradually shifting to demonstrations that invite infants to imitate, then introducing actions via indexical signs, and finally conveying information with iconic gestures. Not surprisingly, a significant correlation was found between age and complexity of the activity. The trajectory over time of caregiver action/gesture messages precedes and predicts the emergence of action/gesture development in infants reported in prior studies, pointing to caregiver interaction as the birthplace of infant action and gesture. The next steps: to investigate the relation of these caregiver data to the emergence of their infants' action/gesture repertoires as well as their words.

40 ***Lexicon composition, lexicon organization and vocabulary size: designing a new picture vocabulary test***

Ewa Haman¹, Krzysztof Fronczyk², Magdalena Smoczyńska³, Aneta Miekisz¹, ¹University of Warsaw, ²University of Finance and Management in Warsaw, ³Jagellonian University

Lexicon composition (proportion of nouns, verbs and adjectives) and organization (taxonomic, thematic or phonetic relations among words) reflect basic processes involved in word learning (Gentner & Boroditsky, 2001, 2009) and are important in both language and conceptual development in typical and atypical populations (Sheng & McGregor, 2010). Vocabulary size influences syntactic abilities (Dale et al., 2000), central aspects of cognitive development (Biemiller, 2007; Gopnik & Nazzi, 2003; Watson et al., 2001) and school readiness (Forget-Dubois et al., 2009). Thus there is a substantial need for effective methods of vocabulary assessment applicable for both scientific and educational/clinical purposes which consider various aspects of lexicon composition and organization.

We present the design and development of such a new method: a receptive picture vocabulary test for Polish preschool children. In our test a target word (noun, verb or adjective) is matched with three distractors, each reflecting semantic (taxonomic), thematic or phonetic relation to the target. Test items comprise 4 pictures representing the target word and its distractors, and a query to show which picture goes best with the target word.

The test was developed in three stages:

- (1) 152 participants age 4;00-6;11 – a set of 497 test items randomly organized
- (2) 199 participants age 2;00-3;11 – a set of 264 test items randomly organized (assessed for average correctness and discriminative index based on previous results)
- (3) 358 participants age 2;00-6;11 – two parallel versions of 129 items organized by increasing difficulty (based on previous results).

Results indicate main effects of age, word class and distractor type (taxonomic/thematic/phonetic) on children's comprehension of words, thus confirming the importance of lexicon composition and organization in vocabulary size assessment. Analyses aimed at preparation of shorter parallel versions organized by item difficulty for a norming study, and possible applications of the test will be outlined

41 ***Beyond a preference: Word learning and infant-directed speech***

Cassandra Foursha-Stevenson¹, Elena Nicoladis², ¹Mount Royal University, ²University of Alberta

Young children prefer listening to infant-directed speech (IDS) with high-pitched, exaggerated expression than to adult-directed speech. This preference may result in increased attention towards IDS, but it is not clear if IDS enhances language learning. The current study tested whether IDS enhances word learning in children between 18 and 24 months of age. The children were taught novel labels for novel items either in IDS or adult-direct speech and then tested using preferential looking procedures on a forced choice. Preliminary results indicate that although, overall looking time for the IDS and adult-directed groups is equivalent, the children in the IDS group showed a trend towards looking longer at the item matching the word over the non-matching item in comparison to the adult-directed group. This effect did not differ across the age groups. These results suggest that IDS may actually enhance word learning in young children

42 ***The role of function words and prosody for word segmentation in French-learning infants***

Erin Robertson¹, Rushen Shi², ¹Cape Breton University, ²Université du Québec à Montréal

Shi and Lepage (2008) found that 8-month-olds learning French used frequent functors to segment nouns from speech (e.g. mes preuves "my proofs"). What is unknown is whether the functor must also be reduced for successful word segmentation. We measured noun segmentation from functor-noun phrases with informative prosody (lower pitch in functor compared to noun) and uninformative prosody (similar pitches in functors and nouns). A preferential-looking paradigm was used in two experiments to measure noun segmentation in 8-month-old monolingual French-learning infants. In each experiment, frequent and nonsense functors were compared as cues to noun segmentation. In experiment 1 (informative prosody), infants were familiarized with two functor-novel noun phrases: one with a frequent functor and one with a nonsense functor (e.g. mes BANS and ji REUS respectively). In both phrases, the prosody was held constant: the functor had a lower pitch than the noun. In the test trials, novel nouns (bans and reus) were presented in isolation and looking times for each noun were measured. In experiment 2 (uninformative prosody), the same procedure was followed, but in the familiarization phase the functors and nouns had similar pitches. In the test trials for both experiments, infants consistently looked longer to the novel noun that was paired with the frequent functor in the familiarization

phase, regardless of the prosodic relationship between the functor and noun. In conclusion, successful noun segmentation in preverbal French-learning infants does not require a preceding reduced functor; frequent functors facilitate noun segmentation even when the prosodic pattern is uninformative

- 43 **C-command and First Language Acquisition by Persian Children**
Sara Sharifpour¹, Ali Darzi¹, *Tehran University*

This paper studies the knowledge of the abstract concept of C-command in Persian children acquiring their first language via the first principle of the Binding Theory. It attempts to describe part of the competence or the innate mental grammar of human being, which according to Chomsky is a biological endowment. This research was performed on a sample of 40 randomly selected children in the age range of three years and six months to five years old. Preparing the test was done by considering the studies by McDaniel et al (1990), Chien & Wexler(1990) and Marefat (2004). We employed descriptive statistics and independent- samples T test as inferential statistics in this research. The statistical results indicated that the children of 4-5 years of age outperformed the kids of 3-4 years of age in recognizing the referent of an anaphor or in identifying the noun phrase which C-commands the anaphoric pronominals. Also, the effect of gender variable as a biological factor was found to be in favor of female subjects. The statistical results indicated that girls acted better than boys in identifying the referent of anaphors, a task that is highly sensitive to the concept of C-command.

- 44 **Frequency and Neighborhood Density Effects During First Word Acquisition in French**
Christophe dos Santos¹, Sophie Kern¹, Stephanie Stokes¹, ¹*Université François-Rabelais,* ²*Laboratoire Dynamique du Langage,* ³*University of Canterbury*

This study investigates the claim that neighborhood density (ND) has a greater effect on word learning than word frequency (WF) (Stokes, 2010), by examining the effect of these two factors on expressive vocabulary development in monolingual French-speaking children. While Goodman et al. (2008) showed that the effect of WF was dependent on word class (eg. nouns versus closed class words) and Coady and Aslin (2003) showed that words of high ND were learned earlier, Stokes (2010) showed that WF had little effect over and above that of ND. The question addressed in this study is: are children using these two factors to learn new words in a similar way? And if not, do the children using different word-learning strategies develop their lexicon at the same rate (have the same lexicon size)?

This study is based on 208 French Communicative Development Inventory questionnaires (a French adaptation of the MacArthur-Bates Communicative Development) completed by parents of monolingual French-speaking children aged between 24 and 30 months. WF and ND were computed from Lexique 3 database (New et al, 2007).

The results showed that these two factors accounted for 62% of the variance in lexicon size, but ND accounted for 53% of the variance. The lexicons of children who had already acquired a large number of new words tended to be comprised of words of lower ND than children who had just begun to learn their first words. It appears that the strategy applied to word learning changes during the course of acquisition

- 45 **Phonological development in Swedish children with otitis-proneness**
Helena Stålnacke, Jan van Doorn, Peter Czigler, *Orebro University*

One complication of acute otitis media is middle ear effusion, resulting in fluctuating conductive hearing loss. Fluctuating conductive hearing loss has been found to affect children's phonological development.

The present longitudinal, qualitative study focuses on the phonological development in terms of the emerging phonological system (word- and syllable-shapes, phoneme inventories), and the developmental phonological processes, in Swedish children with otitis-proneness.

A total number of 43 (23 with otitis-proneness, and 20 as a control group) children's phonological development was longitudinally investigated on yearly basis.

The children were selected through medical records in a number of Child Health Care Centers in a Mid-Swedish county. Initially, none of the children was involved in specialized audiological care. However, a few children had a ventilation tube inserted surgically at later stages of the investigation.

For seven of the children in each group, the investigations started at the age of 2,5 years, and for the rest at 3,5 years. Speech samples, containing maximally 104 words for each child were elicited by standardized picture naming tasks, at the ages of 2,5; 3,5; and 4,5. The speech samples were narrowly transcribed, and analyzed.

The findings indicate that a major part of the children does have a phonological development within normal limits. However, children with otitis proneness tended to inter-dentalize the /s/-sound, and weaken the /r/-sound to a higher degree than children in the control group. A few individual cases of delayed phonological development were found in both groups

- 46 **A standardization and validity study of a speech and language screening tool: A look at a Canadian linguistic minority outside Québec**
Michèle Minor-Corriveau, *Laurentian University*

The period spanning from kindergarten to grade 3 represents a critical learning period for elementary level students. The purpose of this longitudinal and cross-sectional study is to standardize and validate the *Speech and Language Profile*, a speech and language screening tool developed by and for educational Speech-Language Pathologists. Extensive literature review as well as polls carried out throughout Ontario and Québec

revealed that there does not seem to be a gold standard protocol agreed upon for use by Speech-Language Pathologists for the purpose of identifying children in need of speech and language services. The reliability and validity measures obtained will draw upon data taken from administering the screening tool, which will be measured against each individual child's academic performance through teacher report and standardized testing, including numeracy and literacy scores obtained by the Education Quality and Accountability Office's provincial mandatory standardized testing. This study hopes to demonstrate high predictive and concurrent validity of this tool in both of Canada's official languages, as well as a high inter- and intra-rater agreement. Favorable results could support the use of this tool by educational Speech-Language Pathologists to help them determine, at the earliest possible moment in the child's academic trajectory, which services would be required in order to maximize the students' learning potential. A high level of predictive and concurrent validity could also support the importance for standardizing this tool with other populations in minority and majority language settings at an international level.

47 *Mean length of utterance in morphemes, syllables and words in Slovak as a flexive language - theory and practice*

Daniela Slancova¹, Svetlana Kapalkova², Jana Kesselova¹, Stanislava Zajacova¹, ¹Presov University, ²Comenius University

Calculating mean length of utterance in morphemes in Slovak (language with rich declension and conjugation) is the first attempt to adapt MLUm measurement in Slavic languages. Rules for calculating developed by our research team are based on a morphematic analysis with regard to specific features of language acquisition derived from the longitudinal data of five Slovak-speaking children. The calculation of MLU by means of the given rules (specific morphematic analysis – sMLUm) was compared to the MLU based on a complex morphematic analysis (cMLUm). The material for calculation were CHAT transcripts of three Slovak children's speech samples (two girls and a boy) aged 1;0 – 2;6 who were videotaped in their naturalistic conditions for one hour every month. The second source for calculation were 1 050 parental reports on children aged 1;5 – 2;6 in a Slovak version of MacArthur-Bates CDI TEKOS II: Words and sentences, particularly the subtest "three longest sentences". At the same time MLU in syllables (MLUs) and words (MLUw) were calculated. Correlations among all four values have been calculated by means of Spearman and Pearson correlations and have shown the highest value between the cMLUm and sMLUm and between sMLUm and MLUs in both samples. The lowest correlation has occurred between cMLUm and MLUw. Consequently, recommendation for practice is to calculate the MLU for Slovak-speaking children first in syllables and if more detailed values are needed, in sMLUm. Both methods are (considering the complexity of the Slovak morphological system) applicable quite easily.

48 *The development of novel metaphor and metonymy comprehension in typically developing children*

Jo Van Herwegen¹, Dagmara Annaz², Gabriella Rundblad³, ¹Kingston University, ²Middlesex University, London, ³King's College London

Previous studies investigating figurative language comprehension in typically developing (TD) children have focussed on lexicalised expressions. These are expressions that might have been encountered by children before and thus comprehension might rely on lexical retrieving strategies. However, it is unclear how and when children come to understand novel expressions for which a meaning needs to be created and little research has examined how such an understanding develops in relation to age. Furthermore, it is unclear whether metaphors and metonyms are two distinct types of figurative expressions that rely upon different cognitive mechanisms. The current study addresses these shortcomings by constructing cross-sectional developmental trajectories, a methodology which emphasises the relationship between performance and age. Thirty-three TD children were presented with short stories which ended in a novel metaphor or metonymy and asked to select a meaning for the expression by touching a picture on a screen. Comprehension of the expressions was compared to performance on inference, semantic knowledge, and theory of mind tasks. The results showed that metaphor and metonymy comprehension in TD children increased in line with their chronological age. However, comprehension of object-user metonyms was poorer compared to synecdoche metonyms, while there was no such difference found between sensori and non-sensori metaphors. Inference abilities and theory of mind abilities did not show to be related to novel metaphor and metonymy comprehension, while semantic abilities correlated with comprehension of novel metaphor but not metonymy. This paper discusses these results in relation to current theories explaining novel metaphor and metonymy comprehension.

49 *Children's understanding of the logical words 'not', 'every', and 'or'*

Anna Notley¹, Rosalind Thornton¹, Stephen Crain¹, ¹Macquarie University

This study examined 4-5-year-old English-speaking children's interpretation of sentences like '*Not every farmer washed a cow or a dog*'. For adults, this sentence means that at least one farmer did not wash a cow and did not wash a dog. This meaning results from our interpretation of the meanings of '*not*', '*every*', and '*or*' in an ordered hierarchy which conforms to classical logic. However, there are other possible ways to combine the meanings of these expressions. If children interpret complex combinations of logical operators in the same way as adults do, this would constitute evidence for the proposal that innate logical principles guide sentence interpretation in natural language. Alternatively, if children pass through a stage in which their interpretations are non-adult-like, this would suggest that the principles guiding the interpretation of logical operators must be learnt. A Truth Value Judgement task was used to test 17 children on trials of two types. One type of trial made the test sentences false on an adult reading, but true on a non-adult reading, and the other type had the

reverse pattern. The child subjects correctly rejected false sentences 84% of the time, and correctly accepted true sentences 71% of the time. No child consistently produced non adult-like responses to either trial type. The results show that, on balance, children and adults interpret the complex combination of 'not', 'every', and 'or' in the same way. This suggests that the emergence of the meanings of logical operators is guided by principles of logic.

- 50 **Early prosodic development: evidence from intonation and tempo in European Portuguese**
Marina Vigário, Sónia Frota, Nuno Matos, *Universidade de Lisboa*

Studies on prosodic development have shown cross-linguistic differences on early word and utterance production, such as the presence/absence of word-minimality effects. However, studies that integrate various sources of evidence are scarce and our understanding of the pathways of prosodic development is still limited, with opposite views arguing for a bottom-up or a top-down process. For the present study, we gathered production data on intonation, word stress, and duration patterns at segmental, syllabic and phrasal levels, from the speech of one Portuguese child, on the basis of nearly daily recordings from 1;00 to 2;04. The results for disyllabic targets in initial productions (until 1;04) show one pitch accent per syllable and level stress, among other properties that indicate that the syllable is being treated as a prosodic word (PW) and as a phrase. After 1;04, disyllabic targets are uttered with one pitch accent and stress shift predominates, indicating that syllables no longer coincide with PWs. The presence of a strict relation between number of pitch accents and number of PWs, and the irrelevance of syllable position in the phrase for syllable duration, show that each PW is treated as a prosodic phrase. After 1;09, the relation between number of pitch accents and number of PWs is broken (matching pitch accent distribution in the input) and phrase-final syllables become longer, showing that PWs and phrases are now treated differently. These findings strongly suggest a path of development where key prosodic domains align and development proceeds by unfolding of the different levels

- 51 **Acquiring early verb constructions in Mandarin Chinese: A comparison of 2 and 3 year olds' verb use in naturalistic and experimental contexts**
Juan Hu, Nancy Budwig, *Clark University*

A central issue in children's verb construction development is productivity, which has been illustrated mainly in experimental settings by testing whether children can generalize a nonce verb to a construction (e.g., transitive) different from the one in which that verb was original modelled (e.g., intransitive). How do children's early constructions with familiar verbs compare with what can be gleaned from their productions in an experimental setting? Investigations on this understudied question can not only provide a more complete account of children's productivity, but also shed light on the developmental processes through which children build up abstract verb constructions in Chinese and other languages. 12 children from a larger study of forty-eight monolingual Mandarin-speaking mother-child dyads participated. The method included collection of naturalistic speech samples (40-minute play per dyad) and a novel verb training experiment involving exposing children to six nonce verbs introduced in transitive or intransitive constructions. The 12 children were divided into two groups: 6 generalizing and 6 non-generalizing children. Age didn't impact capacity to generalize (range: 2;8 – 3;6). Analyses focused on whether the two groups of children differed in a number of aspects of their familiar verb use in naturalistic contexts. Findings revealed that generalizing children produced significantly more verb types, used familiar verbs in a wider range of argument frames, and incorporated a greater variety of different verbs and pronouns into argument frames than non-generalizing children. These findings established evidence that the diversity of children's verb use in naturalistic speech is positively related to their generalization ability.

- 52 **Eliciting noun plurals in German: a comparison of children's productions in a classical elicitation and a playful naming task**
Sabine Laaha, *Austrian Academy of Sciences*

Children's linguistic achievements in a domain such as noun plurals depend on the context in which they are elicited. In a classical elicitation task of the type *This is one X. And what are these? Two/many __*, plurals are elicited in a way which is conducive to retrieval of explicit language knowledge (conscious conceptualization of form-meaning). The aim of this study was to compare children's productions in a classical elicitation task (CET) and a less explicit playful naming task (PNT). We predicted higher correct scores in PNT, due to the less explicit nature of the task.

The study participants were 120 monolingual German-speaking children in six age groups (four- to nine-year-olds). Each child was tested twice: in PNT, he/she had to instruct another child to put plural items on a coloured cardboard; in CET, he/she had to provide the plural of a given singular. Stimulus items (N=21, balanced for plural markers) were identical in both tasks.

Results showed a significantly higher success rate in PNT, especially in the younger age groups (four- to six-year-olds). There were more zero responses in CET, due to priming of the singular. Non-transparent, exceptional plurals were better in PNT, whereas there was no task-dependent difference in transparent, highly-predictable plurals. These findings suggest that explicit language knowledge gradually develops with schooling and that a more implicit task is 'easier' for younger children. Moreover, the results are compatible both with single-route and with new, weaker dual-route accounts which limit rule application to several transparent, highly-predictable inflectional forms.

- 53 ***Sex-related acoustical differences in a mother's speech toward opposite-sex twin infants***
Katsuko Niwano, *Tohoku Fukushi University*

In this longitudinal study we examined acoustical features of a mother's speech directed to her twin infants—a boy and a girl—when the twins were 3, 5, 7 and 9 months old. The infants were born full-term and were healthy throughout the study, with no history of hearing disorder or other health issues. The mother's voice was recorded as she spoke to her children separately. Acoustic analysis yielded a mean fundamental frequency (F0), an F0 range and a mean speech duration for the mother's speech as directed to each of the infants. Values for the boy and girl were compared to reveal any gender-related differences in maternal speech. A significant difference in mean F0 appeared when the infants were 3, 5 and 7 months old; with the F0 value higher for the boy than for the girl. Speech duration differed significantly when the infants were 5 months old; being longer for the boy than for the girl. No significant differences were observed in F0 range. We also recorded the frequency of infant utterances, and found that the girl produced utterances more often than the boy throughout the study. These results suggest that the mother, recognizing that her son was producing fewer utterances, attempted to elicit utterances from him by employing higher F0 and longer speech duration

LANGUAGE DEVELOPMENT IN ATYPICAL POPULATIONS

- 54 ***Multimodal strategies for teaching children with Down Syndrome new words***
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We investigate whether teaching new words to eleven 2- to 5-year-old children with Down Syndrome using a multimodal strategy (speech, sign, visual symbols) facilitates vocabulary development, language use, and prelinguistic communication, compared to a control condition using a dual-modal strategy (speech, sign), particularly when words taught in six 30-min individual speech-language-therapist (SLT) sessions for each intervention are reinforced by equivalent sessions with parents and teachers. Using a cross-over repeated measures design, children were taught eight new words using each strategy (order was counterbalanced across children with groups balanced for cognitive ability at baseline). Words in each condition were balanced for psycholinguistic variables (e.g., imageability, frequency) and reported to be not productively acquired by the children. Results showed a main effect of intervention strategy: Frequency and types of words communicated (by sign or speech) relative to frequency, and initiated joint attention (measured from language sampled during interactions at baseline and post-intervention with an SLT who is not the child's intervention SLT), increased with multimodal than with dual-modal intervention, supporting previous findings that language and communication gain for children with Down Syndrome is greater for multimodal than dual-modal strategies. Results reinforce the view that the multimodal strategy capitalises on children's visuo-spatial strengths, particularly given that these children tend to experience difficulties with phonological and STM memory. Findings that parent-reported vocabulary size did not increase with either strategy, may relate to the use of parent-report measures in the context of caregiving arrangements (some children had domestic helpers as primary caregivers).

- 55 ***The assessment of pre-linguistic communication in severely motor-impaired preschool children***
Raz Tenenbaum¹, Dana Roth², Esther Dromi¹, ¹*Tel Aviv University*, ²*Beit Issie Shapiro*

The communication of children with Cerebral Palsy is complex and demands attention to many factors. This study reports on the adaptation and experimental application of a highly detailed clinical tool for the assessment of pre-linguistic behaviours in 13 domains. The assessment tool was originally constructed in England by Keirnan and Reid (1987) for setting goals of intervention for non-verbal adults. It was adapted to Hebrew and for use with young children with deafness by Dromi et al., (2002), and more recently was modified for the application with young children with Cerebral Palsy (Pre-Verbal Communication Schedule-Cerebral Palsy- PVCS-CP). Twenty children with CP ranging in age from 20 to 85 months (mean age = 51.8 months) participated in the study. The children were 10 boys and 10 girls from 4 different special education pre-schools in Israel. All children were non-verbal, 10 had a personal communication picture book. The PVCS CP forms were filled by the speech therapist of each child with the assistance of the teachers. Results indicated that participants mainly demonstrated passive communicative behaviours. Children who used a few gestures despite their limited motor skills gained higher total communicative scores. In addition, those who used pictures and objects for communication gained higher total and linguistic scores.

- 56 ***Slow mapping lexical learning and immediate list recall in children with and without SLI***
Natalie Munro, Elise Baker, *University of Sydney*

Empirical data from fast mapping experiments suggest that children with Specific Language Impairment (SLI) have difficulty learning phonological, lexical and/or semantic aspects of new words. What is less well understood is the nature of the difficulties that children have as they consolidate newly learned words overtime.

In this study we compare the slow mapping abilities of 17 children with SLI aged 54 to 77 months with 14 typically developing (TD) matched controls. All children were trained weekly for 6-weeks on 12 new word forms for known referents (hereafter called mapped word training) using a paired associate, 2nd language learning

paradigm. Word learning was assessed via word recognition and naming tasks pre, during and post training. The integrity of participants' newly learned lexical representations was assessed using an immediate supraspan list recall task before and after the mapped word training where performance of mapped word recall was compared with list recall of untrained but known real words.

A repeated measures (RM) ANOVA with planned orthogonal Helmert contrasts revealed significant time*group interactions such that the SLI group recognised and labelled fewer mapped words over time compared to the TD group. Another RM ANOVA comparing immediate word recall of both real words and mapped words showed the SLI group recalled significantly fewer words for both lists, but importantly a significant improvement in mapped word recall after training compared to real word recall for both groups. We suggest that poor mapping processes and poor short term memory processes underlie children's word learning difficulties.

57 ***Comprehension of subject and object relatives by SLI and typically developing children: comparing Act-Out and Sentence-picture tasks***

Alexandrina Martins, Ana Catarina Baptista, Catarina Afonso, Susana Rodrigues, *Universidade de Lisboa*

In this study we try to ascertain the differences in performance between ACT-OUT METHOD and SENTENCE-PICTURE TASK in children with typical language development and in children diagnosed with SLI. At the same time, we discuss differences in understanding different types of relative clauses and assess the performances of children with different subtypes of SLI.

In order to achieve the above objectives, the participants in the study were submitted to the act-out method and the results compared to the previous study of Costa, Lobo, Silva and Ferreira (2008) for European Portuguese, in which the "sentence-picture matching task" adapted from Friedmann (1998) was used. In our study, we evaluated 30 children with typical language development aged 5 to 9 years old and 6 children diagnosed with SLI within the same age range (lexical-syntactic SLI and phonological-syntactic SLI). As a main result of this study, we show that the ACT-OUT method yielded better results for the study of relative clauses (subject and object) in children with typical language development. However the same did not happen with the SLI group, as far as object relatives were concerned. Moreover, when comparing the subtypes of SLI, it is possible to verify that the children who present lexical-syntactic SLI showed significantly worse results than the children with phonological-syntactic SLI on the comprehension of object relatives ($p < 0,05$). We therefore conclude that an ACT-OUT methodology not only confirms the difficulty with object relatives but may well be a methodology amplifying the differences between SLI and typically developing populations.

58 ***Language development in individuals with Specific Language Impairment (SLI): Trajectories and subgroups***

Gina Conti-Ramsden¹, Kevin Durkin², Andrew Pickles³, Michelle St. Clair⁴, ¹*University of Manchester*, ²*University of Strathclyde*, ³*King's College London*, ⁴*University of Cambridge*

There are several theories regarding the trajectory of language development in children with specific language impairment (SLI). The tracking hypothesis predicts similar rates of language development to the typically developing (TD) population, but at lower overall ability level. Other theories predict a slowing of language development in individuals with SLI, so that they fall further and further behind their TD peers. Another possibility is that children with SLI make gains with time, becoming less and less impaired when compared to their TD peers. However, the available empirical evidence is limited, with no convincing evidence for different subgroup trajectories found. The present study investigates the developmental trajectory of a large sample ($n = 242$, 24% female) of individuals with a history of SLI from age 7 to 17 years. Overall group results suggest that in general there is stable development, with little evidence of deterioration or catch up. In order to examine whether there was evidence of potential subgroups of individuals with differing developmental trajectories, longitudinal measures of expressive and receptive language were considered simultaneously. The most parsimonious model identified seven distinct subgroups of individuals with SLI. However, these differed only in the severity of language impairment, not their developmental trajectory. Thus, in conclusion, our general results suggest stable developmental patterns of language learning between middle childhood and adolescence in individuals with SLI. However, exceptions to this pattern of development are also observed. Interestingly, these are spread throughout the language ability/severity range

59 ***Verbal and Nonverbal Intelligence in Individuals with a History of Specific Language Impairment (SLI): Developmental Trajectories***

Kevin Durkin¹, Gina Conti-Ramsden², Andrew Pickles³, Michelle St. Clair⁴, ¹*University of Strathclyde*, ²*University of Manchester*, ³*King's College London*, ⁴*University of Cambridge*

Specific language impairment (SLI) is a disorder fundamentally defined by impaired language abilities within the context of normal nonverbal skills. However, there is growing evidence of a decline in nonverbal abilities from childhood to adolescence in individuals who have a history of SLI. In the present study, we examine in more detail the role that language severity may play in the development of nonverbal skills. Importantly, we use a longitudinal approach to subgrouping individuals with SLI based on the severity of their language difficulties. The sample consisted of 242 individuals with SLI who were followed longitudinally from age 7 to 17 years (24% female). The results indicated a general decline in nonverbal skills from childhood to adolescence. This was also the case for seven subgroups of individuals with SLI who were classified based on language severity. Furthermore, we found an interesting relationship between receptive language abilities and nonverbal

skills longitudinally. Subgroups 1 to 3, which had receptive language ability at or above 81, i.e., -1.25 SD, had nonverbal skills which were positively correlated with language abilities. The nonverbal skills of those individuals with receptive language below -1.25 SD were generally poor. There was one exception, subgroup 5. This subgroup had the fastest rate of decline in nonverbal skills. Interestingly, this subgroup exhibited an unusual profile of language abilities, where expressive language was better than receptive skills. In conclusion, these findings suggest a complex developmental relationship between linguistic and non-linguistic abilities in SLI from middle childhood to adolescence.

60 Socio-conversational skills and verbal behaviour of Slovenian-speaking talkers aged from 24 to 36 months: a comparative analysis of late talkers with normal language development

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Several researchers state that the late talkers received significantly lower ratings for both assertiveness and responsiveness in comparison with their age-matched peers and that they did not differ significantly from the younger, vocabulary-matched group. Social conversational skills i.e. socio-pragmatic skills are very important in child communication and interaction with parents and peers. A parent administered questionnaire for evaluating the conversational skills of children was developed by Girolametto (1997) and translated into Italian by Bonifacio and Girolametto (2007). To examine the conversational assertiveness and responsiveness of 40 Slovenian children aged from 24 to 36 months this study uses the cited parent administered questionnaire for evaluating the conversational skills of children - Slovenian version and a parent administered questionnaire for evaluating verbal and non verbal behaviour (gestures, first words and sentences). The results will show us the development of assertiveness and responsiveness mean ratings Social Conversational Skills in Slovenian children aged from 24 to 36 months, with normal language development and those with delayed language development (late talkers) and investigate if assertiveness and responsiveness mean ratings are correlated with vocabulary size and sentence production in the evaluated groups.

61 Statistical bootstrapping in emerging lexicons: Late talkers do it differently

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Late talkers' (LT) are two-year-old-children who have significantly smaller expressive vocabularies than their typically developing (TD) peers, usually at the 10th or 16th percentile for their age. Children use statistical/distributional properties of the input language (neighborhood density, word frequency; ND, WF) during word learning (Storkel, 2004). Ability to capitalize on these statistical cues is related to verbal short term memory abilities. English-speaking LTs performed poorly on a measure of verbal short term memory (Stokes & Klee, 2009). There may be a relationship between late talking, poor verbal short term memory skills and the use of ND and WF bootstrapping cues during early vocabulary development.

This research examined the relationship between ND, WF and vocabulary size across three languages, English, French and Danish. LTs (at the 16th percentile) were compared with TD children. Hierarchical regression revealed that ND and WF together predicted a significant proportion of the variance in vocabulary size (61%, 62% and 41% for English, French and Danish respectively). ND independently accounted for 47 %, 53% and 40% of that variance for English, French and Danish respectively.

For English and French, between- group Anovas showed that late talkers had significantly *higher* ND values and significantly *lower* WF values than typically developing children. For Danish, late talkers had significantly *higher* ND and significantly *higher* WF values than typically developing children. Cross-linguistic differences were attributed to variation in the phonological characteristics of English, French and Danish. A theory of *Extended Statistical Learning* is proposed to account for the findings.

62 Vowel acoustics of hearing impairment: a comparison between typically developing, hearing-assisted and cochlear implant speech

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This study investigates vowel production of a group of 7-year-old congenitally deaf children who received a cochlear implant (CI; n=9) in the first two years of life. Their productions were compared to these of a group of hearing-impaired (HI; n=9) age-mates with a conventional hearing aid and a group of normally hearing peers (NH; n=90). They took part in a pseudoword elicitation task containing the 12 steady-state vowels of Belgian Dutch.

Several acoustic dimensions of the collected vowel productions were analyzed and compared within and across groups: (1) F1/F2; (2) the surface of the acoustic vowel space defined by F1/F2 of the three corner vowels [i-u-a]; (3) the surface of the acoustic vowel space defined by F1/F2 of all vowels; (4) the 95% confidence ellipses and the number of overlaps between each individual vowel and the other vowels; (5) the proportion of overlap between the 95% confidence ellipse of each vowel and all other vowels.

The results show that the vowel spaces of the CI and HI groups are significantly smaller and much more centralized than those of the NH group. Moreover the vowels of the HI and CI groups have significantly more overlap than the NH group. These results indicate that even after six years of device use, the acoustic vowel space of CI children is still considerably different from that of the NH group: CI children's vowels are less

differentiated. Furthermore, the acoustic characteristics of their vowels are still quite similar to those of HI children.

- 63 ***The early predictors of expressive language performance for three-year-old late-talking children***
Huei-Mei Liu, Yu-Sha Cho, Hui-Ying Hsu, Feng-Ming Tsao, *National Taiwan Normal University*

In order to advance the early identification for toddlers at high risk for later language impairment, it is crucial to identify which early toddler and maternal speech factors are associated with language learning difficulties in late-talking toddlers (LT). Mandarin-speaking children identified as late talkers (LT, $n = 44$) at 2;0, and age-matched typically-developing children (TD, $n = 36$) were recruited. Children's language and speech performances were measured at ages 2;0 and 3;0, including: expressive and receptive language abilities, speech production, word learning process (performance on a mutual-exclusivity word learning task). Maternal speech input quality (maternal speech synchrony with their child's speech in a free play session) were assessed at 2;0. The LT group performed significantly poorer than the TD group on all speech and language measures at both ages. Compared with TD group, mothers of LT children used fewer words, word types, total utterances, and were less synchronized with child's speech in dyadic interactions. The stepwise regression analysis ($R^2 = .624$, $p < .001$) showed that three factors at 2;0: children's speech production, maternal speech synchrony and word types, accounted for LT's expressive language performance at 3;0. Furthermore, when classified 3-year-old children (were LT at age 2) into three categories (LT, near TD, TD), the logistic regression analysis demonstrated that child's language comprehension and maternal speech synchrony were the most potent early predictors of expressive language performance at 3;0. Results of this study suggested that both children's language abilities and maternal speech quality were predictive of late-talking children's language performance.

- 64 ***Investigating relative clauses in children with Specific Language Impairment***
Pauline Frizelle, Paul Fletcher, *University College Cork*

It is well documented in the literature that children with Specific Language Impairment (SLI) experience significant grammatical deficits. While much of the focus has been on their morphological difficulties, there is less known about their difficulties in acquiring complex syntactic structures. Sentence recall has been acknowledged in the literature as a reliable methodological tool to investigate syntactic knowledge. This study examines an important complex syntactic structure, the relative clause, by Irish school age children with SLI, using a sentence recall task.

Thirty three children with SLI and thirty three typically developing (TD) children, between the ages of 6 and 7,11 years, carried out the task, which was based on work carried out by Diessel and Tomasello (2005). There was a difference in performance overall on the task – the children with SLI showing significantly greater difficulty. Relative clauses attached to the predicate nominal of a copular clause caused fewer problems for the children with SLI than those attached to the direct object of a transitive main clause. This is in line with the Diessel and Tomasello findings with younger TD children. A common error pattern in the children with SLI, also found in the younger TD children, in the aforementioned study, is that children with SLI tended to convert object, oblique and indirect object relative clauses to subject relatives.

The results suggest that problems with complex syntax in English extends well into primary school age for children with SLI, but that the trajectory of their development of relative clause structures may resemble that of younger children.

- 65 ***Production and perception of speech in children with cochlear implants***
Vesna Mildner, *University of Zagreb*

The aim of the study was to analyze the production and perception of speech in severely hearing-impaired children (pre-school and elementary school level) using cochlear implants. It focused on the five Croatian vowels (/i, e, a, o, u/), fricatives /s/ and /ʃ/ and affricates /ts/ and /tʃ/. The vowels were analyzed in terms of the vowel space defined by the first and second formant frequencies. The perception of fricatives and affricates was analyzed in terms of voicing, place of articulation and manner of articulation. The production of fricatives was analyzed in terms of their noise frequencies, and the production of affricates was analyzed with respect to duration and fricative-stop timing. Perception was tested by means of an auditory forced-choice minimal pairs test and production was tested by having the subjects name everyday objects presented in pictures and numbers 1 through 10. The perception data reveal that there are more confusions between vowels that are close to each other (e.g. a-e, or o-u) than between the more distant ones (e.g. i-a). With respect to consonants, manner of articulation was the easiest, with voicing and place of articulation only slightly above chance level. The vowel production results reveal formant-defined vowel space that is smaller in area and fronted compared to hearing children's data. Both fricatives had higher noise frequency than controls, with considerable overlap. The percentage of correctly produced affricates was low, with targets being most frequently substituted by fricatives. Overall duration was longer than in hearing children.

- 66 ***Predicting language outcomes from early pragmatics assessed by the Language Use Inventory***
Diane Pesco¹, Daniela O'Neill¹, ¹Concordia University, ²University of Waterloo

The study investigated the predictive validity of the Language Use Inventory (LUI), a new parent report designed to assess the pragmatic language development of children 18 to 47 months old. Children (N=348) whose parents had completed the LUI were re-assessed at 5 to 6 years old using language measures and

parent report of developmental history. The relationship between LUI scores and outcomes was examined through correlation and classification analysis and comparisons of mean scores of children who scored above and below a LUI cut-off determined using ROC curves. For Age Group 24-47 (age in months at time of LUI completion), LUI scores correlated significantly with outcome scores. Sensitivity, specificity, negative predictive value (NPV) and positive predictive values (PPV) were high, and measures of effect size confirmed a strong relationship between LUI scores and later language. For Age Group 18-23, high specificity and NPV were accompanied by lower sensitivity and PPV. The LUI's predictive validity was well-supported for LUI Age Group 24-47 and partially supported for Age Group 18-23. The results compare favourably to those reported for other widely used early child language measures.

- 67 ***Language skills of the prematurely born very-low-birth-weight Finnish children at two years of age with the focus on the emergence of grammar***
 Suvi Stolt¹, Leena Haataja², Helena Lapinleimu², Liisa Lehtonen², PIPARI Study Group², ¹University of Turku, ²Turku University Hospital

Background and aims: There is a higher incidence for language problems in very-low-birth-weight (VLBW; birth weight ≤ 1500 g and/or born ≤ 32 weeks of gestation) children than in full-term children. However, more information of early language development in this group is needed to be able to identify early those who need support for their language development in clinical work. The aim of the present study was to obtain information on the expressive language skills of the VLBW children at 2;0.

Subjects and methods: The Finnish version of the Communicative Development Inventory was used to collect the data on expressive language in VLBW children (N = 156) and in full-term controls (N = 146) at 2;0. The language skills of the VLBW children were first compared to the skills of the controls. Then, the grammatical development was analysed in relation to the lexicon size in VLBW children and compared to that of the controls.

Results and conclusions: At a group level, the language skills of the VLBW children were significantly weaker than the skills of the controls. When the grammatical development was analysed in relation to the lexicon size, few differences arose between the groups of the VLBW children and the controls with lexicons of > 51 words. The results suggest that even though the grammar develops at a slower rate for the VLBW children, the grammatical development for the majority of the VLBW children is comparable to that of the controls when the lexicon size is taken into consideration.

- 68 ***Simultaneous processing in children with Primary Language Impairment: Identifying sources of performance breakdown***
 Naomi Eichorn, Campanelli Luca, Cruz Joseline, Puglik Ingrid, Scheuer Jessica, Goral Mira, Obler Loraine, Marton Klara, Graduate Center / CUNY

Primary Language Impairment (PLI) is traditionally defined based on the presence of significant language processing difficulties, however, recent studies identify weakness in working memory (WM) that have become another hallmark of PLI. Based on a WM model recently described by Oberauer (2009), we propose that some weaknesses observed in this population stem from difficulties integrating different functions simultaneously within the WM system. Our primary hypothesis was that children with PLI will not differ significantly from children with typical language development (TLD) on tasks involving single linguistic or cognitive functions but will diverge on tasks requiring concurrent processing. Additionally, we predicted that children with PLI will demonstrate different patterns of performance compared to TLD children, with performance breakdown occurring sooner on tasks placing incremental demands on linguistic processing and WM.

Sixteen children with PLI and 16 TLD children were compared on tasks examining linguistic processing and working memory (WM) individually and in combination. Results demonstrated group differences across tasks, all of which were statistically significant. Additionally, significant interactions were observed, with performance differences varying among tasks. Effects of task type were most robust on a sentence repetition task involving concurrent demands on linguistic processing and WM, supporting our hypothesis that children with PLI would show steep performance decrements under such conditions. Within-subject analysis further revealed earlier performance breakdowns for the PLI group when linguistic and WM demands were systematically increased. Overall, results indicate a susceptibility in PLI to performance breakdown during simultaneous processing and elucidate conditions under which these occur.

LANGUAGE EVOLUTION AND LANGUAGE ACQUISITION

- 69 ***On the effect of morphophonological complexity in the acquisition of plural noun forms in European Portuguese***
 Catarina Afonso, Maria João Freitas, Universidade de Lisboa

Number features in European Portuguese (EP) are early acquired, sometimes before children reach 24 months (Freitas, Miguel & Faria, 2001). However, irregular plural forms seem to be problematic for Portuguese children; in the case of word-final nasal diphthongs, these are problematic until 72 months (Ramalho 2010). Unlike regular plural nouns, most irregular ones involve allophony and allomorphy, which may explain their late acquisition (Peperkamp & Dupoux 2002, Hayes 2004, and Fikkert & Freitas 2006).

The current study is focused on the acquisition of EP plural nouns with word-final [-l] (anel [6□nE5] “ring”; anéis [6□nEjS] “rings”). Since branching Codas are not possible in EP, the plural form shows gliding of the lateral (generating a branching Rhyme) due to insertion of the plural marker /s/, a non branching Coda (Morales-Front & Holt 1998; Mateus & Andrade 2000).

In this study, we provide reference data on the acquisition of this morphophonologically complex structure. A naming test was built (34 stimuli: 17 words; 17 distractors); 81 children from 50-75 months were tested. A frequency and comparative statistical analysis was performed. Overall, children showed difficulties performing the task: only 3,7% of the subjects reached 100% of success. Young children (48-60 months) showed low rates of success, producing the plural target-like (Mean=4) and adding [ʔS] to the singular form. The older children reached higher levels of success (Mean=8), showing however that the structure is not mastered at 6;0. The results will be discussed as a product of the morphophonological complexity underlying the focused structure.

LITERACY AND LANGUAGE

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SLI and reading in Finnish at ages 7 to 10

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In order to find universal features of SLI, study of this syndrome in different languages is important. Finnish, as an orthographically transparent language, offers an interesting viewpoint of SLI and reading development. 42 7-year-old SLI-children and their development of reading were followed for three years in primary school. Technical reading and reading comprehension scores were analyzed with non-parametric Friedman test. Good and weaker readers and comprehenders were grouped using reading scores on year 3. Language tests (Boston Naming Test, Rapid Serial Naming Test, sentence comprehension test in Finnish, Boehm Test of concepts and morphology test in Finnish) were compared to reading status using Friedman test. At year 1 majority of children were average or slightly above average readers technically. By year 3 technical scores decreased ($p=0.014$). Reading comprehension skills at year 1 were on average or below average levels, between years 2 and 3 there's an improvement in reading comprehension ($p=0.022$). Language tests at year 1 and 2 had no significant correlations with reading scores at year 3, except for Boston Naming Test, which correlated with technical reading ($p=0.002$) and reading comprehension ($p=0.01$). Conclusion: Reading skills at age 10 could not be predicted from language test scores at age 8 and 9. Although most children had average scores on technical reading and reading comprehension at year 3, technical reading in the SLI-group had started to deteriorate and might later show effects on reading comprehension, too.

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The Effect of Foot + Foot Structure on Reading Performance in Japanese Young Children

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Children in early stages of reading are believed to have poor phonological-processing skills. As a result, it is expected that children with poor reading skills would be easily affected by phonological structure, whereas its effect would be small in those with proficient reading skills. In the present study, we focused on F (foot) +F (foot) structure. Sakono and Ito (submitted) reported that 4-mora words with F+F structure were easier to read than 3-mora words without such structure in Japanese young children. The purpose of the present study was to investigate whether children with poor reading skills would be more easily affected by F+F structure than those with proficient reading skills. The participants were 29 children from the ages of 5;1 to 6;11. Low-familiarity words were used as stimuli in this study; namely, 4 four-mora words with F+F structure and 4 three-mora words without this structure. Children were asked to read each word as fast as possible. The results were as follows. The participants were divided into 3 groups: poor readers (19 children), proficient readers (5 children) and intermediate readers (5 children). As expected, the mean vocal reaction time was significantly shorter in 4-mora words with F+F structure than 3-mora words in the poor reading group ($F(1, 22) = 12.84, p < .01$), whereas the difference was not significant in the proficient reading group. These results suggest that children with poor reading skills are strongly affected by phonological structure, while its effect is small in those with proficient reading skills

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Phonological processing and reading development in bilingual children with speech delay

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The risk of reading difficulties in children with speech and language delay is high in shallow orthography like English (between 40% and 90%) (Catts, 1993). Although, there are Individual differences because of specificity and severity of speech delay, children's age, error profiles and development process (Catts, Fey, Tomblin & Zhang, 2002). This longitudinal study analyzes the relation between early speech delay (3/4 years) and the subsequent development of reading abilities and phonological processing (memory, naming, and awareness) evaluated four and five years later in bilingual children (Spanish-Catalan).

Method: We assigned 8 children that have had a speech delay when they were 3 years old, identified by AREHA (Aguilar & Serra, 2003) (percentile 30-10) and 8 control children that showed normal values for their age (percentile 70-100). The phonological processing through PROFON (Lara, Aguilar & Serra, 2005) of these

children was evaluated when they were 7-8 and 8-9 years old and as well as their reading ability through PROLEC (Cuetos *et al.*, 2002).

Results: The children identified as with presence of language delay at 5-6 years of age exhibited poor reading and phonological processing performances at age 6-7 and 8-9. Phonological awareness explains 73% of variance of reading performance at 7-8 years and 54% at 8-9 years.

Conclusions: These results showed that the children who had speech delay display performances in phonological processing and reading below the controls when the children were aged 7-8 and 8-9. These results were analyzed through a causal developmental model in which the role of the phonological system was examined in the subsequent development of phonological processing and reading

- 73 ***Educators' Print Referencing Strategies and Children's Responses in Two Emergent Literacy Contexts***
 Lisa-Christine Girard¹, Luigi Girolametto¹, Elaine Weitzman², Janice Greenberg², ¹*University of Toronto,*
²*The Hanen Centre, Toronto*

Purpose: This study examined educators' strategies for promoting emergent literacy skills in early childhood classrooms and children's responses to these strategies. Strategies included utterances that contained print references, alphabet letter names, alphabet letter sounds, and four levels of decontextualized language.

Educators' responses to items on a literacy questionnaire were correlated with observed use of strategies.

Method: Twenty early childhood educators and 76 preschoolers, four from each educator's classroom, participated in this study. Videotaped interactions of storybook reading and a post-story craft activity were coded to capture the frequency of educators' and children's use of print references, alphabet letter names, and alphabet letter sounds, and decontextualized language. A literacy questionnaire tapped educators' perceptions of their literacy facilitation practices.

Results: Educators and children used significantly more utterances that contained alphabet letter names and the sounds of letters during the post-story craft activity than during storybook reading. In contrast, the children used significantly higher frequencies of linguistic abstraction in storybook reading than in craft. Only the item regarding use of alphabet letter names was correlated with educator's observed practices.

Conclusion: Overall, the results of this study suggest that literacy rich contexts other than book reading may be used to promote emergent literacy skills in early childhood classrooms. Educators perceived and observed practices were in agreement regarding use of alphabet letter names.

- 74 ***Parent's Use of Elaborative Forms of Language in Two Contexts: Reminiscing and Book Reading with Children from Linguistically Diverse, Low-Income Backgrounds***
 Alison Sparks, *Amherst College*

In research with middle-class children, parental use of elaborative language while reminiscing predicts child language, memory, and literacy. Conversational strategies observed in the elaborative style include asking open-ended questions and extending child utterances. Story reading has received less attention as a context for parent elaboration. Parent intervention studies of dialogic reading, which incorporates elaborative strategies, have shown effects on child language. Nevertheless, a meta-analysis indicated that dialogic reading may be less effective for low-income children. This study is the first to examine the effects of elaborative forms of language in both reminiscing and book reading contexts on children's language and literacy in families from linguistically diverse, low-income backgrounds.

Parents of children entering Head Start (N = 60, Mean age 4 years, 10 months) were videotaped reading books and reminiscing about a shared and unshared past event, a good behavior and a misbehavior past event. Children completed a language and literacy assessment, including a story retelling, a measure of narrative skill. Parent elaboration was coded for the use of open-ended questions, and children's story retelling was coded for narrative quality. Reminiscing in the behavior contexts uniquely predicted children's literacy ($\beta = .42, p < .01$). However, parent use of elaboration in the story reading context was not associated with children's language or literacy and was negatively correlated with children's narratives ($r = -.46, p < .01$). Results suggest a differentiated view for benefits of elaborative discourse, with the need to consider cultural variation and conversational context.

- 75 ***Dire, lire et écrire: The development of language and reading skills in French and English of multilingual and English monolingual Grade 4 children in French immersion***
 Daniel Berube, Stefka Marinova-Todd, *University of British Columbia*

According to the 2006 Canadian Census, an allophone is a person, usually an immigrant, whose home language is neither English nor French. A growing number of allophone children are enrolled in French immersion (FI) programs in Western Canada. This study explored the development of English and French language skills and reading proficiency of allophone children in early FI programs. The participants were 158 students belonging to one of three groups selected from public schools in Western Canada: 63 allophone children in FI, 61 Anglophone children in FI, and 34 allophone children in English-only programs. Participants were tested at the beginning of Grade 4 (T1) when English instruction was first introduced in FI, and again at the end of Grade 4 (T2), with standardized measures of English and French vocabulary (PPVT-IV, ÉVIP), listening comprehension, reading fluency, and reading comprehension (WLPB-R, WIAT).

Results from a series of mixed ANOVAs revealed that both groups in FI performed better on all English oral language and reading measures than the allophone children in English-only programs, both at T1 and T2. When comparing the English and French skills of the two groups in FI only, results revealed that both groups demonstrated better oral language and reading proficiency in English than in French. However, allophone

children in FI showed a greater increase in reading speed in French than the Anglophone group. The results suggest that FI programs provide an academic environment in which allophone children develop strong language and reading skills in both English and French.

76 Oral narratives, dialogical intervention and reading comprehension: A study of 5-to-8 years old French children

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The acquisition of narrative skills is a developmental process that spans several years. Although children as young as 4-5 years can produce descriptive narratives, they have difficulties to produce coherent and causally-motivated plots. Previous studies have shown that from 6-7 years on, children produce more coherently structured and mind-oriented narratives after participating in conversations that solicit children's attention on the reasons of the events of the story.

We believe that promoting narrative skills is not only an important achievement in itself but also a useful approach for improving children's reading comprehension, more useful than concentrating on lower level units of written text like phonological awareness or letters.

The aim of this study is to present the progression of children's oral narratives in the construction of a story from a set of pictures and in the recall of a story read by the experimenter, and how such a progression relates to measures of emergent reading and writing skills and to two theory of mind tasks.

To this effect, 100 children between the ages of 5 to 8 (25 children per age group) participated in the different phases of the study.

Preliminary results show that the dialogical intervention procedure promotes in some children more structured and evaluative narratives, a progression that correlates with children's emergent reading and writing measures. These results confirm the importance of the conversational intervention procedure for improving narratives and its usefulness as an evaluative tool for understanding the relation between oral narratives and reading comprehension.

NEUROCOGNITIVE CORRELATES

77 Who is doing What to Whom? The processing of topicalized objects in preschool children

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At what age do children discriminate correctly between subject initial and object initial structures in German? To address this question, we investigated the development of the processing of case marking and argument structures in children at the age of 3, 4;6 and 6 years.

Behaviorally, we tested children in a sentence-picture matching task. In addition, we conducted an event-related potential (ERP) study. Word order (subject-first vs. object-first) and case marking were manipulated in German main clauses constructed of transitive verbs and noun phrases referring to animate arguments.

Behavioral data show a significant outcome above chance in the subject-first condition for all age-groups. In the object-first condition, however, 3-year-olds are significantly below chance-level while 4;6- and 6-year-olds still do not perform above chance.

The ERP results give detailed insights into the underlying neural mechanisms: 3-year-olds display an early negativity for the object-first condition (indicating difficulties to process the accusative case-marking in initial position), children at the age of 4;6, however, do not differ in the processing patterns of object-first vs. subject-first sentences. In contrast, 6-year olds show a late positivity (implying syntactic integration difficulties) in response to object-first sentences.

The behavioral and electrophysiological findings suggest that each age-group uses different interpretational strategies crucial for their development. While 3-year-olds merely detect differences in the two sentence structures, 4;6-year-olds proceed to use a word order strategy by processing both conditions in the same manner. Furthermore, 6-year-olds are perfectly able to use the case-marking cue but still show enhanced effort for correct thematic-role assignment.

78 Syllables in word segmentation by French-learning infants: an ERPs study

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Behavioural studies (Nazzi et al., 2006) have shown that French-learning 12-month-olds segment syllabic units rather than whole words (the rhythmic-based segmentation procedure). Given the implications of these results, we used ERPs to re-evaluate syllable-based segmentation in French. 16 French-learning 12-month-olds first heard 10 tokens of a syllable, and were tested on 8 target sentences (half containing a bisyllabic word whose initial syllable was the target syllable; half containing an other bisyllabic word whose final syllable was the target syllable) and 8 control sentences (containing bisyllabic words with the same control syllable in either initial or final position). For the test phase, mean ERPs were calculated for target versus control syllables, for both positions: initial and final syllables.

For initial syllables, an ANOVA with the factors of familiarity and scalp area on mean amplitude for the 450-600 ms window found an interaction between familiarity and area ($p = .04$). Mean amplitude was more positive for target than control words on the right anterior area ($p = .03$). For final syllables a marginal interaction between familiarity and area for the 650-800 ms window ($p = .051$) was found. Mean amplitude was more positive for target than for control words on the posterior median area ($p = .03$). The present results support the proposal that French-learning 12-month-olds segment syllables. The differences in timing and topographical signatures of the ERP responses for initial and final syllables suggest that infants might be responding differently to syllable positions within words, which could be explained by coarticulation and distributional properties.

NEW METHODS IN CHILD LANGUAGE RESEARCH

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Acoustic analysis from Brazilian Portuguese fricative voiced and voiceless sounds

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Aim: to acoustically analyze voiced and voiceless fricatives, in Brazilian Portuguese speaking children.
Methods: three male children aged between 6:0 and 7:0 years old. Two children diagnosed as phonologically disordered, one with (S1) and one without (S2) devoicing and a third child (S3) with no speaking and/or language problem presented). All children were solicited to repeat four times each target word /faka/ and /vaka/ in a vehicle sentence. S1 always produced /v/ as /f/. Parameters analyzed for F2 from /f/ and /v/ sounds were steady state, duration from the whole word and for the syllable /fa/ and /va/ and slope from the target sound to the following vowel.
Results: Steady state duration was longer for S1 for both /f/ and /v/ and shorter for S2 for /f/ and for S3 for /v/. Slope value was higher for S3 and lower for S1/S2 in both target sounds. Duration from the syllable and from the whole word was longer for S1 and shorter for S2/S3.
Conclusion: Children performed differently considering acoustic parameters. S1 tended to use steady state, syllable and word duration as the most relevant acoustic parameter. Slope analysis results do not seem to be an important parameter for this child as it was for S3. On the other hand S2 seems to use in equal terms all parameters to produce the difference between voiced and voiceless sounds. It seems that to differentiate voiced and devoiced sounds beyond vocal fold vibration children also used sound duration and velocity from articulator changes

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Adaptations of the MacArthur-Bates Communicative Development Inventories into Other Languages: A 2011 Update

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The MacArthur-Bates Communicative Development Inventories have proven to be highly valid and cost-effective tools for assessing early language development in both research and clinical activities. Due to this success, many adaptations into other languages have been made. They provide a valuable tool within in each linguistic community; this is particularly true for languages which have been little studied previously, where the adapted CDI provides a fruitful starting point for research and practice. The adaptations are also useful for cross-linguistic and bilingual research.

At present, over 50 adaptation projects are listed on the CDI website, http://www.sci.sdsu.edu/cdi/adaptations_ol.htm. The adaptation projects are at varying stages of progress, from preliminary design through pilot testing and limited use, to completion, defined as construction of a final version, a norming study, and some validation evidence. The CDI Advisory Board is currently conducting a survey of all authorized projects. The poster and handout will summarize the state of each project, including the following information:

1. Which instruments are being adapted? CDI: Words & Gestures, CDI: Words & Sentences, CDI-III, and/or shortforms?
2. Is the present version preliminary or final, and is it available to others? If so, how?
3. Are there
 - ! norms
 - ! a technical manual
 - ! validation information
 for the instrument(s), and if so, how is each of them available?
4. Will the item-level data eventually be included in CLEX (the Cross-Linguistic Lexical Norms database)?
5. Are there plans for further CDI work in this language?
6. Citations for representative publications on each project.

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Are there defaults in sentence processing? How pronominal and noncanonical sentences are processed by English-learning 3-year-olds

Letitia Naigles¹, Caitlin Reynolds¹, Aylin Kuntay², ¹University of Connecticut, ²Koc University

Researchers hypothesize that preschoolers assign 1st NPs to subject roles and subsequent NPs to object roles as a default 'superficial' strategy. We test this hypothesis via the on-line processing of two types of transitive sentences by English-learning 3-year-olds: Pronoun and Noncanonical (NNV). If they process transitive sentences superficially, they should behave similarly with pronoun, NNV, and canonical NVN sentences.

In 2 studies, we tested 35-month-olds' comprehension of 3rd person pronouns (Study 1) and NVN or NNV sentences (Study 2). Children watched side-by-side videos with actors engaged in familiar transitive actions, paired with sentences with pronoun arguments ("She is tickling him") or full NPs (NNV: "The horse the bird is pushing", NVN: "The horse is pushing the bird."). Children's eye movements were coded off-line. In Study 1, children looked longer at the matching scene only during the 2nd half of the test trials, and preferred the matching scene more on *she-him* trials than on *he-her* trials. In Study 2, the children in the NVN condition significantly preferred the matching scene, unlike those in the NNV condition. Moreover, only the NVN group had shorter latencies to the match than to the nonmatch and the children in the NNV condition switched attention more than those in the NVN condition. These on-line measures reveal that children in Study 1 were listening to both pronouns, and those in Study 2 were sensitive to the non-canonical nature of NNV order. We conclude that they were processing the sentences in a detailed rather than superficial fashion.

OTHER THEMES IN CHILD LANGUAGE RESEARCH

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Stability of Child Language Competence from Infancy to Preschool: A Multi-method Study

Marc Bornstein, Eunice Kennedy Shriver National Institute of Health

Previous studies of the stability of child language competence have indicated moderate stability (e.g., *r*s between .30 and .50), marked by great variation (Bornstein, Tamis-LeMonda, & Haynes, 1999; Feldman et al., 2000; Fenson et al., 2000). Stability estimates vary by the ages of the child and the measure of child language being. This study serves to extend the current literature by using multiple measures from multiple sources used (e.g., maternal report checklist, observation, assessment) to assess the stability of language competence from infancy to preschool.

Participants were 192 children aged 20 months at the first assessment and 48 months at the second assessment. At 20 months, mothers completed the Early Language Inventory (ELI; Bates, Benigni, Bretherton, Camaioni, & Volterra, 1979; Bates et al., 1988) and Communication domain of the Vineland Adaptive Behavior Scales (VABS; Sparrow, Balla, & Cicchetti, 1984), we recorded child mean length of utterance (MLU) and number of different word roots from a 10-min joint mother-child play session, and an experimenter administered the Expressive Language Scale and the Verbal Comprehension Scale 'A' of the Reynell Developmental Language Scales – 2nd Revision (RDLS; Reynell & Gruber, 1990). At 48 months, mothers again completed the Communication domain of the VABS, we recorded child MLU and number of different word roots from an oral storytelling task, and an experimenter administered 3 verbal subscales (verbal information, verbal similarities, and verbal arithmetic) from the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R; Wechsler, 1989).

Results for the total stability of child language competence are presented in Figure 1. The estimate of stability from 20- to 48-months was .65 (see Figure 1). Once error terms for MLU and word roots at each time point (shared source variance) and Reynell expression and word roots at 20 months (both measures of expressive language) were covaried, the model fit was acceptable, $\chi^2(50) = 79.55, p < .01$; CFI = .98; NFI = .96; RMSEA = .06, 90% CI = .03-.08. The model factor loadings and the stability coefficient were similar for boys and girls, $\Delta\chi^2(13) = 10.85, ns$.

Results for individual relations of 20-month language scales with 48-month language scales are presented in Table 1. Most measures of child language competence at 20 months were related to measures at 48 months. MLU at 20-months was only significantly related to MLU at 48 months, and word roots at 20 months were unrelated to word roots and verbal information at 48 months.

Findings suggest that when multiple procedures and informants are used to measure child language competence, stability from late infancy to preschool is strong. At the individual level, mean length of utterance in infancy may have limited predictive validity to other measures of language ability, and the variability of observed speech (word roots) in preschool may be difficult to predict from early measures of language competence.

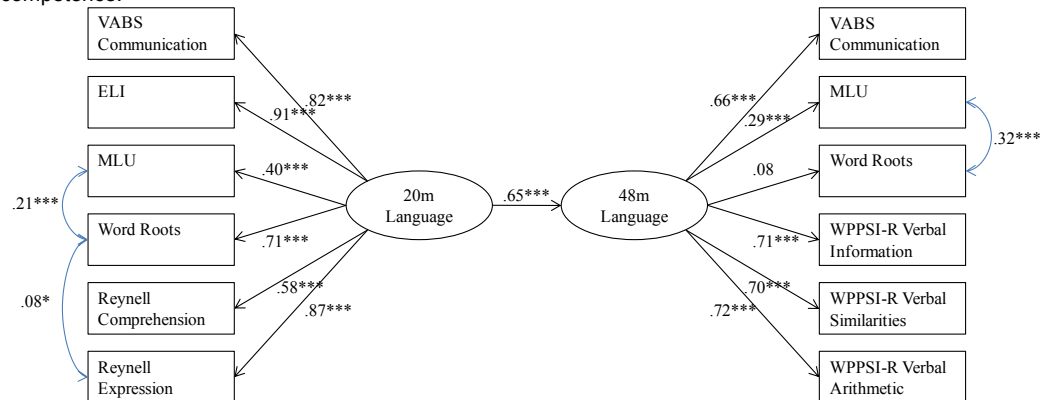


Figure 1. Model of the stability of child language competence from 20 to 48 months

- 83 ***Gestures with and without speech: What do they reveal about the developing gesture-speech system?***
Nicole Weidinger¹, Katrin Lindner², Wolfram Ziegler¹, Georg Goldenberg¹, Katharina Hogrefe¹, ¹*Clinical Neuropsychology Research Group, Munich,* ²*Ludwig-Maximilians-University*

How do gestures change their formal characteristics when they are produced without speech and what do they reveal about the developing gesture-speech system in preschool and school children? To answer this question, eight five- and eight nine-year old German children were asked to retell short video clips under two conditions: first with speech and without speech (i.e. pantomime). For gesture analysis, fifty hand gestures from each condition were transcribed for physiological properties: Hand shape, orientation of the palm and fingers, location with respect to the body, movement type, repetition of movement and hand choice. As dependent variable we used the Hamming distance, which indicates in how many features two gestures differ from each other and allowed us to assess a degree of a formal gestural diversity with and without speech. Furthermore, we determined whether gestures constituted gesture strings or formed single gestures in both conditions. The results of the nine-year-olds showed that their gestures became more diverse and that they combined more gestures to strings when deprived of the possibility for verbal expression. By contrast, this change in gestural characteristics between the conditions was absent in the five-year-olds: Gestures with speech were as diverse and combined to strings as their gestures without speech. The findings suggest, that the linkage between gesture and speech changes with age. Obviously, a division of function between the modalities has taken place in the nine-year-olds which was not observed in the younger group, whose gestures with speech did not differ from their gestures without speech.

- 84 ***Examining the relationship between language and emotional competence in middle childhood***
Luna Beck, Klann-Delius Gisela, Eid Michael, Kumschick Irina, *Excellence Cluster Languages of Emotion, Free University*

Whether there is any relation between language development and emotional competence is a controversial issue and has not been a prominent focus of developmental research. In recent years some studies have supported the view that language and emotional competence might be related. This research has focused the early stages of children's development. It is an open question, whether emotional competence and language competence are related in later stages of development. Since children's transition from kindergarten to school constitutes a "critical period" for the social-emotional and cognitive development, this is an important issue. Hence, the purpose of this interdisciplinary study was to evaluate whether language competence continues to be related to children's emotional competence once they reached middle childhood. More especially, our aim was to examine which of the facets of language and emotional competences contribute most to this relationship. Considering all modalities of language and emotional competence we measured multiple facets of children's receptive and expressive language as well as emotion understanding and emotion expression. 210 primary-school children participated in this study. A canonical correlation analysis was calculated in order to appropriately consider the multivariate relationships among the variables. Results identified a significant positive relationship between language and emotional competencies. Receptive lexicon and explicit emotion knowledge were identified to contribute most to this relationship. These findings underscore the assumption that children's emotional development is inextricably intertwined with language competence – even in middle childhood.

- 85 ***Children's acquisition of the word All: Evidence for slow-mapping***
Naomi J. Aldrich, Kaia Huus, Patricia J. Brooks, *College of Staten Island & The Graduate Center, CUNY*

We investigated children's acquisition of the word *all* by examining longitudinal corpora of American English speakers (15 girls, 13 boys) from the CHILDES database focusing on children (ages 1;6-3;6) with their caregivers. Several categories of usage were identified: (1) noun modifiers (e.g., *all cookies*), pronoun modifiers (e.g., *ate it all*), *all of NP* (e.g., *all of them*); (2) pronoun usage (e.g., *that's all*), (3) adverbial intensifiers of particles and adjectives (e.g., *all gone*), (4) the 'all-up' construction (e.g., *cleaned it all up*); and (5) other idiomatic expressions (e.g., *all of a sudden*). From a young age, children used *all* primarily as an adverbial intensifier in a restricted range of constructions, despite hearing the word used both as a set-relational quantifier and as an adverb in a diverse range of constructions by their caregiver. Children with MLU < 2 used *all* mostly to emphasize completion (e.g., *all done*) and from MLU 2.01-3, began to resemble their caregiver's use, albeit within less complex constructions. From MLU 3.01-4, usage increased in complexity as constructions were merged (e.g., *that's all there are*). Furthermore, children used *all* rarely as a universal quantifier with count nouns in their early noun or pronoun modification. Considerable semantic overlap across uses of *all* as an adverbial modifier and early uses as a noun modifier, suggest that a process akin to constructional grounding may be at work, whereby the child initially extends the meaning associated with the simpler adverbial construction to sentences with more complex syntactic and semantic potential.

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Helping hands: Recognising iconicity in gestures and its advantage during verb acquisition

Katherine Mumford, Sotaro Kita, *University of Birmingham*

In experimental situations, children often find it difficult to generalise a new verb outside of the context it was originally encountered. These situations, however, are devoid of gestures, which may be available in real life to facilitate word learning. The present study investigated how children understand gestures that depict human action and whether they can use this information to generalise new verbs to new situations.

In Experiment 1, children were asked to match iconic gestures to videos of people walking in novel ways. The results showed that 3-year-olds could complete this task successfully, while 2-year-olds could not. At 3-years (but not 2-years) children could interpret the gestural hand movement as symbolically referring to another action by the legs or torso.

In Experiment 2, 3-year-olds were taught novel verbs for the novel actions in the video clips, using statements such as 'Wow, he's *larping!*' These statements were accompanied with either congruent iconic gestures, incongruent iconic gestures or no gestures. Participants were then shown two new video clips (the original actor performing a novel action, versus a novel actor performing the original action) and asked 'Which one's *larping?*' Preliminary results found that the performance of the congruent iconic gesture group was numerically (but not significantly) better than both the incongruent and no gesture groups. Crucially, only the congruent iconic gesture group performed significantly better than chance. This suggests that seeing congruent iconic gestures, which depict the referent action of a novel verb, may help children to accept action alone as that referent.

QUALITATIVE AND QUANTITATIVE INPUT FACTORS

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Communicative Interactions in Childcare Centers

Carol Westby, *Bilingual Multicultural Services*

Problem: Amount of language infants/toddlers hear in their homes influences their vocabulary development. Some children spend many hours in childcare centers. Little is known about the quantity and quality of linguistic input they receive in this environment.

Methods: Project PLAY (Play and Language Attunement with Young Children) provided training/mentoring to caregivers of infants/toddlers in childcare centers with the goal of improving frequency and quality of caregiver-child interactions. Vocal/verbal interactions between caregivers and infants/toddlers were monitored using LENA digital language processors, which recorded all sounds and utterances heard and spoken while the children wore the them. Computer analysis of recordings provided data on: number of vocalizations/words uttered by child; number of words spoken by adults; number of conversational interactions between caregivers and infants/toddlers; percentage of noise and digital sound (TV, music) in the environment.

Before and after training, caregivers also completed a questionnaire about their child-rearing beliefs/practices and participated in ethnographic interviews that explored what they learned from the project and how they perceived their observations and interactions changing.

Results: Caregivers reported changes in their understanding of and interactions with infant/toddlers but over the course of the project there was minimal change in the frequency of their verbalization and interactions with the children. LENA data indicated that children were typically hearing fewer words per hour than previous research has shown that children hear in working class and welfare families.

Conclusion: Infant/toddlers in childcare centers may not be receiving the frequency of communicative interactions to develop their language skills optimally

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Factors Analysis for a Computational Model of Emergent Simple Syntax

Hao Yu, Xiaojie Wang, *Beijing University of Posts and Telecommunications*

This paper proposes several factors for computational models of early child language acquisition, giving a better explanation on how external language input and intrinsic parameter affect learning, comprehension and production of simple syntax.

Taking a model simulating transition from one-word stage to two-word stage (O2T) as beginning, we give quantitative simulation based investigations on how the language input and parameter affect the volume of system (i.e. how much is learned) and evaluation output (i.e. how well the learned can be used by the system to comprehend or produce simple syntax). Factors including contributing word, related string/concept and critical abstract factor, have been figured out to uncover underlying reasons. Contributing words bring syntax information from language input to the system; related strings/concepts relate the learned syntax to new syntax; and abstract factor is crucial for the ability of generative learning.

Experiment results show that contributing word and related string/concept have much greater influence respectively on the volume of system and evaluation output, compared to other information the language input contains. Jointly with related string/concept, critical abstract factor controls evaluation output. And there exists value ranges of critical abstract factor for the occurrence of under-extension and over-extension. After that, we make similar investigation on MOSAIC (i.e. a mature and widely-accepted computational model of syntax

* Student Poster Competition

acquisition), and get similar results, which indicate some degree of generality of the factors. In the light of discrepancies between the results, we also get a clearer image of MOSAIC by discussing its differences from O2T model

- 89 **Mothers' Infant Directed Speech (IDS) in face-to-face interaction with typically developing (TD) infants and infant siblings (SIBS-A) of children with Autistic Spectrum Disorder, aged 3 to 12 months**
Jean Quigley, *Trinity College Dublin*

This is a multicase, longitudinal, microanalytic study of early mother-infant socio-communicative interaction. The critical role of early social interaction for language development is well established. Comparatively little however has been detailed about the characteristics of the linguistic input received in the pre-verbal stage when the infant is interacting with a significant other.

19 mother-infant dyads (10 low-risk, TD infants and 9 SIBS-A infants, defined as high-risk, including monozygotic twins) were filmed every four weeks between 3 and 12 months during face-to-face naturalistic interaction. Sessions were coded (blind to group status) for a range of behaviours using Observer 9.0 Tx and all maternal vocalisations were transcribed and analysed using the CHILDES/CLAN system. Group status, sex and age of infant were used to analyse maternal IDS for consistency within dyads and for variability across age and group status. Initial analyses allowed infants to be further classified into low/high-risk and high/high-risk groups. Findings reported here relate to grammatical, rather than to prosodic or acoustic, analyses of mothers' IDS.

Results indicate differences in the linguistic environments of the high-risk infants in interaction, in terms of quantity, diversity and complexity of linguistic input. Two conclusions are drawn: that typical patterns of maternal input and response are disrupted by the high-risk status of the infants, triggering for example, increased use of compensatory attention-getting vocal but non-meaningful devices and infant's name; and that the subset of high/high-risk infants are also behaving differently and are providing fewer feedback opportunities for mother to create tailored linguistic environments over time.

SPEECH

- 90 **Use of irony by teenagers, face-to-face versus internet forums**
Marc Aguet¹, Virginie Laval¹, Nadia Gauducheau², Hassan Atifi², Michel Marcoccia², ¹*Université de Poitiers - CNRS*, ²*Technological University of Troyes-CNRS*

Teenagers are the main users of computer-mediated communication (CMC) devices such as internet forums. Because of the lack of contextual and non-verbal cues, it could be tricky to use irony on an internet forum. The study addressed 3 questions: (i) is the use of irony the same in face-to-face interactions than in CMC, quantitatively and qualitatively? (ii) If there are differences, which specific characteristics of CMC lead to these differences? (iii) Is there some developmental specificity in the use of irony between early and late adolescence?

We collected discursive exchanges (i) on a natural French-speaking internet forum for teenagers (no common background and no non-verbal channel), (ii) with face-to-face interactions between friends (common background and non-verbal channel) and (iii) on an experimental internet forum where all the participants were in the same school, (common background). Furthermore, the participants were either in the same room (non-verbal channel), or separated (no non-verbal channel). Participants were 13-years-old and 17-years-old.

Results showed that the technologic device and the opportunity to communicate through the non-verbal channel had no impact on the use of irony. The most important variable was the common background: if the participants do not know each other, they rarely use irony; if the participants are from the same school, irony is more frequent. There is no qualitative difference between the young and the older adolescents.

To conclude, this study shows that teenagers are able to adapt their use of irony to the social situation and to pay attention to the background of their conversational partner.

- 91 **Phonetic, phonotactic, and neighborhood effects on syllable production in child Southern Min**
James Myers, Jane Tsay, *National Chung Cheng University, Taiwan*

Research on Western European languages has shown that the accuracy of syllable production by young children depends on phonetics (articulatory difficulty), neighborhood density (degree of similarity with lexical syllables), and phonotactic probability (involving decomposition into segments). While the phonetic and lexical neighborhood effects should be universal, phonotactics may be less important in a language like Southern Min (Taiwanese), where the simple syllable structure generates a small syllable inventory, perhaps memorizable without decomposition. We tested for these three effects in the spontaneous productions of a child acquiring Southern Min from 1;6 to 2;4. Our corpus contained 512 target syllable types with at least one bigram (two segments) and their 9,777 production tokens. The dependent measure was log by-type mean number of segmental changes from syllable target to production. Articulatory difficulty of a target was quantified as the mean number of feature differences (i.e., articulatory changes) within target bigrams. Phonotactic probability was quantified as the mean number of target bigrams in the syllable inventory divided by the number expected from free segment combination. Neighborhood density was the number of syllables in the inventory differing from the target by one segment. Regression analysis showed that production accuracy was significantly decreased by articulatory difficulty and increased by neighborhood density, even with the effects of syllable frequency and length taken into account. However, phonotactic probability had no significant independent

effect. Thus the simple structure of Southern Min syllables may indeed cause children to store them without segmental decomposition.

POSTER SESSION

16:45 – 18:30
IASCL Central • Foyer
Poster Session 2

BILINGUAL FIRST LANGUAGE ACQUISITION

- 01** *The first 10 signs lexicon of a hearing child of deaf parents*
Orit Fuks, *Kaye College, Israel*

The objective of the present article is to describe the 10 first signs of a hearing child of deaf parents. Relatively very few studies follow the process of acquiring signed language in hearing children of deaf parents. Hearing children, whose parents are deaf, have been typically included in a research group together with deaf children whose parents are deaf with no separate reference to the development of their signed language. In literature there is also disagreement as to the age when the first signs appear in children who acquire sign language as mother tongue. Some of the studies claim that the first sign appears as early as 8 months, while others report a later appearance of the first sign, at around 11 months. This paper used a long-term case study in order to follow the process of acquiring signed language by a hearing child of deaf parents starting at the age of 8 months until the age of 2 years. The findings of the research support the reports of a later appearance of the first sign. The deaf mother reported that the first sign appeared at the age of 10 months and two weeks, while in the tape recordings, the first signs were documented at 11 months and one week. The first signs acquired were signs whose referent was very clear and emphasized in communication on the one hand and whose handshape was natural and motorically easy to use on the other hand. Simultaneously with the appearance of the first signs, there was an increase in the number of times the child raised his head to look at his mother's face for a relatively long period of time as well as an increase in understanding the signed utterances that were not coupled with pointing. The findings collected in this study testify that towards the end of the first year of the hearing child's life, he understood the communication channel preferred by his mother and the skills he needs to perfect in order to acquire a language in the manual-visual medium.

- 02** *Rhythmic development of monolingual and bilingual children at 2;06*
Peggy Mok, *Chinese University of Hong Kong*

Previous studies show that monolingual children acquiring rhythmically different languages already have separate rhythmic patterns by 3;0, while bilingual children acquiring the same languages exhibit distinct patterns from the monolinguals. Compared with monolingual children, bilingual patterns are delayed and are influenced by language dominance. However, what is unclear is the rhythmic patterns of younger children and the age when rhythmic separation begins. This study compares monolingual and bilingual children acquiring English (stress-timed) and Cantonese (syllable-timed) at 2;06 using durational data. At least 20 utterances from each of the three groups of five children (monolingual Cantonese, monolingual English and Cantonese-English simultaneous bilingual) are compared using recently developed acoustic rhythmic metrics (Varco and PVIs). Additionally, trochaic disyllabic English words in sentence-medial positions produced by the monolingual English and bilingual children were also compared for stress placement. Results indicate that while there is some rhythmic separation between the monolingual children based on syllable duration variability, the patterns of the bilingual children are less distinct. Also, there is a larger durational difference between the two vowels of disyllabic words produced by monolingual English children than those of bilingual children, indicating that monolingual English children acquired the heavy/light stress pattern faster than the bilingual children. The bilingual pattern is likely to be influenced by the other language of the children, Cantonese, which has no lexical stress. Taken together, the results suggest that rhythmic differentiation may begin around 2;06.

- 03** *Is nonword repetition a good measure for bilingual preschoolers?*
Myrto Brandeker¹, Elin Thordardottir¹, *McGill University*, ²*Centre interdisciplinaire de recherche en réadaptation du Montréal métropolitain*

Introduction: A major difficulty in assessing bilingual language development is the lack of appropriate materials and norms, as well as the insufficient understanding of how these measurements are affected by factors such as varying amounts of exposure and age of onset. Nonword repetition (NWR) is a promising screening tool for monolingual children, but it is not yet well understood with bilinguals. The purpose of this study was to examine how NWR, tested in English and French, was affected by varying degrees of input to each of the languages.

Methods: Typically developing preschoolers ($n=50$, *mean age*=35 months, $SD=3.74$) with different levels of exposure to French and English were assessed on NWR tasks as well as expressive and receptive language measures in both their languages. Bilingual exposure was measured by mapping daily current and previous

amounts of input. The sample included monolingual and bilingual children spanning the continuum of relative amounts of French and English exposure.

Results: Irrespective of the levels of language exposure, bilingual performance on NWR was not different than monolingual. NWR was found to be less sensitive to varying amounts of language exposure than traditionally used language measures.

Conclusions: The findings strengthen the use of NWR for bilingual populations, primarily due to its insensitivity to varying levels of language exposure. They also highlight the fact that when bilingual children perform poorly on traditional language measures this might be due to lesser exposure, rather than language difficulties. The use of NWR tasks could improve clinical assessment of bilingual children

04 ***The construction of narrative temporality in dual language learning Latino Head Start children***

Joy Lorenzo Kennedy¹, ¹*New York University*, ²*The Children's Aid Society*

Narrative competency is essential for children's literacy development, classroom participation, and assessment. One primary domain of narrative competence is temporality, the relation of story events to each other and to the present time. Languages differ in how narrative temporality is typically expressed and, thus, narrative competence might take different forms across languages. Unfortunately, we lack data on normative narrative performance across languages for dual language learning (DLL) children, a gap addressed by this study.

Bilingual interviewers assessed 133 DLL Latino preschoolers (62 boys; 71 girls) at school. Most children (69.9%) spoke Spanish as their first language. Children completed three narrative tasks, in both English and Spanish. CHILDES was used to transcribe and verify narrative recordings; narratives were analyzed in the language spoken for temporal adverbs (*after/después*), lexical markers (*yesterday/ayer*), causal connectives (*because/porque*), verb inflection (tense, aspect, person), and narrative complexity.

Narrative length and complexity varied greatly by task, but not by language. English-language narratives included significantly more temporal adverbs, while verb use was significantly more diverse in Spanish-language narratives. Lexical indicators were used equivalently across languages, generally in formulaic introductions and conclusions. Use of causal connectives was rare in either language.

Educators can use narrative competency to promote other academic skills and develop effective narrative assessments provided they have good data on typical narrative performance. In DLL children, we showed that one aspect of narrative competency – temporality – was constructed differently in English and Spanish. These differences stem from both child-specific language skills and language-specific differences in grammatical forms.

05 ***Linguistic diversity in a nationally representative sample of Australian 4- to 5-year-old children and their parents***

Sharynne McLeod, *Charles Sturt University*

Information about cultural and linguistic diversity of preschool children can guide resourcing, assessment and intervention practices. The aim of this poster is to describe the language use of 4,983 Australian 4- to 5-year-olds and their parents. This study utilized weighted data from the entire Kindergarten cohort of the Longitudinal Study of Australian Children (LSAC); a study supported by the Australian government and designed to represent the Australian population of 4- to 5-year-olds.

Thirty five different languages were listed as the children's primary language (not including those listed as "other"). English was the primary language spoken at home by 86% of the children. The next most common languages spoken were Arabic (1.6%), Cantonese (1.3%), Vietnamese (1.0%), Greek (0.8%) and Mandarin (0.8%). One fifth of the children were regularly spoken to in a language other than English (21.9%). Italian was the most commonly listed additional language, spoken by 2.9% of the children. The next most common additional languages were Arabic (or Lebanese) (2.0%), Mandarin (1.4%), Cantonese (1.4%), Greek (1.4%) and Vietnamese (1.2%).

Forty two different languages were spoken by the children's parents. Most of the children's parents spoke English as the primary language at home (parent 1: 82.5%; parent 2: 69.8%). There was missing data for parent 2 on this question (15%). The next most common languages spoken by parent 1 were Arabic (1.8%), Cantonese (1.3%), Italian (1.2%), and Vietnamese (1.1%). and for parent 2 were Arabic (1.7%), Italian (1.1%), Greek (0.9%), and Mandarin (0.9%).

Australian preschool children are culturally and linguistically diverse. Apart from English, there is no one commonly spoken language, a situation that is mirrored in the Australian census data. The diversity of languages presents a challenge to Australian speech-language pathologists and teachers as they support preschool children's language development.

CHILD SECOND LANGUAGE ACQUISITION

- 06 **Root infinitives in the early successive acquisition of German**
Monika Rothweiler, *University of Bremen*

There is an early stage in L1 acquisition when children use two different grammatical forms for declarative sentences: one form with finite verbs and the other with non-finite verbs where finite verbs are required in the adult language, so-called root infinitives. Children acquiring German as L1 produce finite verbs in the V2 position from early on, while non-finite verbs occur in the appropriate structural clause-final position. In contrast to L1 acquisition, the distribution of finite and non-finite verbs is different in L2 acquisition since adult L2 learners (aL2) do not restrict non-finite verbs to the verb final position. The research question is whether child L2 (cL2) acquisition shows patterns similar to first language acquisition or to aL2 acquisition. The findings come from a longitudinal study of successive language acquisition by two Turkish children who were first exposed to German at the age of 2;10 and 3;0. The results suggest that the two children go through two or three stages, respectively. One of the children starts with formulaic expressions which copy V2 structures. The second stage occurs in both children and can be described as a root infinitive stage. Both children produce finite V2 sentences as well as non-finite root sentences. The third stage starts with the acquisition of SVA and generalized V2. This development parallels L1 acquisition, although the first stage may show some influence of a possible different initial state compared to L1 acquisition

- 07 **Development of ergative case marking in Basque L1 and L2**
Itziar Idiazabal, Margareta Almgren, Ibon Manterola, *University of the Basque Country*

In accusative languages, such as Spanish, transitive and intransitive subjects are not distinguished, both being assigned the nominative case. In ergative languages, such as Basque, intransitive subjects are assigned the zero-marked accusative case, whereas transitive subjects are assigned ergative case marking (Dixon, 1994). In Basque, verbal inflection also marks intransitivity and transitivity. However, previous studies carried out on Basque as L1 and child L2 showed that case marking causes more problems than verbal inflection to L2 speakers of Basque (Ezeizabarrena & Manterola, 2009; Barreña & Almgren, 2010). Data for the present study have been extracted from corpora of oral story-telling produced by Basque and Spanish L1 and L2 subjects at ages 5 and 8, in environments where Basque or Spanish are predominant, respectively. Basque L1 subjects in Basque-speaking environment occasionally omit ergative case marking at age 5, but hardly ever at age 8. Spanish L1 subjects in Spanish-speaking environment, however, omit ergative case marking massively at age 5 and continue doing so to a somewhat lesser degree at age 8. When combining L1/L2 and sociolinguistic environment our data show fairly balanced rates at age 5 for subjects in both predominantly Spanish and Basque-speaking environments, whereas at age 8, Basque L2 subjects from the Basque-speaking environment show a lower rate of omissions than Basque L1 subjects from the Spanish-speaking environment. These findings seem to indicate that not only time of exposure to language but also educational and sociolinguistic factors are determinant in order to attain native-like competence.

- 08 **How do Turkish-German early successive bilinguals acquire German past participles?**
Franziska Sterner, *University of Hamburg*

This paper focusses on the acquisition of participle inflection in child L2. Two issues are addressed: the status of regular and irregular inflection, and the relevance of age of onset (AoO). The acquisition of English past tense and German past participles is known to show patterns like overgeneralizations (*goed*) and asymmetry between errors of regular and irregular verbs (Marcus et al. 1992, Plunkett & Marchmann 1993). Whether these patterns are best accounted for by a dual or single mechanism model has been an ongoing debate (cf. Penke 2006). L1 acquisition and adult L2 acquisition show qualitative differences for which the age factor seems to be most relevant. Studies of child L2 acquisition show that the faculty of language already changes between age 3 and 4, inflectional morphology being affected earlier than syntax (Meisel 2009). I present results from a longitudinal study of three successive-bilingual Turkish-German children (AoO 3). The main findings confirm that these children acquire German like monolinguals (cf. Rothweiler 2006) regarding the rates of overt participle markings, the correctness scores, the error types and frequencies, and the significantly higher rate of overgeneralization of the regular suffix *-t* than the irregular suffix *-n*. This indicates the different representational status of these two inflections which strenghtens the dual mechanism account. Surprisingly, the omission rate of the prefix *ge-* is significantly lower in the bilinguals than in the monolinguals studied in Clahsen & Rothweiler (1993). This may be related to prosody, since only younger children predominantly omit unstressed initial syllables like *ge-*.

- 09 **The L2-Acquisition of the German Number System by Children with Russian or Turkish as their First Language and its Implications for Morphological Theories**
Verena Wecker, *Westfälische Wilhelms-Universität*

Plural in German is a complex grammatical system, as there are several forms that mark plurality on the noun. The mapping of the plural marker and noun can be stated by a complex system of rules with a rather limited

validity. How do children with the first languages Turkish or Russian acquire this complex system? Nonce word experiments to elicit plural forms were carried out with 30 children (age 6-10) with Turkish or Russian as first language in the time period of six months. The results show two interesting facts: First, the children reduce the variety of plural markings and focus on forms with the strongest cue strength. Second, the children's creations of plural forms in the experiment show that they use two strategies to form a plural. On the one hand, they seem to follow the regularities of the system to form a plural on the basis of the given singular. This behavior is predicted by models in the tradition of an item-and-process approach to inflectional morphology. On the other hand, there are answers that cannot be explained by a rule-based approach as they contradict the regularities of the system. Here, the children seem to create the plural in accordance with an abstract pattern that represents a typical German plural form. This can be explained by models assuming a schema-approach to morphology. We thus propose a model that contains both: a rule-based approach and a schema component that do not only coexist but compete in the formation of plural forms.

10 ***Text connectors in oral narratives in Basque and Spanish L1 and L2***

Ibon Manterola, Margareta Almgren, Itziar Idiazabal, *University of the Basque Country*

This presentation analyses the use of text connectors at ages 5 and 8 in Basque and Spanish. Our Spanish L1/Basque L2 subjects attend Basque immersion programmes in a Spanish-speaking environment. The Basque L1/Spanish L2 subjects are educated in Basque in a predominantly Basque-speaking environment. Our work explores the use of connectors in oral story-telling in L1 and L2, taking into account the different sociolinguistic contexts. Categories of textual organisers used by the children are identified and their functions are analysed.

Other studies (Akinçi & Jisa, 2000; De Weck, 1991) show that at age 5 connectors are frequent but scarcely diversified. The arch-connector "and" is repeated massively. Karmiloff-Smith distinguishes between "local-discursive control" with abundance of connectors and simple succession of actions and "textual-discursive control" with fewer but more diversified connectors, showing an overall textual view (in Tolchinsky, 1990:85). These tendencies, with age-related progress and language-related differences, are reflected in our study. Our results show that the textual-discursive control on connectors increases from age 5 to 8 in both Basque and Spanish L1 and L2. The facts that the Basque L1 group acquires Spanish outside home and school, whereas the Basque L2 group acquires Basque exclusively through school may underline the role of contextual factors in L1/L2 development, such as education in Basque L2 and the extended presence of Spanish in the Basque speaking community.

11 ***Developing of a detached discourse stance in L2 Spanish***

Elisa Rosado¹, Melina Aparici², Lilita Tolchinsky¹, Joan Perera¹, ¹*Universitat de Barcelona*, ²*Universitat Autònoma de Barcelona*

Languages display a repertoire of formal options that allow the expression of contents from a more or less involved stance. L1 speakers' selection of these options is constrained by discourse genre and modality of production. For expository texts, they express a detached stance because these texts are aimed at analyzing topics rather than personal motives. In L1 Spanish, detachment is obtained by means of devices that either imply the global organization of the clause (e.g., passive voice) or operate at a local level (e.g., universal quantifiers) and its use increases with age. With the aim of establishing how nonnative discourse stance develops in Spanish, we examine the expository texts produced by nonnative Spanish speakers. Thirty L2 Spanish speakers (L1= Moroccan Arabic) ages 9 to 14, from three levels of L2 competence (beginner, intermediate, and advanced), and 60 L1 controls matched by age participate in the study. The participants watch a soundless video about conflict situations in the school and are asked to give their oral and written reflections on the topic. The corpus comprises 180 texts transcribed and coded in CHAT (CHILDES)). Similarly to what is found for the L1, the use of detachment devices in L2 Spanish increases with age, and L2 speakers prefer structures that do not imply the global organization of the clause but rather operate locally. In contrast to L1 Spanish, no effect of modality is found. Contrary to expectations, nonnative attainment of a detached discourse stance does not differ significantly by level of L2 competence.

12 ***Narrative development across tasks and languages in dual language learning Latino children***

Joy Lorenzo Kennedy, *New York University & The Children's Aid Society*

Narrative competence is a unique language skill with its own developmental trajectory, independent of general language or vocabulary acquisition. While monolingual children have been studied across languages, we lack information on how narrative competence develops in dual language learning (DLL) children. For DLL children, narrative development might proceed as in monolingual peers, or might follow a unique trajectory with skills learned in one language transferring to the other.

This study investigated the development of narrative competence longitudinally in 125 DLL Latino preschoolers (62 boys; 71 girls). Most children (69.9%) spoke Spanish as their first language. Children completed three narrative tasks, each in both English and Spanish, at three time points over the school year. CHILDES was used to transcribe and verify narrative recordings; narratives were analyzed in the language spoken using the Index of Narrative Complexity.

Unsurprisingly, narrative complexity increased over time – children increasingly used setting, dialogue, temporal linkages, and evaluation to weave their story. However, preliminary analyses show that development was not consistent across tasks: the more structured the task, the greater the increase in narrative complexity. Development was also not consistent across languages: children showed the greatest gains in narratives produced in English.

This study demonstrates that DLL children's narrative performance is sensitive to task requirements and the language of elicitation. Given the myriad ways that narrative is used in the classroom and in assessment, it is essential to provide DLL children with a range of opportunities to display and build narrative competence.

13 ***An Assessment Tool for Child L2 Mandarin Receptive Vocabulary***

Angel CHAN¹, Kathy LEE², Virginia YIP², ¹*The Hong Kong Polytechnic University*, ²*The Chinese University of Hong Kong*

As part of the "Chinese language boom" phenomenon, it is increasingly common for children to learn Mandarin as a second language around the world. Yet, empirical research investigating child L2 Mandarin is scarce, and thus far there are very few, if any, tools widely accessible to researchers and practitioners to assess the L2 Mandarin proficiency of young children. As an initial attempt to document L2 Mandarin development in Hong Kong (HK) preschool children, we constructed a tool to assess children's Mandarin receptive vocabulary. The tool can be adapted for use with other child L2 Mandarin learners of various L1s.

Based on the early vocabulary inventory of Mandarin-speaking children in Beijing (Hao et al. 2008), the tool assesses the comprehension of 98 words from 14 semantic categories. Children were presented with 4 pictures at a time showing the target word, a phonological distracter, a semantic distracter, and an unrelated distracter, and were asked to point to the picture that matched a spoken word.

We present data from 260 HK children (age 3-6) who learn Mandarin as an L2. In HK, most children are exposed to Mandarin once they enter kindergarten: according to our recent survey, over 80% of HK kindergartens provide regular exposure to Mandarin, albeit with varying amounts of input. Results indicate that input conditions influence child L2 vocabulary competence, and that L1 Cantonese plays both facilitative and interfering roles in the L2 acquisition of Mandarin vocabulary. The tool will be valuable to researchers and practitioners interested in the acquisition of Mandarin as an L2 by children.

14 ***Does syntactic development in early second language acquisition need nouns and verbs?***

Barbara Geist¹, Petra Schulz, *Goethe-Universität*

Modular (Pinker, 1999) and non-modular (Marchman/Bates, 1994) accounts of language acquisition consider verbs to be crucial for grammar acquisition, but only non-modular accounts assume that grammar emerges once a 'critical mass' of lexical items (nouns, verbs, etc.) has been acquired. Moreover, the question whether the relationship between lexicon and grammar is relevant only in the earliest acquisition stages is still open (Bates/Goodman, 2001). For example, at the onset of acquisition early second language (eL2) learners are older than monolingual children, wrt syntax seem to develop in parallel (Thoma/Tracy, 2009; Rothweiler, 2006). Addressing both aspects, our study investigated eL2 acquisition, using a standardized vocabulary-test and an elicited-production-task.

The relation between both noun- and verb-vocabulary and syntactic development was tested with 37 6-year-old eL2-children learning German (mean age-of-onset of L2: 3;4 years; range=2;1-6;1, mean length-of-exposure: 33 months; range=5-46). Children participated in two testing rounds (T) 4 months apart: At T1, children's expressive-vocabulary was tested (AWST-R, Kiese-Himmel, 2005: correctly named verbs and nouns); at T1 and T2 sentence-production was tested (LiSe-DaZ, Schulz/Tracy, in press). Children's syntactic abilities at T2 were not significantly correlated with age, age-of-onset or length-of-exposure (range $r = -.241$ to $.196$) at T1.

eL2-children's verb-vocabulary at T1 correlates significantly with their syntactic abilities at T2 ($r = .441, p = .006$), but no correlation exists between noun-vocabulary at T1 and syntax at T2 ($r = .224, p = .183$). These results suggest that, independent of age and exposure effects, in eL2 acquisition lexical and syntactic development are closely related, confirming findings from monolingual acquisition, and that this relation is restricted to verbs.

COGNITION AND LANGUAGE DEVELOPMENT

15 ***Relationships between toddler's mental state language and their Theory of Mind Abilities***

Sabrina Sarah Chiarella¹, Diane Poulin-Dubois¹, Susanne Kristen², Beate Sodian², ¹*Concordia University*, ²*Ludwig Maximilian University of Munich*

There is a dearth of research on the relationship between mental state language (MSL) abilities and ToM skills, despite the fact that MSL is a precursor for later ToM in childhood (Olineck & Poulin-Dubois, 2005). The present studies set out to examine whether 2-year-old children's mental lexicon is concurrently related to their understanding of emotions and perception in samples of Canadian ($n = 54$, $M = 31.69$ months, $SD = 2.55$) and German ($n = 51$, $M = 29.86$ months, $SD = .47$) children. The children's parents were asked to complete the

French or German adaptation of the Mental State Language Questionnaire (Bretherton & Beeghly, 1982). All children were administered tasks assessing their understanding of other's visual perspectives. The Canadian sample was also tested with a task measuring children's understanding of other's emotions. Children's visual perspective taking skills were correlated with the production of the total lexicon vocabulary, even after controlling for age and gender general language abilities (Canada: $r = .37, p < .05$; Germany: $r = .23, p < .01$). Moreover, children's emotional ToM skills were significantly related to their production of *emotional* mental states words ($r = .31, p < .05$). Taken together, these findings illustrate that children's understanding about the mind is linked with their production of mental state language, with a specific link between the understanding of emotion and their emotional word usage. These results confirm that children's mental state language is a reliable measure of ToM skills in young children.

16 *The effect of ecological factors and linguistic skills on event memory*
Ercenur Unal, Aylin C. Kuntay, *Koc University*

We investigate (a) whether 2 to 3 year old children can remember specific events, (b) the association between children's language skills and their ability to remember specific events, and (c) the role of learning materials in the home context in this association. Participants were 26 2- to 3-year-old children ($M=32.2$) and their mothers. The dyads were visited at their homes twice. In the first visit, maternal reports of children's expressive language were collected using TİGE (the Turkish adaptation of the MB-Communicative Development Inventory); and learning materials in the home context were assessed with the Turkish adaptation of the Home scales. The children were exposed to a novel magic cutting event where an adult showed them how to turn a cardboard into a strip of a circle. In the second visit, their receptive language skills were assessed using a receptive language scale (TİFALDİ). Their memories for the magic cutting event were assessed using a structured interview.

The children with higher expressive and receptive language skills had higher memory scores in the interview as compared to children with lower expressive ($F = 8.70, p < .01$) and receptive language skills ($F=10.65, p < .01$). In addition the effects of learning materials in the home context on memory were fully mediated through expressive ($p < .01$) and receptive language skills ($p < .05$). These results provided support for direct effects of expressive and receptive language skills, as well as indirect effects of learning materials in the home context on the features of event memory in 2- to 3-year-old children.

17 *Can English-speaking and Korean-speaking children use variability across events in verb learning?*
Kristin Benavides¹, Jae Paik², Jane Childers¹, Neathery Thurmond¹, Clarissa Terrell¹, ¹*Trinity University*, ²*San Francisco State University*

Learning new verbs requires children to not only link a verb with a particular context, but also develop strategies for extending verbs to new contexts. Variability across situations could help children extend verbs, if they can process it. Two studies test children's ability to use variability of agents, and examine this across event complexity, age, and language.

In Study 1, 2 ½ (n = 14 to date) and 3 ½-year-olds (n = 18) saw 2 simple and 2 complex video events. In learning phase, actions were performed by a single actor 3 times, or multiple actors. At test, children saw new events and were asked to extend the verb. A repeated measures ANOVA with age (2, 3) and actor (same, varied) between subjects, event type (simple, complex) within subjects, revealed a main effect of event type. Children chose more extensions when shown simple events (agent performing body movement) than complex (agent using a tool on an affected object) ($F(1, 30) = 12.08, p = .002$).

The same study was conducted in Seoul with Korean-speaking 3-year-olds (n = 16). A similar analysis showed a significant interaction between event type and actor, $F(1, 14) = 10.31, p < .01$; this suggests that children learning Korean were better able to process complex events if they were seen with a single actor.

Analyses of 3-year-olds across languages showed a significant interaction of condition, event, and language, $F(1, 30) = 11.38, p < .01$. The discussion highlights the importance of examining cross-situational information in verb learning.

18 *Language vs. cognition preferences in two and four year olds*
Hartman Brawley, Laura Wagner, *Ohio State University*

Our research examines the extent to which our language affects the ways we think about events in the world. Do children have cognitive preferences for analyzing events that are distinct and different from their linguistic preferences? And will their non-linguistic thought be shaped by increasing language experience? We tested 24 two-year-old and 16 four-year-old children in parallel linguistic and non-linguistic tasks. We used directed motion events to measure preferred event components. The central action of such an event can be characterized as having a path (direction of motion), a manner of motion, a source (starting point), and a goal (ending point). In the linguistic task children watched videos of directed motion events of a stuffed animal and were asked to describe them. In the non-linguistic task, the same group of children performed a forced imitation choice task with the same events from the videos. Pilot work suggested that two-year-olds prefer to talk about the goals of events over other components while preferring to imitate the paths. Comprehensive coding of the current data is underway to determine whether two-year-olds replicate the pilot result, and further, whether four-year-olds with substantially more experience with their language share these preferences

in their language and/or cognition. Our results will indicate whether children think and talk about events in the same way or whether they prioritize the event components differently according to the task. Moreover, by comparing the age groups, we will see whether language experience changes the relationship between linguistic and cognitive preferences.

- 19 ***Does a behavioral experiment on language-based reasoning support the neurological findings?***
 Jodi Tommerdahl¹, Paul Moran¹, ¹University of Texas in Arlington, ²University of Chester

In order to better understand the development and cognitive architecture of human reasoning, a possible divide between deductive reasoning and probabilistic reasoning has often been proposed. Several neurological tests have been carried out on both clinical and typical populations with nearly all finding that the two proposed types of reasoning are underpinned by relatively independent neural substrates. This paper seeks to determine through behavioral experiment whether the two alleged types of reasoning have similar or different developmental trajectories with the notion that similar trajectories would question these findings while different trajectories would support the notion of a separation between systems. An experiment was carried out on children from age 4 to 14 requiring them to make choices of whether a given conclusion was *certain* or merely *likely* to be true or untrue. Results showed significantly different development trajectories between deductive and probabilistic reasoning, thereby supporting the neurological studies' findings that separate systems for the two types of reasoning exist. This experiment also provides further results that allow the authors to propose the nature of interplay between these systems.

- 20 ***The role of within-category semantic variability in word learning***
 Gwyneth Rost, Karla McGregor, The University of Iowa

Nouns describe object categories, and categories are typically described as a range of exemplars from which learners extract a category prototype. Yet research into noun learning has typically used a single exemplar of the object category in teaching the word-object link, and does not investigate the role that abstraction of the category prototype plays. In this study, we ask if children's word learning can be boosted by using multiple members of the object category (i.e., different exemplars) or by using a set of exemplars that supports statistical abstraction of the prototype (i.e., multiple exemplars of the prototype and a small number of category variants).

Three year-olds learned three novel words in a play-training paradigm in one of three conditions. In the single-exemplar condition, children were taught the words using five identical exemplars. In the multiple-exemplar condition, children saw five different exemplars. In the prototype condition, children saw three identical exemplars (the prototype) and two variants. Five minutes after training, they were asked to identify untrained and trained exemplars.

Results with 9 children per condition indicate that children identified a familiar item marginally better in conditions where that item was presented multiple times (single-exemplar and prototype vs. multiple exemplar, $p=.07$), and generalized that label to a new item in conditions where they were trained on multiple items (prototype and multiple-exemplar vs. single-exemplar, $p=.04$).

Overall word learning benefitted most by presentation of exemplars that supports a prototype of the category and demonstrates category variance.

- 21 ***Children's Talk about Art***
 Laura Schneebaum, Adina Schick, Gigliana Melzi, New York University

Children's expression of artistic appreciation has been a focus of inquiry since the 1930s. Visual literacy sharpens children's oral and written literacy which, in turn, directly influence their understanding of the visual world. To date, however, few studies have empirically explored how children's visual literacy skills develop and whether a relationship exists between children's talk about art and their cognitive reasoning. The proposed study seeks to address this gap in the research by investigating the relationship between children's talk about three renowned works of art and their cognitive reasoning abilities. Forty children ages of 8-13 (divided evenly by gender) participated in the study. Children completed a Piagetian-like measure of cognitive reasoning; were shown reproductions of the three artworks, and were prompted to provide a range of information from concrete descriptions and to emotional reactions. Children's discussions were transcribed verbatim, and were coded for five artistic elements: attraction, representation/realism, emotional expression, style/form, and interpretation. Preliminary analyses suggest that older children's talk about artwork was longer and more elaborate as compared to that of younger children. Furthermore, regardless of age, only children who scored at the higher subsets of concrete operational or formal operational thinking included abstract emotional reactions as they discussed the art. Results show that as children develop cognitively, their appreciation and interpretation of art becomes more complex and abstract. Findings are discussed in relation to the importance of visual literacy skills for children's oral and written language development.

22

Relevance inferences in 3-year-olds based on pre-conditions for actions

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Though even infants are able to infer the referential and social (communicative) intention of a non-verbal pointing gesture (Behne et.al., 2005; Liebal et.al., 2009) and also conventionalized indirect requests as requests for action (Ervin-Tripp, 1977; Ervin-Tripp et.al., 1987), children as old as 6 seem to have difficulties understanding speaker's communicative intentions in indirect communication (de Villiers et.al., 2009; Verbuk, 2009). The current study addresses the question whether 36-month-old children are able to infer a speaker's social intention (that is, what about an utterance is relevant for them in a certain situation) in indirect conversational situations.

Twenty children saw an interactive puppet theatre and were shown pairs of objects (target-object, e.g. cereals and alternative object, e.g. roll). One puppet indirectly answered to a question (e.g. "What do you want for breakfast?") by stating that the target-object either is (e.g., "We have milk") or is no option (e.g., "The milk is gone").

When the puppet's utterance conveyed evidence that the precondition for using the target-object was unfulfilled, children made the required inference and excluded the target-object from their possible choice ($M=0.28$, $SD=0.20$, $t(19)=-5.107$, $p<.001$). Since in the case of a fulfilled precondition there is no real criterion for excluding one object, children are at chance ($M=0.58$, $SD=0.28$), indicating that their object-choice is not due to a simple association between the target-object and the pre-condition item mentioned by the speaker. We conclude that young 3-year-olds are able to make quite sophisticated relevance inferences about a speaker's social intention.

CULTURAL AND SOCIAL FACTORS

23

Children's self-talk in the context of triadic parent-sibling interaction

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Vygotsky (1934/1986) assumed that the young child is socially adapted and his early language is directed at a listener or to an ambiguous listener. As the child gradually differentiates between talk-for-others and talk-for-self, talk-for-self becomes more private. Research has explored important issues such as the role of private speech as a potential mediator between adult-child interactions and children's task improvement (Winsler, Diaz, & Montero, 1997) and contextual variation and age-related changes in private speech (Winsler Carlton, & Barry, 2000). However, few have systematically explored the nature of the child's self-talk in social interactions. This study explored children's self-talk in triadic parent-sibling interaction by identifying types of self-talk and the relationship to age-related differences in self-talk. Participants included 16 Japanese families with two parents and two same-sex siblings. The two siblings had two sessions, one with the mother and one with the father. Triadic family interactions were videotaped at home while the children were playing with building blocks. All the utterances were coded for addressees and speech acts. All the children's private speech utterances were further coded into three categories: Fantasy play, Self-guiding/planning, and Self-questioning/answering. Analyses revealed that older siblings used self-talk for self-regulatory functions more than younger ones in the mothers' sessions, whereas younger children talked to themselves more frequently while they engaged in fantasy play. The participant structure of triadic settings seemed to play an important role in prompting or determining the occurrence of self-talk. Dialogic features' sensitivity to contexts, a central feature of Vygotsky's theory, is also discussed.

24

Transmission of linguistic variables during childhood: mutual influences in the peer group

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Sociolinguistic studies have shown that linguistic uses are closely related to social relationships and interactions between individuals. This has been established in adults and adolescents but developmental studies in children are lacking. Thus, we aimed to study whether peers influence the acquisition of social dialects in young children and how, by combining sociolinguistic and ethological approaches. Children from the same class in a French nursery school were observed during two periods over a year (mean age at P1: 4;7, P2: 5;7). Spontaneous conversations and social interactions among peers during free activities were recorded and quantified using ethological methods. Children's uses of three French phonological variables known as social markers in adults were then analyzed in relation to the children's social network. First, we found that children's linguistic uses converged within peer groups over time. Second, we found a link between linguistic uses and frequency of verbal interactions in P1, but not in P2. In P1, interactions within the group are focalized: some children often interact with a limited set of interlocutors, some never interact together. Children who interact influence each other, but do not influence the others. In P2, interactions within the group vary more and children interact with more partners, linguistic variants circulate more in the group and each individual influences all the individuals. These data explain (1) the convergence of linguistic uses and (2) the disappearance of the link between frequency of interactions and uses.

- 25 ***Oppositional discourse markers in Turkish children's peer conversations***
Bahar Köymen¹, Aylin Küntay¹, ¹Koç University

Within peer interactions, children recycle elements from prior discourse (Goodwin, 1990) and use oppositional discourse markers to highlight their divergent stances with their interlocutors (Kyratzis & Ervin-Tripp, 1999). Moreover, children were observed to attach discourse markers to indirect and non-confrontational utterances (Killen & Naigles, 1995; Kyratzis, Shuqum-Ross, & Köymen, 2010), such as justifications for oppositions. This paper compares Turkish-speaking preschoolers' use of two oppositional discourse markers "ki" and "ya" within their peer interactions. "ki" is a sentence-final discourse particle, whereas "ya" can be used both in the sentence-initial or sentence-final position. In the sentence-final position, these discourse markers could be used interchangeably. The data comes from a corpus of 22 hours of videorecordings of preschoolers' semi-naturalistic peer interactions at a preschool in Turkey. Seventy-eight children (age range: 3;7-5;5) were grouped into triads and were instructed to play together in activities of drawing, lego-construction, and two board games (15 minutes per task). The utterances with "ki" and "ya" in the sentence-final position were coded according to two criteria: 1) whether the oppositional utterance was syntactically primed within the 5 prior utterances and 2) whether the opposition was direct (counter-opposition) or indirect (justification, mitigation). The results suggested that the oppositional statements with "ki" were mostly unprimed and indirect, whereas the oppositions with "ya" were mostly primed and direct. Thus, children selectively used oppositional discourse markers. They recycled the elements in the prior discourse and aggravated the opposition with "ya"; or they formulated indirect oppositions with "ki", which privileged unprimed constructions.

- 26 ***Learning words from a skirt-wearing boy: Exploring the depth of conventionality bias in children's word learning***
Sevda Bahtiyar, Mark Sabbagh, Jenna Rines, *Queen's University*

By the age of two, children show a 'conventionality bias' when learning words: they are biased to assume that word meanings are shared between the members of a given linguistic community. However, when there is evidence that words are not likely to be shared, children could easily override this bias and avoid learning. Although the existing studies suggest that conventionality bias has an important role in word learning, the depth of this bias has never been explored. In the present study, we examined how powerful this conventionality bias is. Specifically, we investigated whether violating a shared convention in a non-linguistic domain would affect children's word learning. We tested thirty-six 4-year-olds in one of the two conditions. In the unconventional condition, children heard novel words from a male puppet wearing a skirt. In the conventional condition, children heard the same novel labels from a puppet that does not appear to be violating any conventions (i.e., a male puppet with pants). Results indicated that 4-year-olds are less likely to produce the words when the words are taught by the speaker violating a convention. Moreover, they are unlikely to remember the object-word link when the link is provided by the convention-violating speaker. The present research speaks directly to the role that conventionality plays in preschoolers' word acquisition. The findings suggest that when a speaker violates an agreed convention even in a non-linguistic domain, children probably assume that the speaker is less likely to provide them with 'right' conventional information.

FIRST LANGUAGE ACQUISITION

- 27 ***The Development of Morphological Complexity in the Verb System of an Arabic Speaking Child***
Sigal Uziel-Karl^{2,3}, Rossana Isaaq¹, Roni Henkin⁴, Dorit Ravid¹, ¹Tel Aviv University, ²Haifa University, ³Ono Academic College, ⁴Ben Gurion University of the Negev

Arabic verbs are inflectionally rich. They are inflected for number, gender, person and tense and may get additional affixes like bound objects (*darab-ni* 'hit me') and negation (*bisma'aesh* 'he-hears-not', spoken language). Thus, they form an interesting test case for morphological acquisition. The present paper examines the development of morphological complexity in the verbal system of one girl, a native speaker of Spoken Palestinian Arabic (SPA) (Haifa dialect), ages 1;11-2;3 years. To this end, we used longitudinal speech samples of spontaneous interactions between the girl and her family, in a variety of situations. The interactions were video-recorded at intervals of 10 days, of which 17 were selected for the study. These were transcribed, coded and analyzed using CHILDES with adaptations to Arabic. All verbs in the girl's data were morphologically coded (suffixes: number, person; prefixes: number, gender, person tense; negation, bound object). To track developmental changes, the data were divided into four sampling periods by MLU (N ~ 250 verbs per period). The findings reveal that the girl used certain morphologically complex forms right from the start (e.g., bound objects) and that the relative frequency of the affixes was suffixes > prefixes > bound objects. In addition, over time, the number of inflected verbs increased, and so did the number of different inflectional categories with each verb. These findings suggest that the girl is attentive to the morphological characteristics of her language, and that she is able to acquire complex morphological knowledge and use it productively from very early on.

- 28 **Spanish-Colombia normalization of the MacArthur-Bates Communicative Development Inventories CDI**
 María Fernanda Lara-Díaz¹, Angela Gómez¹, Elisabet Serrat², ¹Universidad Nacional de Colombia, Columbia,
²Universitat de Girona

The MacArthur Bates inventories are well known and valuable instruments in early child language development. This presentation includes a description of sample demographics and gathering procedure, moving to the main findings concerning language development in the assessed Colombian children (firsts words, general development tendencies) to conclude with the most important information on instrument properties (validity, association between scales, internal consistency), demographic variables impact in punctuations (mother education, number of siblings) and future challenges for the version (efforts to obtain a more culturally diverse sample).

- 29 **Language Specificity in the Production of Derivations and Compounds in Polish and American English-Speaking Preschool Children**
 Andrea Zevenbergen¹, Ewa Haman², Joanna Pilat², Stephanie Potkova¹, ¹SUNY Fredonia, ²University of Warsaw

Young children are said to be surprisingly good word makers in spontaneous speech in many languages (e.g., Clark, 2003, for English; Haman, 2000, for Polish). In our study we explore factors influencing production of innovative complex words in two languages favoring different patterns of word-formation: English (promoting compounding) and Polish (promoting derivation). A picture-naming elicitation task was designed to assess children's abilities to coin innovative nouns in various word-formational categories. The categories used were derivations and compounds, with further systematic differentiation for functional categories (e.g., diminutives, names for instruments, agents). The stimuli included 32 items (prompt + picture) with prompts promoting use of derivatives (containing one content word characterizing the picture, i.e., verb or noun) or promoting the use of compound (two content words, i.e., noun-noun or noun-verb pairs). All pictures presented unknown objects or persons performing unknown actions.

A total of 144 children (72 American English-speaking and 72 Polish) 3-, 4-, and 5-years-olds participated in the study. There were no significant differences across languages in overall productivity of innovations. In both language groups, there was significant improvement with age. However, in the American sample, this effect was caused exclusively by an increase in compounds coined for noun-noun type prompts, while in Polish the significant increase occurred in deverbal derivation type prompts and in denominal derivation type prompts. Overall, children's coinages followed patterns typical for their language. Language specificity was also demonstrated in the scope and frequency of use of affixes (both in derivations and compounds). Polish children made significantly wider use of affixes. The study shows that acquisition of word-formation depends on language specificity and by the end of preschool age is still in progress.

- 30 **Phonological neighbourhoods in the vocabularies of Dutch typically developing children and children with a familial risk of dyslexia**
 Elise de Bree¹, Tania Zamuner¹, Frank Wijnen¹, ¹Utrecht University, ²University of Ottawa

Neighbourhood density (ND) in the developing lexicon provides information on the information children extract from the input. This study looks at Dutch-learning children, and compares NDs in typically developing children (TD) and children with a familial risk of dyslexia (FR). We address two issues. (1) Do young children use information from the distributional (phonological) properties of the input to develop receptive and expressive vocabularies?; (2) As dyslexia has precursors in phonological acquisition, we ask if NDs in FR children are qualitatively different from those in TD children.

On the basis of the Dutch MCDI (Zink & Lejaegere, 2001), ND patterns were compared across ages (19 and 31 months), using expressive and productive measures. Analyses focused on relative densities of initial consonant, vowel, and final consonant neighbours (of monosyllabic words).

There were no differences between the TD and FR groups. At 19 months, both groups had a high density of words overlapping in vowel position. For both TD and FR, this changed to a higher density of words overlapping in initial position at 31 months. The shift was most pronounced in expressive vocabularies.

We draw the following conclusions: (a) relative positional densities change with age, which points to attunement to the target language. (b) There are qualitative differences between productive and perceptive vocabularies. (c) FR children do not differ from TD children with respect to NDs, demanding further refinement of the assumed phonological deficit underlying dyslexia.

- 31 **ERP responses to morphosyntactic agreement violations in a passive listening task**
 Emily Zane, Sarah Kresh, Marisa Genuardi, Valerie L. Shafer, Richard G. Schwartz, CUNY Graduate Center

This study used ERPs to examine processing of morphosyntactic agreement violations in fifteen native English-speaking children (mean 8;5 years) and ten adults. Participants underwent a passive listening task in which they saw photographs of animals performing actions and heard corresponding sentences: "The dog plays", "The dogs play" (grammatical) and "The dogs plays", "The dog play" (ungrammatical). ERPs from verb offset were compared.

In the ungrammatical condition, anterior negativities (AN) were followed by posterior positivities (P600) for adults and a majority of the children tested. Child responses were less consistent than adults'. Adult ANs were bilateral, beginning 60ms poststimulus offset (PSO). Child AN was found on the right, beginning 100ms PSO. Adult P600 was found on the right and the midline, starting 180ms and 420ms PSO, respectively. Child P600 was found on the left, beginning approximately 550ms PSO.

Our results are consistent with previous studies on morphosyntactic violations in English, which have reported both a left AN (LAN) and P600 in adults and similar, but delayed, responses in children. However, we also observed right AN for adults and children, with children showing no LAN.

Differences between our results and those of previous studies may be due to two factors: (1) absence of response task, and (2) use of visual reinforcements. Importantly, these findings suggest that a passive task may be used to examine sensitivity to morphosyntactic agreement violations in young children or in clinical populations who cannot provide active responses.

32 Stages in late phonological development: Expansion, Stabilization and Resolution

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This study investigates the late phonological development of children acquiring Spanish as a first language. The general working hypothesis is that developmental paths will not be linear, which will allow for developmental stages to be delimited in accordance with the incidence and nature of the phonological processes observed.

Method is based on recording, transcribing and analysing child speech corpora within the framework of the CHILDES Project. The corpus analysed was obtained from 240 Spanish-speaking subjects between 3 and 6 years of age, divided into six age groups. Speech samples were collected in naturalistic contexts of spontaneous conversation. An *ad hoc* system for codification of processes adapted to Spanish phonology was devised. Statistical processing of data in order to determine the effect of age was based on the Analysis of Covariance.

Results show a relative distribution of processes in the age groups that reflects the dynamics of late phonological development, and would make it possible to distinguish three late stages within phonological development: Three-year-old children would still be within an expansion stage of the phonological system; processes in four-year-old children would correspond to a stage of system stabilization; finally, from five years of age onwards processes would reach an stage of definitive resolution.

Comparison of our results with those obtained for other languages, particularly English, suggest that developmental stages could have a universal character. Convergent evolution of the phonological representations from a wide individual variability would reflect growing functional integration resulting from universal processes of learning and cognitive development.

33 Japanese 28-month-olds' inference about verb meaning from syntactic frames

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Research on the intermodal preferential-looking (IPL) paradigm has demonstrated that English-speaking 28-month-olds infer the meaning of novel verbs from syntactic frames alone in the absence of a referent (Yuan & Fisher, 2009), suggesting that syntax is independently informative in early verb learning. However, its universality is totally unclear because the children acquiring argument-drop languages such as Japanese remained to be investigated. The present study addresses this issue by comparing previous evidence with new findings from Japanese.

Using the IPL paradigm, 28-month-olds ($N=32$) were first presented on a monitor with a two-women dialogue incorporating novel verbs either in intransitive sentences, "Tomo-kun-to Yuu-chan-ga waget-teiru-yo" (Tomo-kun and Yuu-chan are wagetting) or in transitive sentences, "Tomo-kun-ga Yuu-chan-o waget-teiru-yo" (Tomo is wagetting Yuu-chan). In the test, while the children heard "Waget-teiru-no Docchi?" (Which is wagetting?), they saw two side-by-side screens: causative actions (a boy spins a girl around) and non-causative actions (the same people wave one of their hands synchronously).

A mixed-design ANOVA with Condition (transitive, intransitive) as a between-subjects factor and Test (baseline, target) and Trial block (first, second) as within-subjects factors revealed a significant interaction between Condition and Test, $F(1,30)=16.912$, $p<.001$. Further analyses with Bonferroni correction revealed that the children who heard transitive sentences looked preferentially at the causative actions in the test than in the baseline ($p<.05$) whereas those who had heard intransitive sentences looked preferentially at the non-causative actions in the test than in the baseline ($p<.001$), suggesting that children acquiring argument-drop languages can infer verb meaning from syntactic frames alone.

34 The acquisition of two-consonant clusters in Finnish

Sari Kunnari, Tuula Savinainen-Makkonen, University of Oulu, Finland

The aim of this study is to examine the acquisition of two-element consonant clusters. In Finnish consonant clusters are numerous: there are more than 50 word-medial (heterosyllabic) clusters. However, word-initial and word-final clusters are rare. Knowledge about the development of consonant clusters is crucial to speech and language pathologists, as disorders can only be defined if norms for normal development are provided. This

study is a first attempt to provide developmental norms for the acquisition of consonant clusters in Finnish. The findings of this study will be useful in identifying children with a likelihood for later speech and language problems and in selecting targets for intervention.

A picture-naming assessment procedure including 36 items was used. Two-hundred normally developing monolingual Finnish-speaking children aged 3;0–6;11 were assessed. The data were transcribed phonetically using the IPA. A cluster was counted as having been mastered by an age group when 90 % of the children produced the cluster at least once in the sample.

The results showed, that out of 33 medial clusters observed, 3-year olds produced four medial clusters, 4-year olds 14 medial clusters, 5-year olds 21 medial clusters and 6-year-olds 25 medial clusters. Out of the three onset clusters (pr, tr, kr) none were mastered by the age of 6. The results of this study confirm that the acquisition of consonant clusters is gradual, and there is a typical developmental sequence. The homorganic clusters containing nasal + stop (e.g., /mp/, /nt/ and /ŋt/) were the earliest and most correctly produced clusters.

35 Investigating children's omission of English third singular –s: The defaulting hypothesis

Sanna Rasanen, Julian Pine, Ben Ambridge, *University of Liverpool*

Young English-speaking children often produce utterances with missing 3sg –s (e.g., **He go*). In the recent literature, such errors have tended to be treated as Optional Infinitive (OI) errors. For example, both the Variational Learning Model and MOSAIC assume that the *go* in *He go* is an infinitive rather than a bare stem. These accounts have the advantage that they provide unified explanations of the cross-linguistic data. However, a recent study has demonstrated that they both seriously underestimate the very high rate of OI errors in English. One possible explanation is that at least some *He go* errors reflect a process whereby the child defaults to the form with the highest frequency in the input. The present study reports the results of a cross-sectional elicited imitation and production experiment aimed at investigating this possibility. The experiment was presented as a turn-taking game in which the experimenter and the child (N=15) took turns in repeating sentences and describing pictures presented on a computer screen. The test sentences included verbs with different relative frequencies of bare and 3sg –s forms in English input. The results showed a significant relationship between children's tendency to make 3sg –s omission errors on particular verbs and the relative frequency of bare and 3sg –s forms of those verbs in the Manchester corpus. These results suggest that, contrary to the claims of much previous research in this area, at least some of English-speaking children's 3sg –s omission errors reflect a process of defaulting to the bare stem.

36 Acquisition of non-adjacent phonological dependencies in the first year of life: Consonant versus vowel dependencies

Nayeli Gonzalez Gomez, Thierry Nazzi, *Université Paris Descartes-CNRS*

Languages instantiate many different kinds of dependencies, some holding between adjacent elements and others holding between non-adjacent elements. However, no study has established sensitivity to nonadjacent phonological dependencies. The Headturn Preference Procedure was used to explore whether French-learning infants are sensitive to non-adjacent phonological dependencies, contrasting vocalic and consonantal acquisitions. The Labial-Coronal bias (corresponding to the prevalence of LC structures over CL ones, such as *bid* over *dib*) was utilized to explore non-adjacent consonantal sensitivity. A similar posterior-anterior bias (corresponding to the prevalence of PA structures over AP ones, such as *api* over *ipa*) was used for non-adjacent vocalic sensitivity. The results show a preference for LC words over CL words that emerges between 7 ($p = .84$) and 10 ($p < .001$) months of age. However, no posterior-anterior bias was found at 10 months ($p = .80$), suggesting a delay for the acquisition of non-adjacent vocalic dependencies. Accordingly a group of 13-month-old infants was tested on the posterior-anterior bias, and established that this bias is acquired by 13 months ($p = .01$). The data available so far are consistent with studies showing differences in the processing of consonants and vowels in infancy. In conclusion, the present study brings the first piece of evidence that early in life infants are sensitive to non-adjacent dependencies, and reveals earlier sensitivity to consonant compared to vocalic dependencies.

37 German children's pronoun case errors are not rare but systematic

Barbara Stumper, Elena Lieven, *MPI-EVA, Germany*

English-speaking children regularly make pronoun case errors such as *Me do it*. For German-speaking children, such errors are considered a rare phenomenon (Pelham, 2010). However this could be due to small sample sizes on which former studies were based. The present study is based on extensive longitudinal data from spontaneous speech of one German-speaking boy, Leo (Behrens, 2006). Pronoun use in the input is analyzed to clarify the influence of input frequency on Leo's use of different pronouns (Kirjavainen, Theakston & Lieven, 2009).

Results show that subject pronouns (*ich* 'I', *du* 'you') are acquired before object pronouns (accusative/dative: *mich/mir* 'me', *dich/dir* 'you'). Input frequencies of pronouns correlate significantly with rate of acquisition ($r_{sp} = .943$, $p < .05$). In all, 141 case-marking errors were found between the ages of 2;4 to 3;0. The acquisition of pronouns shows U-shaped development with relative frequencies of correct uses dropping to between 30% and 60% before recovery. First, we find significantly more errors when Leo is referring to self than to

addressee ($\chi^2(1,1072)=70.1621, p<.001$). Second, we find a significant preference for erroneous use of accusative pronouns in reflexive contexts compared to a preference for erroneous use of dative pronouns in situations of giving. This suggests that Leo initially marks one function with one form, before arriving at the less transparent system of German grammar. This study is the first to show systematic pronoun case errors for German. It suggests that acquisition of pronouns interacts with input frequency and the semantics that the child is trying to convey.

- 38 ***The adaptation into French of a screening tool aimed at identifying language impairment for children between 12 and 71 months***
Marianne Paul, McGill University

Providing early intervention for children with language impairment is crucial to limit its negative impacts on social development and academic achievement, which implies an early diagnosis of LI. To undertake large-scale screenings, the availability of a cost-efficient, easily administered and valid screening test is crucial, but no such test is currently available for Francophone children. The goal of this study is to determine the adequacy of a French adaptation (i.e. wording, choice of examples, developmental sensitivity) of a Dutch parent questionnaire with good psychometric properties. First, the English translation of the original screener was adapted to French, and two native French speakers verified the items. Then, parents of children of three age groups completed the questionnaire: 9 were 12-23 months, 8 were 35-45 months, and 9 were 60-69 months. All children are monolingual French-speakers, normally developing and having normal hearing. The obtained scores increase systematically with age, and a ceiling effect was found for older children. Item analysis shows that if all the younger children received a 'yes' for an item all the older children did too; if some of the older children received a 'no' for an item, all the youngest children did. Some questions were judged unclear by the parents, and all but one took less than 10 minutes to complete the questionnaire. A new version was created to clarify some questions and to include items related to skills acquired around age 5. These preliminary results are promising and an investigation of the questionnaire validity is warranted.

- 39 ***Vocabulary development and word & non-word repetition in Spanish 2 to 4 year-olds***
Sonia Mariscal, Carlos Gallego, Berta Puig, Susana Lopez-Ornat, Universidad Nacional de Educación a Distancia

An association between non-word repetition and language skills has frequently been reported, both in school-age children and in very young ones. This work aims at contributing to the scarce set of language assessment instruments in Spanish, and at allowing the comparison with results obtained in English, given the typological differences between both languages. To this end, a repetition task was designed for Spanish children between ages 2 to 4. Similarly to the Roy & Chiat's 2004 task, ours consisted of 18 words and 18 matched non-words, systematically manipulated for length and prosodic structure. Words (one, two, and three syllables) were chosen among those of high and low frequency, from the list of the European Spanish adaptation of the MacArthur-Bates Communicative Development Inventories (CDI). Matched non-words were created by altering the consonant and vowel of the stressed syllable in the corresponding word. Besides, an assessment of receptive vocabulary was administered to 100 children that took part in the study. The repetition task elicited high levels of response, even with the younger children. Overall, results have shown a sensitivity of the task to age, lexical status and item length. In addition, performance in the repetition task showed a significant correlation with performance on the receptive vocabulary test. These results are a potential base for the further construction of a standardized test. Such an instrument is viewed as both useful and necessary for the assessment and the follow-up of language development, particularly in the late-talking population.

- 40 ***CLEX: Cross-linguistic lexical norms online***
Rune Nørgaard Jørgensen¹, Philip S. Dale², Dorthe Bleses¹, Larry Fenson³, ¹University of Southern Denmark, ²University of New Mexico, ³San Diego State University

Parent report has proven a valid and cost-effective means of evaluating early child language. Large scale datasets have proven to be useful both when it comes to basic research as well as in relation to assessment and intervention. And since norming studies based on parent reports contain great potential for various uses, static printed manuals and papers soon turn out to have limitations – it is simply not an option to publish all conceivable results.

This poster describes the concept behind CLEX, a web-based cross-linguistic database for lexical data from adaptations of the MacArthur-Bates Communicative Development Inventories. Including how CLEX provides tools for a range of analyses within and across languages, and how it is designed to incorporate additional language datasets easily, and to permit users to define mappings between lexical items in pairs of languages for more specific cross-linguistic comparisons.

The poster will also present an update on CLEX focusing on changes in functionality and languages included since the preparation of Jørgensen et al. (2010), including the new implementation of early gestures and early grammar. CLEX today contains CDI-data from 5 languages, and during the past half year around 600 unique visitors from over 50 countries and more than 40 universities have visited the website. (This does not count

visitors accessing the site from home, where a professional relation is not defined.) Information will also be provided on how additional researchers can contribute data from their languages to CLEX.

41 **Retrieving the meaning of words from syntactic cues: A comprehension study of 2 to 4 yrs old French-speaking children**

Edy Veneziano¹, Christophe Parisse², ¹Université Paris Descartes-CNRS, ²Université Paris Ouest-CNRS

In French, nouns occur in NP constituents usually preceded by determiners while verbs are embedded in sentences with a preceding subject NP (pronoun or noun), occur "bear" at the imperative form, or occur in VP preceded by auxiliaries or prepositions. Can young children use this kind of grammatical information to attribute meaning to new or semantically ambiguous words?

90 French-speaking children between 2 and 4 years (30 per age group) were confronted to pairs of images, an object and an action performed by a person and were asked to show where was "X", where X was either the noun or the verb version of a meaningful homophone or of a nonce word. Cues were provided by a determinate article or by a subject pronoun in prelexical position. For example, /li/ means bed when preceded by "le" 'the' (le lit 'the bed') and reads when preceded by "elle" 'she' (elle lit 'she reads'). Noun and verb functions, order of items, and position of the requested item on the screen, were controlled. Results show that items are succeeded beyond chance at all ages, the overall number of successes increasing with age. Individually, 50% of the 2 year-olds succeed beyond chance the overall set of items, a proportion that increases with age reaching 93% of the subjects at 4 years. These results show an early sensitivity of young children to syntactic cues and an early capacity to use grammatical information for attributing meaning to new or semantically ambiguous words.

42 **Learning verbs before nouns: Early sensitivity to verb morphosyntactic cues in Japanese 16-month-old children**

Yuriko Oshima-Takane¹, Tessei Kobayashi², ¹McGill University, ²NTT Communication Science Laboratories, Kyoto

Previous habituation studies demonstrate that 14-month-old Japanese children map both novel nouns and novel verbs onto the agents of intransitive actions, suggesting that 14-month-olds are not yet able to use morphosyntactic cues in word learning. The present study investigated whether 16-month-old Japanese children are able to use morphosyntactic cues in the input to map novel words onto agents or actions. Forty-eight 16-month-olds were habituated to two animation events of a novel agent (animal-like/vehicle-like) engaging in different novel intransitive actions (jumping-like/bouncing-like). Each agent-action event was paired with a novel word (*seta*, *moke*) embedded either in a noun sentence frame (noun condition) or in an intransitive verb sentence frame (verb condition). Once habituated, they were presented with a baseline and three switch test trials (agent-switch, action-switch, word-switch). Results showed that the children in the verb condition looked significantly longer at the action-switch ($M=12.1$ s) than at the baseline ($M=7.1$ s). However, those in the noun condition did not look significantly longer at the agent-switch ($M=10.5$ s) than at the baseline ($M=7.0$ s), indicating that 16-month-olds are able to use verb but not noun morphosyntactic cues in word learning. In addition, 16-month-olds in the no word condition ($N=24$) showed no significant difference in detecting agent and action changes. These findings together suggest that Japanese children are able to use verb morphosyntactic cues earlier than noun morphosyntactic cues in word-learning. Whether children's early sensitivity to verb morphosyntactic cues are related to characteristics of Japanese linguistic input will be discussed further.

43 **Space and language: the acquisition of *aquí* in Spanish**

Soraya Cortiñas-Ansoar, *Universidad de Santiago de Compostela*

Spatial references are essential in discourse. Thus, the study of how children acquire reference mechanisms is of an utmost importance. In Spanish one of the means to indicate space is the spatial adverb *aquí* ('here'), which indicates proximity to the speaker. In this poster we intend to discover how children use this adverb following a combinatory analysis (in the syntagmatic axis), a pragmatic analysis (which speech acts children use) and a semantic analysis (what meaning *aquí* has for the children). To this end, we have examined the interventions of 40 children from the *Koiné* corpus, which includes transcripts of Spanish children aged between 1.8-4.5 years.

Our results indicate that *aquí* has a high combinatory progress. Up to 1.11 years *aquí* is the only word in their linguistic structure. Children want to signal the things around them. From 3.6 years onwards they use this item to modify other words. From a pragmatic point of view, *aquí* is very common in assertive speeches in which the child answers a content question. From 2.5 years onwards directive speeches are also frequent to demand joint attention and to indicate something that they are going to do. The most frequent semantic meaning is the locative one. Generally children indicate where an object is located. From 2.5 years onwards children also use this word with a descriptive meaning. In summary, the adverb *aquí* is acquired early. With it, children locate the objects around them quicker, acquire other grammatical categories and communicate their wishes correctly.

- 44 **Proposal for the codification of communicative intentions in the Koiné corpus of child talk**
Beatriz Dieste Quiroga, *Universidade de Santiago de Compostela*

Our investigation is located in the area of Linguistics and we are working with data from the *Koiné* corpus of child talk. This corpus, compiled by a USC team, contains information from more than seventy children who are acquiring Spanish and/or Galician language. Our aim here is to make a proposal for the codification of communicative intentions in this corpus. After examining longitudinal data from two children (children between the ages of two and four) by means of pragmatic analysis, we developed an inventory of approximately twenty intentions uttered by the children in their daily interactions. This inventory has allowed us to develop a coding system which we have already used. We are using this system to code data from a larger number of children with the aim of describing the development of child language according to the communication of intentions.

- 45 **A CHILDES-based study of English where-questions: The important role of input in language development**
Nobuyo Fukaya, *Tsuda College*

This paper addresses the questions as to whether children pass through the same learning stages and whether children's utterances are influenced by their mothers'. I analyzed the development of *where*-questions, using the CHILDES' English longitudinal corpora of Nina, Adam, and Sarah. All the *where*-questions were divided into 10 types (T1: *where?*, T2: *where V?*, T3: *where S?*, T4: *where S V?*, T5: *where S Aux V?*, T6: *where's S?*, T7: *where be S?*, T8: *where Aux S V?*, T9: *where do S?*, T10: others). The results reveal that each child had a preferred pattern and that language process was different: Nina showed her strong preference of T6. Out of 308 *where*-questions (2;1-2;11), 192 belonged to T6. This tendency was much stronger at earlier stages. Adam dominantly used T2 and T4, where *go* was a highly dominative verb. Out of 451 *where*-questions (2;3-2;11), 221 were from these types. Sarah produced T3 at a high rate, with 94 out of 185 (2;3-2;11). I, then, examined *where*-questions spoken by their mothers in the same corpora and found a strong correlation between mothers' utterances and their children's: Nina's mother used T6 and T7, where *be* behaved as a copula. The preference of copula-*be* was also observed in Nina. Adam's mother frequently produced questions with *go*. These results indicate that utterances children hear play an important role in language development, corroborating Tomasello's (2005) claim that the input does matter.

- 46 **Production and Comprehension of the plural: Examining converging versus isolated cues**
Ulrike Hahn¹, Merce Prat-Sala², ¹Cardiff University, ²The University of Winchester

The study examined, from a cue-based perspective, children's and adults' ability to comprehend and produce grammatical encodings of number. Comprehension and production were contrasted across contexts that manipulated the number of available cues. Specifically, participants needed to either produce or comprehend, in both singular and plural, a present tense verb coupled with either a regular noun or an irregular noun with a no-change plural. In one case there are cues to number on both verb and noun (e.g., *the dog writes/the dogs write*), whereas in the other, number is dis-ambiguated by the verb alone (e.g., *the sheep writes/the sheep write*). The study involved 28, native English speaking children with mean age 4, and an adult control group. Participants completed both a production and a comprehension task. For elicited production, they described 24 pictures depicting either one or two animals performing a particular action, embedded within a story context to constrain both tense and aspect. For comprehension, participants saw two pictures, one depicting one and another depicting two animals, each performing the same action. A pre-recorded voice described one of the pictures and participants indicated which one. Children's production was perfect in all but the single cue plural condition (89%). Comprehension scores overall were lower though still good, except for the single cue plural condition where performance levels dropped by more than half (to 39%). This result supports a cue-based view of grammatical knowledge in which knowledge can be partial and hence sufficient to simultaneously support some, but not other, tasks.

- 47 **Understanding early grammar acquisition in Spanish: a multi-method approach**
Marta Casla¹, Sonia Mariscal², Irene Rujas¹, Javier Aguado-Orea³, Ana Prior⁴, ¹Universidad Autonoma de Madrid, ²Universidad Nacional de Educacion a Distancia, ³Universidad Complutense de Madrid, ⁴University of Haifa

The process of early grammar acquisition is still far from being understood nowadays in spite of the huge amount of empirical contributions reported during the last decade. Different kind of experimental evidence, both from comprehension and production, is needed especially to examine languages different from English. This work presents a multi-method approach to the study of Spanish plural morphology.

1) Intermodal Preferential Looking Paradigm (IPLP): comprehension of verbal morphology was tested with 36 children (aged 22- 30 months). The experiment used frequent verbs and nonce verbs. Different Dependent Variables were used to test children's performance: proportions of looking times, number of head-turn to target stimuli and longest segments of looking time.

2) Imitation task: repetition of frequent and non frequent (nonce) verbs in 3rd singular and 3rd plural person

was requested to a set of 55 (aged 24 – 48 months) children.

3) Grammaticality judgements: 32 children (aged 36 months to 6 years) judged sentences with and without agreement errors.

Results show clear effects of age, morphological and lexical frequency. Taking these results together, it is possible to confirm that third plural subject agreement is mastered later than third singular, given that plural are less frequent in the input, specially for younger children compared to toddlers and adults. Moreover, children's difficulties with these morphemes are more evident with less frequent forms and nonce verbs than with more frequent forms. The coherence of results through these various measures and levels of knowledge (implicit in IPL vs. explicit in the judgement task) reinforces the conclusion.

48 ***Giving directions: linguistic strategies by children aged 6 to 9***

Susanne Guckelsberger, *University of Hamburg*

This poster presents a cross-sectional study on children's use of space deixis in contrast to other means of expressing spatial relations when telling the way. 165 German speaking 1st and 2nd graders aged 6;1 to 9;3 participated in the study. They were asked to give directions for a way they are familiar with: their way home from school. The interviewer was identified as a person from a different part of the city to encourage precise and listener-oriented utterances. The experiment was videotaped to include gesture in the analysis. The data were analysed by means of discourse analysis.

As expected, all participants manage to give listener-oriented directions in the common field of perception (space deixis + pointing). For listener orientation outside the visible space, three strategies are identified:

- S1 [space deixis] + [pointing on virtual map]
e.g.: 'there' /+ pointing/
- S2 [space deixis + non-specified reference point + pointing] + [directional phrase + space deixis + pointing]; e.g.: 'there is a bus stop...' /+ pointing/ ,and then walk past there' /+ pointing/
- S3 [street name or specified reference point + directional phrase] – no space deixis, no pointing!
e.g.: 'then down Goethe St. to the end'

Children who employ S1 transfer to the imaginary space linguistic devices that are apt for the orientation in the visible space only; listener orientation fails. With S2 and S3 children try to establish an imaginary space linguistically: they manage to give partly or fully comprehensible directions.

49 ***Motion events in German early child language: a naturalistic longitudinal study***

Eva Maria Freiberger, *Austrian Academy of Sciences*

Typological research about motion proposes the dichotomy between verb-framed languages (e.g. French, Spanish) and satellite-framed languages (e.g. English, German) depending on whether PATH is encoded in the verb or in satellites. Previous naturalistic longitudinal studies show that children's utterances about motion events reflect the prototypical verb- and satellite-framing properties of their language-specific input from the earliest age on. English children often use verb + satellite (MANNER + PATH) structures and therefore express various types of semantic information in an utterance (high utterance density). By contrast, French learners typically rely exclusively on the verb resulting in low utterance density.

The present study aims to compare these findings with naturalistic data of two monolingual German-speaking children from the age of 1;8 until 4;0. German offers more diverse and more frequent use of PATH-particles than English. Due to these language-specific differences we predicted that German-speaking children should encode PATH in satellites more frequently than English-speaking children.

Results show that German-learning children had highest preference for verb + satellite constructions and encoded PATH more frequently in satellites than French and, as predicted, also than English learners.

Moreover, German-speaking children produced semantically denser utterances than French-speaking ones. The observed variations between the two satellite-framed languages suggest that the impact of language-specificity outpaces the general typological dichotomy. Utterance density increased with age independent of language-specific conditions. The results are in line with other studies which support the joint influence of universal cognitive and language-specific factors on early language development.

50 ***Negative input: Evidence from Russian***

Victoria Kazakovskaya, *Institute of Linguistic Studies, St. Petersburg*

This investigation is devoted to Russian input, which remains almost unstudied with regard to 'negative evidence'. Our aims were to analyze parental reactions to grammatically correct and incorrect child utterances, to discuss the dependence of reaction on erroneous speech, and to compare our results with findings of research into Lithuanian, Austrian-German and French CDS obtained in the cross-linguistic project "Pre- and Protomorphology in Language Acquisition". The analysis was based on the longitudinal data of a Russian boy (2;0 – 2;8). 'Parent – child' discourse was annotated for multipurpose automatic linguistic analysis, using tools of the CHILDES program and the data was then analyzed statistically. Study of correlation between *pragmatic* (conversational and metalinguistic) and *structural* (repetitions, expansions, reformulations, questions etc) the types of adult reaction and the child's phrases indicates that parents tend to react more to the form than to the content of the erroneous phrases. The reactions to the 'adult-like' utterances of the child are more often related to the content. *Conversational* reactions are conducive to development of a child's dialogue skills, whereas

metalinguistic responses are connected with language-system skills. Despite the similar conversational strategies of the aforementioned caregivers, preferable types were noted: *Repetition* is the most frequent reaction in Austrian-German and French CDS, while an abundance of *questions* is more typical for the morphologically rich Russian and Lithuanian languages. Thus, explicit / implicit negative evidence facilitating on a child's communicative competence development depends not only on cultural, regional and class differences, but also on typological language differences.

- 51 ***Understanding maternal behaviours that promote early language acquisition***
 Penny Levickis¹, Melissa Wake¹, Sheena Reilly¹, Luigi Girolametto², Obioha Ukoumunne³, ¹*Murdoch Childrens Research Institute*, ²*University of Toronto*, ³*University of Exeter*

Establishing the role of parent-child interaction, and specifically maternal responsive behaviours, in language development could assist in efforts to better understand and improve early language acquisition. This study's objective was to determine, in a community-based sample, the extent to which specific maternal behaviours at 24 months promote child language at 24 and 36 months.

This prospective longitudinal study was derived from a population survey in Melbourne, Australia. At 18 months, 1139 parents completed a 100-word expressive vocabulary checklist, of whom 301 scored <20th percentile. At 24 months, these slow-to-talk toddlers undertook a 15 minute videotaped free-play sample of parent-child interaction. Maternal responsive behaviours were coded (imitations, interpretations, labelling, expansions, supportive directives, questions) using the Observer XT system. Researchers measured receptive and expressive language at 24 and 36 months using the Preschool Language Scale-4. *Analyses*: Linear regression of language scores (outcome) on maternal behaviours (predictors).

256 (85.1%) children had video samples. Maternal behaviours were strongly and consistently associated with language at both ages. Key 36 month findings were, for receptive and expressive scores respectively: expansions (both $p < 0.001$, partial R^2 0.09 and 0.1), imitations ($p = 0.02$, partial R^2 0.03 and $p = 0.002$, partial R^2 0.05), and responsive questions ($p = 0.004$, partial R^2 0.04 and $p = 0.02$, partial R^2 0.03). Labels weakly predicted expressive scores only ($p = 0.04$; partial R^2 0.02), while interpretations and supportive directives predicted neither receptive nor expressive scores.

In conclusion, maternal language-promoting behaviours at 24 months strongly predicted language at 24 and 36 months, providing support for the promotion of these behaviours to enhance language acquisition

- 52 ***Priming the production of subordinate clauses in a narrative context***
 Ludovica Serratrice, Anne Hesketh, Rachel Ashworth, *University of Manchester*

In two studies (Study 1: indirect speech; Study 2: temporal and causal subordinates) we addressed the following questions: 1) can subordinate clauses be primed in a narrative context?; 2) how persistent are priming effects over time?

One-hundred monolingual English-speaking children (mean age 5;6) took part in the two studies. The experimental protocol was the same in both: a pre-test, followed by a priming phase and two post-tests. In the pre-test narrative task children's use of subordination was assessed, this was followed by a priming phase, 10 sessions over two weeks, in which they collectively heard a story told by an experimenter. In both studies the children were divided into two groups (N=25; experimental condition, control condition). The children in the experimental condition heard stories containing 20 subordinates (indirect speech; temporal/causal subordinates), those in the control condition heard the same stories where the subordinates were replaced by coordinators or direct speech. The children's use of subordinates was assessed in two narrative re-telling tasks, 1 week and 10 weeks after the end of the priming phase.

The results of both studies showed that the children in the experimental condition were primed to produce significantly more subordinates than those in the control condition, and that this priming effect persisted up to 10 weeks after the end of the priming phase. From a theoretical perspective these findings support a view of priming as implicit learning; methodologically, they show that priming can be extended to a more ecologically valid and pedagogically meaningful narrative context.

LANGUAGE DEVELOPMENT IN ATYPICAL POPULATIONS

- 53 ***Consonant production in cri du chat syndrome – a multi-case study***
 Kristian Emil Kristoffersen, Hanne Gram Simonsen, Nina Gram Garmann, *University of Oslo*

The poster will present findings from an investigation of consonants produced by 5 Norwegian children with Cri du chat syndrome (CCS), a genetic disorder resulting from loss of genetic material from the short arm of chromosome 5. Individuals with CCS often experience severe articulatory problems, resulting in reduced communicative skills.

Five Norwegian children and adolescents with CCS participated in the study. The participants were given tasks which aimed at eliciting consonants in word initial, word medial and word final position. The analysis builds on recorded and transcribed (IPA) data from the elicitation sessions. Building on work in Articulatory Phonology articulatory errors produced by the participants were characterized according to three broad categories: 1)

errors of differentiation and tuning, 2) errors of coordination and sequencing, and 3) missing gestures. In errors of coordination the various gestures that constitute a target word are not properly coordinated, whereas errors of sequencing result in gestures appearing in the wrong place in a word. Errors of differentiation and tuning, can either be constriction or location errors.

Findings indicate that all five participants made all three types of errors, but to varying degrees. Furthermore, it is clear that young individuals with CCS are delayed with respect to consonant productions – also typically developing children make all these three types of errors. However, there are also some subtypes of errors which suggest that consonant productions of these children are also deviant as compared to those of typically developing children.

- 54 ***On-line comprehension of object clitics by French-speaking SLI, L2 and L2-SLI children***
Aude Laloi, Anne Baker, Jan de Jong, *University of Amsterdam*

Research has shown that early-successive bilingual (L2) children learning Romance languages like French show similarities to children with specific language impairment (SLI) in their production of clitic pronouns. This similarity makes the identification of SLI in L2 children problematic. The present study aims at identifying differences between SLI and L2 effects by investigating language-processing abilities, using an on-line comprehension task. French-speaking monolinguals with SLI (L1-SLI) aged 6 to 8 and L2 peers with SLI (L2-SLI) were compared with aged-matched typically-developing monolinguals (L1-TD) and L2 peers (L2-TD). As well as a production task, all children performed a self-paced listening task involving grammatical and ungrammatical sentences with object clitic omission. Processing speed and processing of ungrammaticality caused by clitic omission were measured. Results showed that the L1-TD group performed better on the production task than the other three groups but that the latter were all similar. On the self-paced listening task there were an effect of L2 in processing speed and an effect of SLI in processing of ungrammaticality. The L2-SLI group was the least proficient group, being at the same time slow in processing and unable to process ungrammaticality. Poor L2 and SLI performances in processing speed support the hypothesis of a similar reduced intake system, either due to processing limitations in SLI or limited L2 exposure. The inability of (L2-)SLI children to process ungrammaticality may be due to processing limitations due to deficient working memory that is particularly taxed in the processing of on-line sentences involving anaphoric references like clitics

- 55 ***Narratives across Contexts in School Age Children with High Functioning Autism***
Janie Lai, Judy Reilly, *San Diego State University*

The number of children diagnosed with high functioning autism (HFA) increases every year. While numerous studies have documented the linguistic and social delays in toddlers with HFA, limited research has been conducted to determine how these profiles change over time. To extend our understanding of linguistic and pragmatic development in this population, the present study examines narratives in two discourse contexts: a structured personal narrative elicitation task and a semi-structured conversational sample in which the children spontaneously produce narratives. The goals of the study are to: (1) compare performance of HFA and typically developing (TD) school age children on personal narratives in a structured narrative elicitation task; (2) determine whether HFA children produce narratives in a conversational sample similarly to TD children; and (3) compare the quality of narratives in structured tasks to those produced during conversation in both TD and HFA groups.

Twelve individuals with HFA and 25 TD children, ages 8;0-12;0, participated on both tasks and were administered the CELF. The transcripts were transcribed in CHAT from CHILDES and coded by two trained RAs. Overall, in the structured task, the HFA group performed comparably to the TD group on the basic story elements, but used less elaboration. In the conversational sample, the HFA group produced fewer spontaneous personal narratives. These results suggest that children with HFA may not understand the social purposes of narratives (e.g., bonding with others, learning social norms). Findings from this study can be directly translated into therapeutic goals when designing interventions for these children.

- 56 ***Communicative acts during shared book reading: Mandarin-speaking mothers and infants in Taiwan***
Ching-Yun Lee, Yueh-Huey Wang, Chien-Ju Chang, *National Taiwan Normal University*

Background and Aims: The aim of this study is to examine the communicative acts of mother and Mandarin-speaking children with autism during play interaction in Taiwan, with special focus on communicative intentions and speech acts.

Method: Participants of this study were 3 dyads of mothers and children with autism living in Taipei area. Data were collected when the children were at the age of 53-60 months. The mothers were asked to play 4 sets of toys (ball, Transformers, drawing, storybook) with their children. The whole processes of play were tape recorded for later coding and analysis. The tapes were transcribed following the CHAT format and coded using the adaptation of INCA-A system (Inventory of Communicative Acts-Abridged) developed by Ninio and Snow.

Results: Results of this study showed that all of mothers and children spent most of their time on "discussing joint focus." "Asking questions" and "stating a declarative statement" were the two speech acts that occurred most frequently in maternal talk. Compared with the communicative acts of children with typical development, pragmatic flexibilities in children with autism were lower and they showed difficulties in "asking a product-

question.”

Conclusion: The INCA-A coding system is appropriate to capture the communicative acts during play interaction between Mandarin-speaking mothers and children with autism in Taiwan. Further study to include more children with autism to investigate their social-communicative acts is suggested.

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Effect of word length on the frequency of stuttering in Japanese children who stutter

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Since the study of Brown (1945), it has been believed that long words are likely to be stuttered. Recently, Hamkin and Bernstein Ratner (2004) investigated the effect of the number of syllables on fluency in English-speaking children who stutter, using a nonword repetition task. Unlike the findings of Brown (1945), the results of Hamkin and Bernstein Ratner (2004) suggested that fluency did not change systematically with increasing length in nonwords. However, in Japanese, the relationship between the frequency of stuttering and the number of syllables is unclear. The purpose of the present study was to investigate whether the number of syllables affected the frequency of stuttering in Japanese. The participants were 21 Japanese children from the ages of 7;4 to 12;1 who stuttered. Four types of stimulus nonwords were used with a length of 2, 3, 4, and 5 syllables, as in Hamkin and Bernstein Ratner (2004). There were 5 instances of each type of word. Both a naming and a reading task were used. The frequency of stuttering was not significantly different among the four types of stimulus nonwords on either of the tasks. These results suggest that the number of syllables does not have a significant effect on the frequency of stuttering in Japanese. Therefore, the results of Hamkin and Bernstein Ratner (2004) together with those of this study indicate that not only in English but also in Japanese the number of syllables is not closely related to the frequency of stuttering.

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The Impact of dual-tasking on sentence comprehension in children with Specific Language Impairment

Anne-Lise Leclercq, Steve Majerus, Gaid Prigent, Christelle Maillart, University of Liege

Although an association between working memory capacity and sentence comprehension abilities has been observed in children with SLI (Montgomery, 1995; Montgomery & Evans, 2009; Montgomery & Windsor, 2007; Weismer & Thordardottir, 2002), this association could also be explained by poor linguistic abilities involved in both the working memory and the sentence comprehension tasks. This study aims at directly assessing the hypothesis of limited processing resources as underlying poor sentence comprehension in children with SLI. We experimentally limited executive processing resources by adding a resource demanding non-linguistic target detection task to a sentence comprehension task. Fifteen children with SLI, 15 age-controls, and 15 grammatical-controls participated in the study. If limitations in general processing resources are to explain sentence comprehension performance in children with SLI, these children should show disproportionate impairments for the sentence comprehension task under the dual task condition relative to age-matched or grammatical-matched peers.

Results showed a main effect of group on response accuracy ($F(2,42)=12.26, p<.001$), SLI and grammatical-controls performing worse than age-controls. A main effect of task condition was also found on response times ($F(1,41)=17.85, p<.001$). Moreover, the group-by-task condition effect ($F(2,41)=5.66, p<.01$) revealed slower response times under dual than single task condition in both SLI ($p<.001$) and grammatical-controls ($p<.01$), but not in age-controls ($p=.94$).

Our study shows that when linguistic knowledge is controlled for, children with SLI are not more affected by interfering non-linguistic secondary task than controls. It does not support limitations in general executive processing resources as underlying impaired sentence comprehension in children with SLI.

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A new tool to test the perception of the phonemes relevant for German verb-morphology

Johannes Hennies¹, Eva Wimmer², Martina Penke³, Monika Rothweiler², Markus Hess¹, ¹University Medical-Center Hamburg-Eppendorf, ²University of Bremen, ³University of Cologne

Research question: Assessment of hearing properties plays a crucial role for therapeutic intervention and fine-tuning of hearing aids in children with hearing impairment. We report findings of a study aiming at the development of a German hearing test which – in contrast to currently used speech perception tests – concentrates on the perception of consonants in the offset of a syllable that mark agreement morphology in German.

Method: 15 hearing impaired (HI) and 14 typically developing children (TD) (age three and four) listened to nouns presented with 65 dB. They had to choose out of three pictures (a minimal pair and a distractor) the one matching the word. The minimal pairs ($n = 11$) were discriminated by one phoneme ($/s/$, $/t/$, or $/n/$) in the offsets of both words (e.g. $/hu:n/ = Huhn$ ‘chicken’ vs. $/hu:t/ = Hut$ ‘hat’).

Results: The HI children achieved low correctness scores, did not choose above chance between test item and phonological distractor and did not improve with age in contrast to the TD children. A significant correlation is found between the number of choices of phonological distractors and the unaided hearing threshold at 2000Hz and 4000Hz, the main frequency ranges for the production of the phonemes $/s/$ and $/t/$.

Conclusion: These findings indicate that critical phonemes in the syllabic offset are difficult to discriminate and to acquire for HI children. Results of a production experiment furthermore suggest that these difficulties affect the acquisition of German verb morphology.

60 A phonetic and phonological account of «consonantless children»

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“Consonantless children” refers to children with a rare speech disorder. They are late talkers. They produce a predominantly correct vowel system but use virtually no consonants. (Le Normand, Chevrie-Muller, 1991, Tubul-Lavy, 2005). The present study focuses on three issues (1) the discrepancy between perception and production of consonants (2) the segregation between vowels and consonants in speech production and (3) the acquisition of the syllable. Phonetic and phonological analyses of corpora as well as perception tests have been performed. Data show (1) that “consonantless children” do not have speech perception deficit: their scores are within the normal range of typical children. Meanwhile, their speech lacks basically consonants, which are systematically replaced by glottal or pharyngeal constrictions. The few consonants, which occur, belong to familiar words, such as *non*, *papa*, *maman* but also *chien* and *chat* for one child. These “frozen forms” are acquired differently from other words, following another path, a holistic sound reproduction which can also be found in non speech sound imitation. (2) “consonantless children” provide strong argument in favor of a separation between consonants and vowels for speech production model as a rather correct vowel system contrasts with a quasi absence of consonants in their production. (3) “consonantless children” illustrate an unusual syllable acquisition without oral opening/closing movements. This possibility is not predicted by the frame/content model which considers the syllable as originating from these movements. Our data suggest another possible path in the acquisition of the syllable.

61 Morphosyntactic disorders as a consequence of categorization difficulty in children with specific language impairment

Sandrine Leroy, Christophe Parisse, Christelle Maillart, University of Liège

Introduction. Grammatical categorization plays a fundamental role in language construction, allowing children to produce creative utterances. They are able to use newly learned items in the way that similar items have been used in the past, despite having never heard or produced the new items. **Hypotheses.** Since children with specific language impairment (SLI) have difficulties with categorization, they cannot use newly learned items to produce creative utterances. Instead, they use items in the constructions in which they heard them, reinforcing fixed forms. Thus, morphosyntactic development may be slow down. **Methodology.** Children with SLI, chronological age matched (CA) controls and linguistic age matched (LA) controls were tested. They were exposed to 4 pseudo-nouns and 4 pseudo-verbs during 6 experimental child-directed play sessions. Children were encouraged to play with figurines and to produce the pseudo-words. The total number of spontaneous utterances containing the novel words was used to assess learning development. **Results.** Children with SLI had difficulties with the construction of verbal and nominal categories. They were less productive with novel words than CA controls. They dominantly used pseudo-words in the same context in which they were previously heard than in a creative utterance. Moreover, their creative utterances consisted principally of simple syntactic structures. Results regarding LA controls will be completed in March 2011. **Discussion.** Children with SLI are more input dependent than their typically developing peers. They must be exposed to a greater number of lexical items to construct a category. Their morphosyntactic disorders could be explained by difficulties related to generalizing their constructions and creating the more abstract dimension of linguistic competence.

62 Phonological representations in children with SLI : a study of French vowels

Christelle Maillart¹, Julia Cazeneuve¹, Andrea MacLeod², ¹University of Liege, ²University Laval

Introduction. Previous research of children with SLI suggests that their phonological representations are less specified than those of their peers. For example, they are not able to distinguish between consonants that differ by one feature. They also produce more vowel errors in spontaneous speech errors than their peers.

Hypotheses. The present study aims to investigate the phonological representations of vowels in children with SLI. Our research showed production errors that were worse than language matched peers. Thus, we expected to observe poor performances in perception tasks.

Methodology. Fifteen children with SLI and 15 vocabulary matched controls participated in two tasks: a vowel discrimination task and a mispronunciation detection task. The stimuli consist of six pairs of vowel differing by one articulatory feature (eg. height: /i/ - /e/). The discrimination task required the child to decide if the stimuli were the same or different (120 pairs were presented). The mispronunciation detection task required the child to detect if a vowel change occurred in 60 familiar words. Three different contexts were targeted: 1) monosyllabic words (CV); 2) plurisyllabic words with the change occurring in the unaccentuated syllable (CVCV); 3) plurisyllabic words with the change occurring in the accentuated syllable (CVCV).

Results. Preliminary results supported our hypothesis. The analysis will be completed for March 2011. This first contribution to the study of vowel representation in children with SLI will increase our understanding of their phonological system.

63 ***The comparative effect of two intervention procedures on the evaluative component of narratives in SLI French children***

Marie-Thérèse Le Normand¹, Edy Veneziano¹, Audrey Scripzac², Fanny Testagrossa², ¹Université Paris Descartes-CNRS, ²Ecole d'Orthophonie, Nantes

The production of coherent and causally-motivated narrative plots invoking internal states of the characters, in particular epistemic ones, to account for the characters' behavior, appears around 6-7 years in typically developing children, but it is not until 9 years that most children produce evaluative, mind-oriented narratives. Previous studies have shown that, children aged 6-7 years produce more coherently structured narratives after intervention procedures consisting in a conversation on the causes of the story events or in the narration of the story by the experimenter.

The present study aims at applying these same two intervention procedures to 20 SLI children aged between 9 and 10; 6 years. All children were first requested to tell the experimenter the story they understood after seeing the set of five pictures presented sequentially ("the stone story" based on a misunderstanding), and again after one of two intervention procedures. One group participated in a conversation soliciting the reasons of the events of the story; a second group heard the experimenter narrate the story and a third group played a "Memory" game with the pictures of the story and some similar ones (a control group). Results show improvement in coherence and in evaluative components after the two intervention procedures. Contrary to studies of typical children, the improvement is more marked after the narration of the model story. In both cases, the immediate effects are maintained one week later. These results show the importance of intervention procedures and the necessity of using various ways to evaluate SLI children's competences

64 ***On the acquisition of adjective gradation by Austrian and Lithuanian typically developing (TD) and SLI children***

Wolfgang U. Dressler¹, Bettina Fürst¹, Laura Kamandulyte-Merfeldiene², Sabine Laaha¹, ¹Austrian Academy of Sciences, ²Vytautas Magnus University

Does adjective gradation (for comparative and superlative) as a representative of non-prototypical inflection pose similar problems to SLI children as other morphological interfaces? Can degrees of inflectional richness and markedness explain the development of gradation in TD and SLI children? In this perspective the acquisition of synthetic adjective gradation has been tested with monolingual Austrian (12 SLI 5 – 8 years, 51 TD 3 – 9 years) and Lithuanian children (10 SLI 6 – 7 years, 30 TD 4 – 5;6 years). The test was a picture-based sentence completion test for comparatives and superlatives.

Main results were:

1. Whereas SLI had always worse results when compared with TD for chronological age, this was not always the case when compared for developmental age.
2. Since Lithuanian has a much richer inflectional morphology than German, Lithuanian children generally produced more correct forms and earlier than Austrian children (both TD and SLI).
3. As expected from previous literature and markedness relations, children were better achievers with comparatives than with the semantically and formally more marked superlatives.
4. They fared better with shorter adjectives (German monosyllables, Lithuanian bisyllables) than with longer ones.
5. Morphological opacity (via German umlaut, Lithuanian palatalisation t --> č) decreased success.
6. Bimorphemic Lithuanian adjectives fared worse than monomorphemic ones of the same length. In German, however, (in contrast to SLI children), already 5 year old TDs had acquired that bisyllabic German adjectives are prototypically bimorphemic. All these results are compatible with markedness or complexity models of language acquisition.

65 ***Storytelling co-construction based on a wordless picture book: comparison between mother-specific language impairment children and mother-normally developing children dyads***

Geneviève de Weck¹, Anne Salazar Orvig², Somayeh Rahmati¹, Tiziana Bignasca¹, Christine da Silva², Stefano Rezzonico¹, ¹University of Neuchâtel, ²University Paris3 - Sorbonne Nouvelle

Joint storytelling is a familiar activity mothers carry out regularly with their children. This activity allows children to get acquainted with the characteristics of narrative genre. Mother and child collaborate in a complementary way in the story construction. Studies on the way mothers and children with or without specific language impairment (SLI) participate in narrative tasks have shown the existence of multiple factors influencing joint storytelling. Thus, mothers display different styles relative to the type of discourse used as well as to the way they make their children participate in the story construction.

This paper investigates differences in narrative styles between mother- SLI child dyads as compared to mother- normally developing (ND) child dyads. 17 mother-SLI child dyads (5 to 7) and 25 mother-ND child (4 to 7) dyads were video-recorded in a situation of joint storytelling based on a wordless picture book. Analyses focused on both participants and were undertaken according to 4 axes: the participation rate of mother and child to story construction, the initiation rate of different story sequences, the types of interventions produced by the participants, the narrative modes and the way mothers make their child participate in the story construction.

Mothers undertake the task of storytelling. Results show differences are mostly linked to dyadic styles than to

the type of children. SLI dyads' performances are not necessarily lower than those of ND dyads, but age seems to play a significant role as 7 year old children contribute more to the story co-construction than younger children.

- 66 ***Characteristics of explanations and justifications produced by mother-child dyads with or without SLI***
S. Rezzonico¹, G. de Weck¹, A. Salazar Orvig², ¹University of Neuchâtel, ²University Paris3 Sorbonne-Nouvelle

Children must acquire structural aspects of a language and the skills necessary to communicate in a social environment. In this paper, we will focus on explanations and justifications considered central pragmatic skills, essential in everyday interactions. In other studies, observed in experimental settings, children with SLI (specific language impairment) produce marks of causality but they use them appropriately less often than typical children. Here, explanations and justifications are considered from a functional and an interactional perspective.

The analyses were conducted on 43 French-speaking dyads: 25 mother-TD (typically developing) child dyads aged from 4 to 7 and 18 mother-child with SLI dyads aged from 5 to 7. Children were audio- and videotaped while interacting with their mothers in a symbolic play situation and in a storytelling activity using a wordless picture book. Explanations and justifications of both mothers and children were analyzed at a linguistic (presence or absence of markers) and pragmatic (dialogical construction, appropriateness and content) level. Results show that, whereas the mothers globally explain and justify more than the children, the situation plays a central role. All the participants use more markers in the storytelling activity. Moreover, mothers and children, as well as populations, present similar profiles in the symbolic game and different profiles in the picture book activity. In fact, in this activity, children (in particular those with SLI) initiate an explanation or a justification less often. Yet, explanations given by children with SLI are accepted by the mothers less frequently.

- 67 ***Anticipatory Sentence Processing in Children with Specific Language Impairment (SLI): Evidence from Eye Movements During Listening***

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Real-time language processing requires an implicit, detailed understanding of the grammar of the language, including lexically-specific knowledge about how words combine semantically and syntactically. Do children with SLI have problems in this area? Twenty-five children with Specific Language Impairment (SLI) (age 5;3 - 8;2 years-old), twenty-five typically developing children (3;3 to 8;2 years-old), twenty-five children matched for MLUw (3;4 to 6;2 years-old), and 31 adults took part in the study. participated in three eye-tracking experiments of spoken language comprehension that were designed to investigate the use of verb information during real-time sentence comprehension in Spanish. In Experiment 1, participants heard sentences like "*El niño recorta con cuidado el papel*" (The boy trims carefully the paper) in the presence of four depicted objects only one of which satisfied the semantic restrictions of the verb *recorta* (trim) e.g., paper, clock, fox and dinosaur. Eye movements revealed that Children with SLI, like other groups, were able to recognize and retrieve the meaning of the verb rapidly enough to anticipate the upcoming semantically appropriate referent, prior to actually hearing the noun phrase *el papel* (the paper). Experiments 2 and 3 revealed that, for all groups of participants, anticipatory eye movements were also modulated by the semantic fit of the object serving as the Patient / Theme of the verb. Relatively fine-grained semantic information of a verb was computed fast enough even by children with SLI to result in anticipatory eye movements to semantically appropriate referents. children did differ from Age-Matched controls and no differences were found between children with SLI and MLUw controls.

LITERACY AND LANGUAGE

- 68 ***Oral language skills as predictors of reading development in Spanish***
María Fernanda Lara-Díaz¹, Angela Gómez¹, Esperanza Silva¹, Eva Águila Martínez², ¹Universidad Nacional de Colombia, ²Universitat Oberta de Catalunya

This study examines the influence of oral language proficiency (narrative skills and comprehensive-expressive language) in the acquisition of reading in a language with high orthographic transparency such as Spanish. Language and reading measures come in the form of standardized language tests scores, as well as the performance in two narrative analysis procedures alternative to the standardized assessment based on a retelling task (Lista de Chequeo para el Análisis de las Narrativas Infantiles: ANI Lara, Gómez & Silva (2009) and the *Narrative Scoring Scheme: NSS of the Narrative analysis SALT Systematic Analysis of Language Transcripts*, Chapman & Miller (1985)). Using a longitudinal and descriptive-correlational design, word decoding-recognition, narrative skills and reading comprehension variables were examined in two assessment times (at children's age 5 and 9 years, respectively). For analytical purposes, the sample (n=58) was split in two groups: efficient and non-efficient readers as per the scores on the reading test (PROLEC Evaluación de los Procesos Lectores), in order to analyze associations among tests as well as the predictive power of the oral language elements considered. Results show that the components of language (vocabulary, semantic

complexity and syntax) play an important role in the development of reading. Nevertheless, the role of these skills varies along the time, impacting different reading acquisition processes.

- 69 ***Home Literacy Environment and Maternal Responsiveness as Predictors of Preschool Outcomes***
Caitlin Phillips, Michelle Jackson, Margaret Friend, *San Diego State University*

A child's earliest cognitive achievements are embedded in social context. Research suggests that responsive and contingent parenting has a positive impact on cognitive development. Further, children reared in home environments rich in literary exposure and shared-reading experiences are competent in a range of developmental outcomes. Of interest are the impacts of maternal responsiveness and the home literacy environment (HLE) over time. This longitudinal study investigates maternal responsiveness and the HLE in the second, third, and fourth year of life as they relate to school-readiness and language development. In the current wave, data are being collected on 40 mother-child dyads (4:3 to 5:11). Parents will complete the HLE Questionnaire (HLEQ). Maternal responsiveness and child language complexity and diversity will be assessed through a 20-minute observation of toy play and shared book-reading. School-readiness will be assessed with The Lollipop Test. It is predicted that the HLE and maternal responsiveness will be stable over time, and that the HLE and maternal responsiveness will be associated with language proficiency and school readiness. Previous research indicates stability in the HLEQ from the second to the third year and this is supported by preliminary data from the third to fourth year ($r=.712$, $N=16$, $p=.002$). There is, at present, no evidence of a relationship between the HLEQ and the Lollipop Test. This may result from low variability in the HLEQ due to social desirability effects. We expect observed parent-child interaction data to clarify this finding.

- 70 ***Is Print key information for young children during storybook independent reading: evidence from the comparison of eye movements on the print and main character***
Baogen Liu, Jing Zhou, Xiaomei Gao, Linhui Li, *East China Normal University*

Print awareness is one of key building blocks for children's literacy development, one behavior of young children's print awareness in picture book reading is fixating on the print. A body of research on preschool children's eye-fixation during parent-child story reading found that children rarely look at the print when they are being read to.

The study used eye-gaze analysis to study whether Print is key information for young children or not during storybook independent reading by comparing eyemovements on the print and main character. a total of 121 children ranging in age from 4 to 6 years old participated in this study, recruited from five kindergartens at Shanghai, China. The children's eye movements while reading individually were monitored by Tobii T60 from Tobii Technology AB. The three indexes used for analysis are First to fixation time, Proportion of fixation length and Proportion of fixation counts.

Results revealed that young children paid attention to print earlier and longer than that during shared book reading. The children optimized their fixation on main character increased with age, paid more fixation on print also. 5-6 years old is important for children to develop their ability of fixation on print, the gender difference is exist for the ability of fixation on print.

- 71 ***LOLE: From oral to written language. An instruction program for phonological awareness in kindergarten***
Angeles Mayor¹, Begoña Zubiauz¹, Manuel Peralbo², Luz Fernandez², Alejandro Tunas², Juan Brenlla²,
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We present two studies that tested the effectiveness of an instruction program in phonological awareness: LOLE (Spanish acronym for "From oral to written language"), designed for teachers to use in the classroom with pre-reading students. It consists of 32 units for training in rhyme, syllables and phonemes, using oral language only and a system of aids that allow work to be done on the Zone of Proximal Development (ZPD). The training study was carried out with 180 pre-readers aged 3, 4 and 5, distributed into a control (n=75) and an experimental (n=105) group. The EG received instruction through LOLE over 5 months. The LOLEVA test (original computer application) was used for pre-post-test assessment of meta-phonological skills and reading. In the follow-up study two years later, we assessed performance in phonemic awareness and reading in the 6-year-olds (n=25), to test the long-term effects of the instruction.

The results (t-Student and ANCOVA) show: (a) significant improvement in the EG in the skills in question (Rhyme, $p<.01$; Syllable, $p<.01$; Phoneme, $p<.01$) and in reading -5 year-olds- (regular words, $p<.01$; irregular words, $p<.01$; pseudowords, $p<.01$) and (b) a long-term effect of the improvement in phonemic awareness ($p<.01$) and word reading ($p<.01$).

We concluded that LOLE is effective because it: (a) improves word reading based on systematic training in oral language segmentation tasks; (b) guarantees individualized learning through specific aids in a context of teacher mediation, and (c) enables early identification of reading difficulties.

- 72 ***From picture to print: The reading and literacy development of Chinese young children***
Jing Zhou, Jing Zhou, Baogen Liu, *East China Normal University*

The present research was aimed to find out the developmental process of the early reading and emergent literacy of Chinese 2-6 years old children in a sample of 257. Using Tobii T60 eye-track machine and other tasks, the study examined children's eye movement during the picture book reading time, their visual decoding to Chinese characters and visual expression on the Chinese characters. Results revealed a developmental process of visual awareness in early Chinese reading and emergent literacy. Chinese children experienced a "from picture to print" process with age increased, including children's growing of visual fixation, visual focus on the key information, visual decoding and visual expression on Chinese characters. The study also found out some culture effects on children's development of early reading and emergent literacy.

- 73 ***Interactive reading with deaf pupils: progress in discourse and morphosyntactic development***
Marie-Pierre Baron¹, Hélène Makdissi¹, Andrée Boisclair¹, Edy Veneziano², ¹*Université Laval*, ²*Université Paris Descartes*

Children's literature can be used in the classroom to generate rich discussion about stories. Based on the fact that interactive reading fosters the development of discourse and the identification of recurring components in a story, interventions using children's literature were carried out with deaf pupils. The aim of this study is to describe the progress made in morphosyntactic development, macrostructural coherence and microstructural cohesion among deaf pupils in the context of interactive reading. An experiment was conducted among deaf pupils in Grade 1 who communicated orally, with whom dialogic reading interventions, involving stories from children's literature, were used daily over a period of seven months. Measures of narrative recall were taken at the start and end of the seven-month period. The data were analyzed from two angles: (1) at a cohesion level, the morphosyntax (MLU, analysis of syntactical structuring and errors); (2) at a coherence level, the structuring of narrative recall. The results show improvement in the structuring of recurring components in stories and in the morphosyntactic development of the pupils' oral language. This progress appears to have been supported by these interventions which, from a developmental perspective on the construction of knowledge in children, linked the story's discourse with that of the children so that the adult could intervene within the children's zone of proximal development.

- 74 ***The Continuity of the home-school storytelling experiences of dual-language learners***
Adina Schick, Gigliana Melzi, *New York University*

Policy-makers in the United States face a growing concern about the academic achievement of dual-language learners from low-income homes. Children from low-income, non-English speaking homes score significantly below the national reading average upon school entry, and have lower levels of high school graduation rates than do monolingual English-speakers. Research suggests that these differences might result from a discontinuity in home-school literacy practices, but this suggestion has not been empirically investigated. The present study had two primary objectives: (1) examine the storytelling practices of mothers and teachers of low-income Latino dual-language preschoolers, and determine the extent to which these practices are continuous; and (2) explore the relationship between degree of continuity in home-school storytelling practices and children's emergent literacy skills. Sixty preschoolers from 12 low-income bilingual classrooms, along with their mothers and teachers, participated. Naturalistic mother-child and teacher-class book-sharing narratives were collected early in the preschool year and were transcribed and coded for elaboration and cognitive challenge. At the end of the year, children's emergent literacy skills (e.g., letter recognition, language skills, narrative abilities) were assessed. Preliminary analyses suggest that there exists both continuity and discontinuity in the home-school storytelling experiences of dual-language learners, and that it is the balance between home and school practices that most strongly predicts positive child literacy outcomes. Results are discussed in relation to the importance of the home and preschool environments in supporting early literacy. Findings suggest ways in which early-childhood programs serving low-income children might help support children's narrative skills and overall academic achievement.

- 75 ***Oral narratives with pedagogical intervention as a way to improve reading comprehension: A longitudinal study***
Hélène Makdissi¹, Edy Veneziano², Andrée Boisclair¹, Marie-Pierre Baron¹, Chantal Caracci², Christian Hudelot³, Marie-Hélène Plumet⁴, Serge Poncin², Nathalie Salagnac⁵, ¹*Université Laval*, ²*Université Paris Descartes - CRNS*, ³*CNRS-Université de Nice Sophia-Antipolis*, ⁴*Université Paris Descartes - INSERM*, ⁵*IUFM de Lille*

Remediation programs aiming at improving children's reading comprehension most often focus on low-level units (letters, phonological awareness and local decoding) as if mastery at this level were sufficient for the comprehension of texts. Several studies show that this is not so straightforward. Indeed, children may very well master these decoding abilities without understanding what they are reading. It is urgent to intervene early in the structuring of oral and written discourse. The aim of this research is precisely to

describe the development of oral discourse in children in relation to the early stages of learning to read and write.

Twenty children with language difficulties were seen at the beginning and at the end of the first year of schooling (when they were respectively, around 6 and 7 years of age). At each time, two measures of structured oral narratives (recall of a story and construction of a story from a set of images) and measures of emergent reading and writing were gathered. At the end of the year two additional measures concerned reading comprehension (recall and inferential questions) and a fictional narrative writing. In between these two time periods children participated in "pedagogical interventions" centered on the causal links among events of narratives, through oral and written productions.

Results show a progression in both the structure and in the morphosyntactic extension (T-units) of oral narratives, a progression that correlates with the reading and writing capacities at the end of the school year. Results are in relation to the pedagogical and interactional model implemented.

76 **Skills related to phonological and morphological processing in first grade children with reading difficulties**

Marie-Catherine St-Pierre, Edith Lambert-Bonin, Christel Mérette-Attiew, *Université Laval*

Introduction It is known that a phonological processing deficit hinders the development of decoding in reading. This deficit in turn affects the morphological abilities that are heavily used for identification of written words and grammar. However, although links between phonological processing, morphological skills, and decoding are increasingly demonstrated, they remain unknown for children in early school grades. Furthermore, the different linguistic analysis skills, from auditory input to reading, are generally studied in isolation, making it difficult to come up with an overview of various language deficits simultaneously present in children with reading disorder (RD). This study aims to compare the performance of children with and without reading difficulties in terms of auditory discrimination, phonological processing, phonological awareness and morphological awareness. **Methodology** 16 tasks relating to the above skills were administered to 93 children, aged between 6 and 7 years, having completed first grade (29 RD, 64 controls). **Results:** The performance of RD children was significantly lower than that of control children for all tasks. For the RD group, the results obtained on the morphological awareness task were significantly lower in children with moderate to severe deficit in phonological analysis. **Conclusion:** Children with RD have low skills in language processing both in terms of phonology and morphology. It appears that the magnitude of the deficit in phonological processing skills is related to the development of morphological awareness in children with RD.

77* **Abstract language use during mother-toddler book sharing: A comparison of storybook and vocabulary book genres**

Angela Nyhout, Daniela O'Neill, *University of Waterloo*

Presenting book content in a meaningful context may provide opportunities for more abstract talk. Given that maternal abstract talk during book sharing is predictive of children's later language development, it is important to identify ways of fostering this talk. We compared two genres of books commonly read to toddlers: simple *storybooks* and *didactic* (vocabulary) books. Two children's books about animals were adapted to create two versions, controlled for page number and text quantity. The critical difference between them was context; animals in the storybooks were presented in a scene as part of a (visual) story, whereas animals in the didactic books were alone on the page. We hypothesized that the storybooks would yield more abstract maternal extra-textual utterances (mETUs). Eighteen mother-child dyads (mean child age = 21 months) were videotaped while sharing the didactic version of one book and the storybook version of the other. The interactions were transcribed and coded. A greater proportion of mETUs were abstract (e.g. predictions/inferences, text-to-life comparisons) during storybook sharing ($t(17) = 2.35, p = .03$). In contrast, a greater proportion of mETUs were simple descriptors (e.g. labels, colour/size descriptors) during didactic book sharing ($t(17) = 4.42, p < .001$). Mothers also used more narrative devices (e.g. mental state terms, anaphora, tense variety) when sharing the storybooks ($t(17) = 5.66, p < .001$). Despite a recent decrease in the popularity of storybooks among parents, and even in research studies, the results of the present study suggest that storybooks foster richer talk than their didactic counterparts.

78 **A mismatch preference in Japanese children's mapping between particles and intentionality**

Franklin Chang¹, Tessei Kobayashi², ¹*University of Liverpool*, ²*NTT Communication Sciences Laboratories, Japan*

Children must learn the mapping between language and meaning. Existing preferential looking studies are not clear about these mappings, because multiple features of language and meaning are varied. We examined the specific mapping between Japanese particles and intentionality, while keeping the situations as similar as possible in terms of motion and spatial positions. Japanese is a pro-drop language where particles are used to

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signal meaning. The object particle in "frog-OBJ VERB" would signal that the frog was the object of an intended action, while the subject particle in "frog-SUBJ VERB" would not be appropriate for this situation. We paired these phrases with scenes where a person did an intentional action to an object (e.g., giving) to a situation where the motion of the object was not intentionally caused (e.g., falling).

90 Japanese 20-, 24-, and 28-month olds were tested in a preferential looking task with a baseline looking section and an experimental section where they heard the NOUN-PARTICLE NOVELVERB structure. 20-month olds showed no preference for either particle, but 24 and 28 month olds showed a significant tendency to look at the unintentional video when they heard the object particle sentence (relative to baseline). Thus, it seems that a mismatch preference for the object particle develops between 20 and 24 months in Japanese children. These results are difficult to explain within existing theories of preferential looking, because they involve language-specific developmental changes that mismatch adult preferences. They suggest that children may be doing more than matching in these paradigms.

NEUROCOGNITIVE CORRELATES

79 ***The Roots of action verbs in event structure: A neurophysiological perspective***

Amy Pace¹, Margaret Friend¹, Leslie Carver², ¹San Diego State University, ²University of California at San Diego

Infants are sensitive to the structure of human motion and it is likely that prelinguistic action categories are the early building blocks for verbs. However, little is known about the neurophysiology of this process. It is unclear whether mapping motion verbs to actions is guided by perceptual (bottom-up) or conceptual (top-down) processes. Indeed, little is known about the mechanisms that subservise action processing more generally. The purpose of this research is to identify the neural bases of action processing using Event-Related Potentials (ERPs). One benefit of ERPs is that data collection can be time-locked to specific action segments. Early-occurring components (0-300ms) index perceptual processing, whereas mid-to-late occurring components (>300ms) tend to reflect attention and conceptual processing.

Twelve 24-month-olds were familiarized with a video of a novel event comprised of three actions. During test, thirty frames (10/action) of 150ms duration were presented in rapid succession. Pauses of 450ms were inserted in the middle (Interrupting) or at the completion of each action (Completing). ERPs were time-locked to the final 150ms of each pause. Neural activity to Interrupting and Completing actions differed significantly at anterior cortical sites. The negative component (Nc) observed at ~400ms was greater in amplitude for Interrupting relative to Completing actions indicating attention to temporal structure. These data provide evidence for cortical involvement in action processing and are consistent with recent neurophysiological evidence on object categorization in infancy. Attention to the temporal structure of action may facilitate the development of action categories and pave the way for verb learning.

80 ***Children's reliance on the pause as prosodic boundary marker: ERP studies on intonational phrase perception in German 3- and 6-year-olds***

Claudia Männel, Angela D. Friederici, Max Planck Institute for Human Cognitive and Brain Sciences

Previous ERP studies revealed that adults perceive intonational phrase boundaries (IPBs) independent of the pause as prosodic boundary cue. When only pitch change and preboundary lengthening mark IPBs, adults still show a particular ERP component, the Closure Positive Shift (CPS) relative to the boundaries (Steinhauer, Alter & Friederici, 1999). In children, a developmental shift in IPB perception has been observed, such that 3-year-olds but not yet 2-year-olds show a CPS in response to IPBs signaled by all three prosodic markers (Männel & Friederici, in press). This finding indicates a progression in IPB processing from lower-level detection of speech breaks to higher-level perception of speech structure at later stages of language development. In the current study, we investigated IPB processing in preschool children by targeting their reliance on the pause as boundary cue once the CPS in response to IPBs is already established. Children at 3 and 6 years listened to sentences without IPB and sentences with IPB, in which the pause at the boundary was deleted. When presented with IPBs in the absence of a boundary pause, 6-year-olds, but not 3-year-olds, showed a CPS relative to IPBs as has been previously reported for adults. These data suggest that initially all available prosodic cues are necessary to trigger boundary perception as indicated by the CPS, while later in language development less prosodic information is sufficient. Thus, at an age when the CPS emerges, higher-level speech structure processing still requires the initiation by all available prosodic cues.

NEW METHODS IN CHILD LANGUAGE RESEARCH

81 ***The role of gaze behavior in interaction between children with hearing impairment and normally hearing peers***

Olof Sandgren, Richard Andersson, Kristina Hansson, Birgitta Sahlén, Lund University

Children with moderate hearing impairment (HI) are increasingly placed in mainstream education requiring frequent oral verbal interaction with hearing peers. Due to their disability children with HI are at risk for difficulties with peer relationships, which can have negative consequences for the development of cognitive and social skills. Understanding of how children with HI interact with normally hearing (NH) peers is important in order to be able to provide adequate support. Well-functioning verbal interaction involves a range of behavioral and cognitive skills. In this study, we focus on gaze behavior in conversations between HI and NH. Simultaneous monitoring of gaze behavior in two interlocutors during conversation can provide important real time data on the ongoing co-creation of understanding. Conversational data from 20 pairs (10 HI-NH dyads, 10 NH-NH dyads) were collected during the performance of a referential communication task requiring the description of faces. Both participants wore head-mounted eye-trackers. Using ELAN software we calculated the proportion of time spent by the listener looking at the partner vs. the task. The timing of gazing at the partner was related to turn shifts and asking clarifying questions. The analysis indicates that the participants with HI spent more time looking at the partner's face, and that face gaze more often occurred in connection with requests for clarifying information compared to matched NH controls. The results indicate that children with HI display a greater need for visual cues to facilitate oral verbal processing, or reflect a no longer necessary compensatory strategy.

82 ***Production-comprehension asymmetry of word order: Dutch preschoolers tested with three different comprehension tasks***

Gisi Cannizzaro, *University of Groningen*

How do Dutch preschoolers use word order and animacy information to interpret and produce semantically reversible sentences? An Optimality Theoretic model predicts poor comprehension of sentences in which the subject is inanimate and the object is animate, as well as poorer overall performance on comprehension compared to production. These predictions follow from a universal animacy constraint on meaning, which is ranked too highly in children's grammar as compared to the adult grammar. Dutch two- and three-year-olds were tested in three comprehension tasks: act out, picture-pair selection, and preferential looking—each with an accompanying elicited production task. Gaze data were collected during the picture-selection and preferential looking tasks by a remote eye tracker. Adult controls were tested in a picture-selection and elicited production task with the same materials. Sentences were tested in which the relative animacy of subject and object were alternated.

Adults performed at ceiling on the picture-selection and elicited production tasks, but were slower to answer in comprehension when the subject was inanimate. Dutch children used word order less successfully in the comprehension tasks than in the accompanying production tasks. The younger children's comprehension mistakes in the picture-selection and act out tasks were due to a reversed interpretation of sentences with an inanimate subject and animate object. It is concluded from these mistakes, made consistently across the comprehension tasks, that (1) animacy influences comprehension of word order and (2) production precedes comprehension of word order for Dutch preschoolers.

OTHER THEMES IN CHILD LANGUAGE RESEARCH

83 ***Simultaneous gesture and language production in school-age children with perinatal stroke***

Angel H. Li, Philip T. Lai, Judy S. Reilly, *San Diego State University*

Gestural research in typically-developing children (TD) supports McNeill's hypothesis that language and gesture form an integrated system. Children with perinatal stroke (PS) provide the opportunity to test this hypothesis. Studies of early language in PS infants and toddlers found site-specific differences in early lexical and gestural development: a right hemisphere deficit for gesture and a left-sided deficit for language production. However, these site-specific differences resolve: spontaneous language is in the normal range by school age. Will gesture follow a similar developmental pattern? We investigated gesture and language production in school-age children with PS in a semi-structured biographical interview. Ten six-year-old children with PS (5 RHD; 5 LHD) and ten age-matched TD participated. Language data were transcribed using CHAT from CHILDES. Eudico Linguistic Annotator (ELAN) software was used to code gestures and their temporal integration with speech. Two independent raters coded gesture frequency and diversity. Results within the PS group indicated no site-specific differences for gesture type or diversity, thus we collapsed RHD and LHD groups. Differences between TD and PS groups were found: the TD group was more productive and used more diverse gestures than the PS group. The TD group produced proportionally more iconic gestures whereas the PS group produced proportionally more deictic gestures. Overall, the TD group was more flexible in gesture use suggesting increased gestural complexity and a larger repertoire. Our results are consistent with McNeill's hypothesis: gestures and language are following similar developmental patterns in children with PS.

84 ***Language and affective expression in children with perinatal stroke***

Philip Lai^{1,2}, Angel Li¹, Judy Reilly^{1,3}, ¹*San Diego State University*, ²*University of California San Diego*, ³*Université de Poitiers*

Children with Perinatal Stroke (PS) offer an unusual opportunity to investigate brain-behavior relations and their development. Previous research in the PS group has focused on neuroplasticity in different cognitive domains. Investigations in the same children have found different degrees of developmental plasticity, with greater development seen in the domain of language than in visual-spatial cognition. One understudied communicative domain is affect. Will emotion follow a similar developmental pattern to language? Previous research has found that for both infants and adults with strokes, those with right hemisphere injury (RH) showed flattened affect and increased negativity compared to patients with left hemisphere injury (LH) and typically developing (TD) individuals. We investigate the temporal and semantic integration of language and facial expression in six-year-olds during a biographical interview. Participants included 10 unilateral PS (5 LH; 5 RH) and 10 TD age-matched individuals. Language data were transcribed using CHAT from CHILDES. Two independent raters coded transcripts identifying narratives and coding them for emotional valence (positive and negative). These coders then used Eudico Linguistic Annotator (ELAN), a software platform to code affective facial expression. Results show that the RH group produced more negative spontaneous narratives than LH or TD groups. Similarly, for facial expression, children with RH injury are less expressive and more negative than LH and TD. Overall, our results from both language and facial expression data are consistent with previous infant and adult stroke literature suggesting varying degrees of developmental plasticity across communicative systems.

QUANTITATIVE AND QUALITATIVE INPUT FACTORS

85 ***What the eyes don't see: How the visual scene affects children's ability to demonstrate linguistic knowledge in visual world paradigms***

Caroline Rowland¹, Angel Chan², *University of Liverpool, ²Hong Kong Polytechnic University*

We examined how the visual scene affects children's ability to demonstrate linguistic knowledge in visual world paradigms. Twenty-three Cantonese 3-year-olds were assessed in a forced-choice pointing task on their ability to interpret Cantonese serial-verb datives. Children saw, side by side, two dynamic visual scenes showing a donor character (e.g. a lion) transferring an object (e.g. a duck) to a recipient (e.g. a rabbit) and were asked to identify the scene that matched a spoken sentence. The relevant difference across scenes was role reversal of the object and recipient roles. Importantly, we also varied two other aspects of the visual scene; same/different transfer motion (manner of motion) across scenes and same/different path of motion across scenes.

The children were most accurate when the two scenes differed maximally (contrasting not only in role reversal but also manner and path of motion). The same children performed worst when the two scenes differed only in role reversal. Introducing either manner or path difference across scenes had an equal (moderate) effect. This finding is consistent with the idea that Cantonese is an equipollently-framed language (Slobin 2004), in which both manner and path are expressed by elements that are equal in formal linguistic terms and in force/significance. The results also suggested that children are doing more than just a visual search for the key piece of information that helps them identify the correct referent. Instead, the children seem to be creating a global mental representation of the event conveyed by the sentence, and then matching this representation to the correct visual scene.

86* ***Parental Linguistic Input and Children's Vocabulary Development***

Christine Cox Eriksson, *Stockholm University*

The quantity and quality of parental linguistic input is essential to children's vocabulary development. The current analysis is part of the SPRINT project, which uses a naturalistic family intervention to investigate the relationship between parent interaction style and vocabulary development in Swedish children 18 to 36 months old. Initial measurements of the children's vocabulary at 12 months are followed by non-concurrent onset of intervention at either 18, 24 or 30 months. During each three-month intervention period, parents are given access to video material highlighting "best practice" adult-child interaction sessions and commentary on child language development. Parents also supply vocabulary measurements using the Swedish version of the CDI and audio recordings of interaction with their children before, during and after accessing the video material. Ten children from the first intervention cohort were chosen for this analysis. Five of these children scored in the lowest quartile on the vocabulary inventory reported at 18 months of age and five children had scores in the 50-65th percentile range. From the recordings of parent-child interaction, transcriptions of child-directed utterances were made for a total of 40 minutes per child. The transcriptions were quantitatively analyzed for MLU, lexical diversity, syntactic complexity and use of feedback morphemes. A comparison of the data for parents of children with low versus average vocabulary scores indicates qualitative differences in interaction styles. The vocabulary development of the two groups of children also reveals clearly different trajectories. The data suggest an interrelationship between parent interaction style and children's vocabulary development.

* *Student Poster Competition*

SPEECH

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Toddler's recognition of noise-vocoded speech

Monita Chatterjee, Rochelle Newman, Giovanna Morini, Daniel Eisenberg, *University of Maryland*

Cochlear implants are implantable devices that bypass the cochlea to provide partial hearing to individuals who are deaf. The devices are unable to represent the complete spectral properties of real speech, and much research has examined adult recognition of noise-vocoded speech, a signal that mimics the information transmitted by a cochlear implant. Although toddlers are frequently implanted, their ability to interpret noise-vocoded speech remains unclear. We presented 27-month-old typically-developing children with noise-vocoded speech of two different degrees of spectral resolution in a preferential-looking study. Children saw two images on each trial (e.g., a cat and a dog), and heard a voice instructing them which image to look at ("Find the cat!"). Sentences were presented either in full speech or with noise-vocoded speech of 24 or 8 channels. Data from 19 (of 24) infants have been analyzed to date; surprisingly, children showed virtually equivalent accuracy in all three conditions, suggesting that recognition was not impaired by the loss of spectral resolution. (Children attended to the correct object 64.1% of the time with full speech, compared with 62.7% and 62.9% of the time with 24-channel and 8-channel vocoded speech). However, children's reaction times to identify the word were slower as resolution decreased (children reached 60% accuracy at 533 ms for full speech vs. 733 and 1030 ms for 24-channel and 8-channel speech, respectively). These results suggest that 2-year-olds have a surprising ability to interpret vocoded speech, even without practice, but doing so requires additional processing (as indicated by slowed reaction times).

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Phonological development in Dutch SLI

Annelies Bron, Annette Scheper, *Royal Dutch Kentalis*

In the population of children with Specific Language Impairment (SLI), a subgroup of children with severe speech problems can be distinguished. Unintelligible speech is only one of the language problems of these children. Often they also have problems concerning auditory processing and morphological-syntactic abilities. This manifests itself when using grammatically correct and complex language such as is needed in a narrative task.

At Royal Dutch Kentalis in Eindhoven young children with severe phonological disorders are diagnosed and treated intensively in the Spraak & Taal Ambulatorium. This study investigates whether children diagnosed with phonological SLI benefit from phonological therapy and whether a more complex phonological system also influences other aspects of language.

A standardised method for phonological analysis of the Dutch language is used in order to determine the acquired grade of contrasts and the number of phonological processes. Within a subgroup of SLI the ability to produce grammatically correct and complex utterances and to narrate the plot is analysed in a story generation task (frog story).

Children with phonological SLI (n=25) show a significant growth in the development of the reached grade of contrasts. Especially the phonological processes 'stopping' and 'cluster reduction' reduce significantly. The phonological growth in these children also leads to significant improvements in the grammaticality and complexity of the utterances while generating a story.

Phonological therapy with these children stimulates the acquisition of contrasts and improves the intelligibility of these children. In parallel the phonological development and the morpho-syntactic skills when generating a story grow significantly

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Phonetic and Phonological Acquisition Among French Preschool-Aged Children

Andrea A.N. MacLeod, *Université Laval*

This study investigates the relationship between phonological accuracy and acoustic variability in the acquisition of stops and fricatives by French speaking children. In a multidimensional account of phonological acquisition, children are hypothesized to acquire multiple levels of representation that include (a) a phonetic component, whereby the association between acoustic and articulatory features is built, and (b) a phonological component, whereby speech sound categories are identified and constraints on word forms are learned.

The participants include 30 French-speaking children aged 30, 42 and 54 months of age. These children have typical speech and language development as reported by their parents, and scores on the Peabody Picture Vocabulary Test that are within the normal range. Target words were elicited in a word naming task that included stop consonants and fricative consonants in word initial position. The word initial stop consonants and fricative consonants in the target words were analyzed at two levels: a phonetic transcription and an acoustic analysis.

Results reveal (a) an age effect such that older children are more accurate at the phoneme and phonetic level than younger children; and (b) a phoneme-type effect such that, for the same child, more acoustical variability was observed for fricative consonants than stop consonants. This study provides new insights into the nature of the acoustic patterns that characterize preschool children's productions of selected phonemic contrasts. The application of these results to multi-dimensional models of phonological representations will be discussed.

- 90 **Can children perceive fine phonetic detail from own productions?**
Larissa Cristina Berti, São Paulo State University

This study investigated the ability of the Portuguese-speaking children (aging in average from 35 to 64 months) to identify the categorical and gradient sounds from own productions, during the process of the establishment of contrast between voiceless dental and velar stops. The participants this study were three children with deviant production (phonological disorder - PD) and three children in process of acquisition of the contrast between /t/ and /k/. A previous study based on the speech these children was conducted to determine which productions were categorical or gradient. The experiment perceptual consisted of an identification task, using PERCEVAL software. The stimuli used were the children's own productions, divided in two groups: categorical stimuli (95 tokens) and gradient stimuli (25 tokens). Furthermore, each child identified only the categorical and gradient stimuli they had produced. Both perceptual accuracy and reaction time of responses were adopted in the analysis. The statistical analysis used was ANOVA Kruskal-Wallis. Results revealed that both groups identified categorical and gradient stimuli from own productions. However, younger children showed a trend toward the identification of categorical stimuli over gradient stimuli (60% and 40%, respectively); while children with PD showed a better performance in the correct identification of gradient stimuli over categorical stimuli (67% and 20%, respectively). The reaction time in the identification of these stimuli didn't show statistical significance in both groups. The perception of the phonetic fine detail seems to differentiate the two groups of children. In addition, intermediate productions are a valid category to consider in assessment of both children's speech production and speech perception.

- 91 **Nouns and Verbs in children with Specific Language Impairment (SLI): Evidence from eye movements**
Llorenç Andreu Barrachina¹, Jennifer Johnson², Cristina Martí², Javier Rodríguez Ferreiro², Lucia Buil Legaz³, Mònica Sanz-Torrent², ¹Universitat Oberta de Catalunya, ²Universitat de Barcelona, ³Universitat de les Illes Balears

The semantic representations of nouns and verbs have been considered an important factor determining the differences in complexity between nouns and verbs. Several studies have shown that verb processing becomes more difficult as the number of arguments entailed within the verb's representation increases. The goal of this study was to investigate the effects of argument structure on word recognition in children with Specific Language Impairment (SLI). We registered eye movements to compare the time of visual recognition of Spanish nouns and verbs with different argument structure while subjects listened to the spoken words. Twenty-five children with SLI (age 5;3 - 8;2 years-old), twenty-five typically developing children (3;3 to 8;2 years-old), twenty-five children matched for MLUw (3;4 to 6;2 years-old) and 31 adults took part in the study. The results showed a significant animacy effect in the visual exploration before the end of the spoken word. Moreover, the results revealed differences between nouns and verbs, and among verbs with different argument structure, after the end of the spoken word. Recognition in adults was slower and less accurate as the number of verb arguments increased. Age-matched controls showed the same pattern of looks for nouns and one-argument verbs on the one side, and for two- and three-argument verbs on the other. However, both children in the SLI and the MLU groups showed a pattern of looks that did not correlate with the semantic load of each word type. These results suggest that children with SLI have an incomplete representation of argument structure.

IASCL CENTRAL - FOYER

POSTER SESSION 3

16:45 – 18:30
IASCL Central - Foyer
Poster Session 3

**FESTSCHRIFT POSTER SYMPOSIUM IN HONOR OF CATHERINE SNOW:
FROM BABY TALK TO ACADEMIC LANGUAGE**

Conveners Meredith Rowe, Paola Uccelli, Joan Test, Patrick Proctor, Mariela Paez, Gina Biancarosa
Speakers Brian MacWhinney, Elena Lieven, Jean Berko Gleason

Description:

In this special poster symposium we bring together former students and colleagues of Catherine Snow to pay tribute to her exceptional career in the field of child language and literacy development. Catherine's career is unique in several ways: her work has advanced our understanding of child language and literacy development while simultaneously influencing subsequent research, pedagogical practice, and national policies in areas as varied as pragmatics, vocabulary, reading comprehension, assessment, and bilingualism. Catherine is also an excellent teacher herself, and has served as an academic advisor to over 100 students (so far) during her time at the Harvard Graduate School of Education.

For this symposium we have solicited 22 posters (abstracts from people who were trained by or worked closely with Catherine Snow and are continuing lines of work she inspired. We organize these posters around three general themes: 1) child language and literacy development, 2) bilingualism and second language acquisition, and 3) policy and practical applications. In addition to the posters, several notable researchers who know Catherine well have agreed to provide remarks about her career at the event. During her career Catherine was an active member of IASCL holding several important positions including: member of the executive committee (1978-1990), secretary (1981-1984) and president (1984-1987). She was the co-director of the Child Language Data Exchange System for many years, and also attended graduate school in Montreal. Thus the IASCL 2011 meeting is an ideal setting for this celebration.

01 Word characteristics related to the acquisition of high frequency academic vocabulary in young English language learners and their English proficient classmates
Diane August, *Center for Applied Linguistics*

Because teachers cannot possibly teach all the high frequency vocabulary that students need to learn, it is crucial to learn more about the types of words that English-language learners (ELLs) and their English proficient classmates have difficulty acquiring. The purpose of this study was to develop methods to reliably code three characteristics of words--conceptual complexity, cognate status, and polysemy--that might influence their ease of acquisition and then determine how these characteristics influence the acquisition of high frequency academic vocabulary by ELLs and their English proficient classmates.

Approximately 150 English proficient and 190 third grade ELLs participated in the study. Trained assessors hired by the project administered three tests, including the Word Inventory, a researcher-developed assessment that measured students' knowledge of high frequency academic vocabulary that appears frequently in grade-level text, and the word decoding and word knowledge subtests of the Gates Mac-Ginitie. Inter-rater reliability for rating word characteristics, determined by Kendall's coefficient of stability, was high. The results of both bivariate and multivariate analyses suggest that conceptual complexity is an important predictor of word difficulty for the sample as a whole as well as for each subgroup. Additionally, both analyses suggest that cognate status is an important predictor of word difficulty for ELLs but not English proficient students. Findings from the study are being used to create several interventions that will help students develop academic vocabulary that appears often in grade-level texts.

02 Can L1 vocabulary skills predict L2 vocabulary development? A study of Turkish immigrant children learning Norwegian as a second language
Vibeke Grøver Aukrust¹, Veslemøy Rydland¹, Joshua F. Lawrence², ¹University of Oslo, ²Harvard University

An important question that pertains particularly to language-minority students is whether their L1 vocabulary skills may support the acquisition of L2 vocabulary, or whether the two languages are more in competition with one another. Although a few studies have found positive, albeit weak, correlations between students' L1 and L2 vocabulary skills (Leseman, 2000; Lindsey, Manis, & Bailey, 2003; Verhoeven, 1994), research is too scarce to converge on how (and under what conditions) L1 and L2 vocabulary skills may relate (or transfer). The present study addressed this issue longitudinally, by investigating the vocabulary trajectories of 27 Turkish immigrant students in Norway from age 4 (preschool) to 10 (fifth grade) across four waves of data collection. At each observation, the students' vocabulary skills were measured in Turkish and Norwegian using translated versions of the PPVT (Dunn & Dunn, 1997).

Growth analyses revealed that the students' Turkish vocabulary skills had a strong relationship with Norwegian vocabulary skills at baseline such that a ten point increase in Turkish PPVT predicted a six point increase in baseline Norwegian PPVT scores (Turkish = 0j.6214, $p < 0.005$) controlling for level of maternal education. These findings suggest that students with more developed Turkish vocabularies had an advantage in the early phases of acquiring Norwegian vocabulary, and that this advantage was maintained up to fifth grade.

03 Academic language in transition: Observations of student-teacher interactions across preschool and kindergarten activity settings

Alison L. Bailey, *UCLA*

When young children transition from preschool classrooms to kindergarten, they face not only new social routines and academic demands but also new linguistic and discourse demands. However, we do not know how different these language demands are between the two settings, and thus how great a transition children face, particularly those who speak a language other than English. Using an observational protocol, we examined the oral language to which young students were exposed and the oral language they produced during science activities. We also explored the challenges to operationalizing the construct of academic language at early stages of formal schooling.

Analyses of 54 activity settings in the classrooms of six teachers revealed key differences and similarities, including:

- 1) Participant Structure: Preschool was predominantly teacher-guided small group instruction, with some teacher-directed whole group instruction and child-initiated free play, whereas kindergarten was predominantly teacher-directed whole group instruction;
- 2) Language of Instruction: Spanish was largely favored in preschool, whereas kindergarten teachers used English exclusively and students tended to do the same;
- 3) Academic Language: Both preschool and kindergarten teachers emphasized specialized academic vocabulary, however kindergarten teachers also exposed children to general academic vocabulary along with scientific discourse;
- 4) Language Functions: There was continuity in use of language for science investigation and experimentation across settings.

Paying attention to characteristics of the language environment at key school transition points may facilitate a smoother transition for already at-risk students; namely, with modifications to language and discourse features, teachers can help bridge academic language differences between settings.

04 Prekindergarten teachers expanding beliefs and knowledge of early writing

M. Susan Burns, Julie K. Kidd, *George Mason University*

Research evidence is converging on the significance of writing in young children's literacy development; however, evidence from varied sources indicates that writing opportunities are rarely available in prekindergarten classes. Do teachers of young children think writing is important? What purposes for writing do they report young learners use in their writing samples (e.g., meaningful communication, note taking to remember, learning the code)? In what ways do teachers' views of the importance of writing change as they become more aware of their students' purposes for writing?

This study examines five Head Start teachers' beliefs and knowledge of young children's writing over an academic year. Mixed methods are used, including quantitative single subject design data on teachers' beliefs about writing as well as beliefs about book reading, oral language, and instruction on the code using the Preschool Teacher Language and Literacy Beliefs Questionnaire. Weekly writing samples are collected for five children randomly selected from each of the classrooms. Teachers select samples to be discussed at monthly meetings with the investigators. Teachers' discussions of their students' writing are recorded and then analyzed qualitatively using grounded theory.

While this is a work in progress, we hypothesize that teachers will consider writing more important as their attention is drawn toward the functions of writing for young children. We expect their views on oral language and book reading will remain stable across the year. We also expect that as teachers learn about different purposes for writing, they will broaden their view of the purposes of children's writing.

05 Long-term associations between talk in preschool and grade four language and reading skills

David Dickinson¹, Michelle Porche², ¹*Vanderbilt*, ²*Wellesley College*

This paper will report results of a longitudinal study that examined transcripts of teacher-child conversations that occurred in classrooms of children from low-income homes when these children were four years old. Our study is unique in its ability to describe relationships between specific kinds of teacher-child interaction and later literacy and language outcomes. Children were followed through fourth grade, with testing of language and literacy abilities at the end of kindergarten and fourth grade. Indirect effects of preschool classroom indexes of teacher talk were tested using mediational analyses on fourth grade outcomes for 57 students from these low-income families. Detailed observations and audiotaped teacher and child language data were coded to measure content and quantity of verbal interactions in preschool classrooms.

Preschool teachers' use of sophisticated vocabulary during free play predicted fourth grade reading comprehension and word recognition, with effects mediated by kindergarten child language measures. In large

group preschool settings, teachers' attention-getting utterances were directly related to later comprehension. Preschool teachers' correcting utterances and analytic talk about books, as well as early literacy support in the home, predicted fourth grade vocabulary, as mediated by kindergarten receptive vocabulary. In our discussion, we will explore possible explanations for these relationships, including the possibility that our language measures allowed us to identify particularly verbal teachers, the possibility that self-regulatory abilities were fostered by the same kinds of interactions that foster language, and the possibility that early language fosters later literacy, which, together with enhanced language, results in improved reading.

06 **Supporting more than basic skills within an adolescent reading intervention**
Lowry Hemphill, *Wheelock College*

In an influential 1991 article, Catherine Snow and David Dickinson argued that the development of higher levels of literacy requires more than attention to basic skills. Development of the ability to comprehend and interpret text depends critically on learners' participation in challenging forms of talk. This view has particular relevance for the design of programs for adolescents at risk for literacy failure. In the U. S., 25% of 13 year olds perform at a "below basic level" in reading, struggling with tasks that require interpretation of text. This session will present an analysis of a new program for such struggling adolescent readers, the Strategic Adolescent Reading Intervention (SARI). Different from similar programs for adolescents with reading delays, the SARI incorporates daily opportunities for student discussion and debate along with attention to basic reading skills. The SARI was piloted with approximately 100 adolescents in 2008-2009; a second wave of implementation is occurring in 2010-2011. A diagnostic reading assessment, the Reading Inventory and Student Evaluation (RISE), was used to assess SARI participants' growth in multiple domains of literacy. Results for year 1 showed that SARI participants made statistically significant growth in reading and outperformed comparison students in word reading, vocabulary, sentence structure, and reading comprehension. These initial successes of the SARI suggest that older students with reading delays can benefit from programs that reflect an expanded conception of literacy and that such programs can support gains in both basic reading skills and more challenging aspects of literacy.

07 **EVOCA: Enhancing Vocabulary through Cognate Awareness**
Liz Howard, *University of Connecticut*

It has been well established that vocabulary is a critical component of literacy development, and that many children, particularly second language learners, lack the academic vocabulary necessary to comprehend school texts. One promising approach for developing the vocabulary of native Spanish speakers in particular is to focus on cognates. This intervention study extends the work of previous cognate studies by comparing the effects of the intervention delivered solely in English as a general academic vocabulary curriculum vs. delivered through English and Spanish as a cognate curriculum, with explicit connections made across languages. The three primary aims of the study are to determine the relative efficacy of the two approaches; to determine if the effects of the approaches vary as a result of students' Spanish proficiency and/or exposure; and to investigate transfer. The pilot phase of this study involved 350 middle school students in 21 classrooms. Six classrooms received the monolingual curriculum, six classrooms received the cross-linguistic curriculum, and nine classrooms received the standard language arts curriculum and served as control. All students were administered pre- and post-tests of vocabulary, reading comprehension, and morphology attainment. Preliminary analyses indicate that there were no significant differences across the two intervention groups on the unit quizzes, with both groups averaging 8/10 words correct per unit. Further analyses will investigate the extent to which there may be group differences on the post-tests, and the extent to which the effects may vary as a function of Spanish exposure and proficiency.

08 **Learning and maintaining academic vocabulary: A follow-up evaluation of the Word Generation Program**

Joshua F. Lawrence¹, Claire White², Lauren Capotosto¹, Lee Branum-Martin³, Catherine E. Snow¹, ¹*Harvard University*, ²*Strategic Educational Research Partnership*, ³*University of Houston*

This longitudinal quasi-experimental study examines the effects of Word Generation, a middle-school vocabulary intervention, on the learning, maintenance, and consolidation of academic vocabulary for students from English-speaking homes (n = 1042), proficient English speakers from language-minority homes (n = 493), and limited English-proficient students (n = 115). Using individual growth modeling, we found that students receiving Word Generation improved on target word knowledge during the instructional period (= 0.1692, p < 0.001). There was an interaction between instruction and language status such that English-proficient students from language-minority homes improved more than English-proficient students from English-speaking homes (= 0.107, p < 0.01). Limited English-proficiency students did improve as much as more proficient students from language-minority homes during the instructional period (= -0.205, p < 0.001). We administered follow-up assessments in the fall after the instructional period and in the spring of the following year to determine how well students maintained knowledge of target words. Students who participated in the intervention maintained their relative improvements at both follow-up assessments.

We take these findings as support for an approach to word learning that emphasizes the contextualized use of words in multiple academic contexts and in multiple modalities, and which emphasizes the use of high-leverage academic language in discussion and debate. While this approach did not result in improvement for all students, those students that benefitted from these activities, especially English proficient students from language-minority homes, demonstrated the effects of participation of the Word Generation program one year after instruction.

- 09 ***Low-Income Chilean parents' talk about writing: Links to children's literacy skills***
Diana Leyva, Andrea Rolla, Monica Berrocal, Monica Rodriguez, Magdalena Infante, *Harvard University*

Parents' talk is critical to the development of children's language and literacy skills. This study examined whether parents who engage in emergent writing activities with their preschoolers spontaneously talk about the purpose of writing and if so, whether this talk is related to children's language and literacy skills. Sixty low-income Chilean parents and their preschoolers participated in the study. At the beginning of preschool, parents and children played a grocery-list task where they made a list together, read and used it to buy items at a pretend store. Children's language and literacy skills were assessed at the beginning and at the end of preschool using the Woodcock-Munoz battery of tests. Parent-child conversations during the grocery-list task were transcribed. Parents' utterances were coded as 'containing information about the purpose of writing' or not. Ratio of parent utterances about the purpose of writing to total number of parental utterances was calculated.

Almost half of the parents (47%) spontaneously talked, at least once, about the purpose of writing. Parents who talked more about the purpose of writing had children with better vocabulary and letter/word identification skills at the beginning of preschool. These parents also had children with better dictation skills at the end of preschool. This link was present even after controlling for parental education and children's age and literacy skills at the beginning of preschool. Findings suggest that parents' talk about the purpose of writing plays a role in the development of children's writing skills. Educational implications of the findings are discussed.

- 10 ***Parents' speech to young children: Additional dimensions of syntactic simplicity***
Anat Ninio, *The Hebrew University of Jerusalem*

We explored two potential aspects of syntactic simplicity in English parental speech addressed to young children, pertaining to verbs serving parents in basic grammatical relations. The first dimension tested was morpho-phonemic complexity, the second, the historical stratum of the vocabulary to which the verbs belonged. Our question was: Do parents only use the simple subsets of the verb vocabulary?

We built a large corpus of parental utterances using transcripts from the CHILDES archive. Only English-speaking parents addressing children under 3;6 were included, and the contribution of each individual parent was limited. There were 506 parents in the corpus, producing 1.5 million words; the majority of children addressed (93%) were between 1;0-2;6. Utterances were hand-parsed for the syntactic Subject-Verb, Verb-Object and Verb-Indirect Object relations. Verbs participating in these grammatical relations were collected and lemmatized for statistical analysis. Verbs were classified as monosyllabic or polysyllabic, and, according to their historical origin, as Anglo-Saxon, Latinate and Other.

Parents used 892 different verbs; 65% were monosyllabic, 35% polysyllabic. Monosyllabic verbs accounted for 98% of all tokens. Second, over 60% of the verb types used by parents were of Anglo-Saxon origin, accounting for 96% of all tokens.

The conclusions are that the parental register is indeed mostly simple on these two dimensions, with high use frequency signaling that simple items are very useful for linguistic communication. However, parents do not omit more complex items from their speech even to very young children; the presence of more complex verbs signals that language is incomplete without them.

- 11 ***Patterns of language and literacy development for Spanish-speaking children***
Mariela M. Pérez¹, Patton O. Tabors², ¹*Boston College*, ²*Harvard University*

This presentation summarizes the findings from a longitudinal study of native-Spanish-speaking children from pre-kindergarten (pre-K) through the end of second grade. The study investigated the oral language and early literacy skills in Spanish and English for a sample of 244 bilingual children in Massachusetts and Maryland (ECS) and a comparison group of 144 monolingual Spanish-speaking children in Puerto Rico (PRC). Children were assessed as they entered and exited pre-kindergarten programs, at the end of kindergarten, first and second grade. Data collection included four subtests of the Woodcock Language Proficiency Battery and a researcher-developed phonological awareness task.

The children in the sample demonstrated considerable variability in their dual language skills when assessed over time. Results show that, on average, children in the ECS sample performed below average in both English and Spanish when compared to monolingual norms and, despite some early literacy and oral language gains during their pre-kindergarten year, continue to lag behind monolingual children of the same age. Children in the ECS sample performed better in the early literacy tasks than in the oral language tasks in both English and Spanish. On average, the PRC sample scored significantly better than the ECS sample in Spanish oral language skills, but lower in phonological awareness skills. Educational implications and directions for future research are discussed.

12

Verbal fluency in bilingual children

Kathleen Peets¹, Lynn Luo², Ellen Bialystok², ¹Ryerson University, ²York University

The goal of the current study was to investigate the role of executive functioning (EF) and verbal ability in bilingual children's verbal fluency performance. Bilingual children have consistently shown disadvantages in vocabulary (receptive scores, lexical retrieval), but EF advantages over their monolingual peers. We investigated the performance of children aged 9-10, both bilingual and monolingual, in vocabulary (PPVT-III) and verbal fluency (Delis-Kaplan Executive Function System) by using a time-course analysis. The fluency task involves naming words in a 60-second timeframe according to two conditions: semantic categories such as girls' names and clothing, and word-initial letter, such as f and s. The category condition is thought to measure verbal ability, while the letter condition integrates an EF component that is based on the arbitrary grouping criterion of phonemic similarity. In the time course analysis, we examined the rate of slowing in word production throughout the one minute task.

We found that the bilingual group, consistent with previous research, had significantly weaker vocabulary scores than did the monolingual group. However, an interaction between group and fluency condition showed that bilinguals suffered less from the increasing EF demands in the letter condition. In the time-course analysis, the bilinguals showed a faster slowing rate in the category condition, possibly reflecting their lower verbal ability compared to the monolinguals. However, bilinguals outperformed monolinguals in the letter condition by showing a smaller declining rate, reflecting their stronger EF ability. These results help to differentiate the role of vocabulary knowledge from EF in verbal fluency performance.

13

Modeling degrees of bilingualism and their relationship to metalinguistic awareness in English and Spanish

Patrick Proctor¹, Rebecca Silverman², Jeffrey Harring², ¹Boston College, ²University of Maryland

In the field of bilingualism, the direct relationships between bilingualism and literacy outcomes have not been consistently documented. Very few studies have undertaken to assess whether degrees of bilingualism are associated with literacy performance (see Davidson, Kline, & Snow, 1986; Lanauze & Snow, 1989) and even fewer consider the differences between bilingualism and biliteracy to be predictive of English literacy outcomes.

We worked with 108 Spanish-English bilinguals in 6 schools across two districts. Students were administered oral language and literacy measures in Spanish and English that were used to model different representations of degrees of bilingualism and biliteracy. To model a degree of bilingualism, we used latent variable structural equation modeling. Findings indicated that English language proficiency was a significant predictor of English reading, but the Spanish proficiency indicator was negatively associated with the outcome, with marginal model fit.

Next, following approaches taken by Lanauze and Snow (1989), bilingual students were classified into 4 groupings for comparison: 1) Strong Spanish/strong English (SSSE); 2) Strong Spanish/weak English (SSWE); 3) Weak Spanish/strong English (WSSE); 4) Weak Spanish/weak English (WSWE). These groups were compared with monolinguals in the sample. The highest performing group in the sample was the SSSE group, consistent with Davidson et al.'s (1986) findings.

Finally, biliterate students were compared with their bilingual but monoliterate (English) counterparts. One-way ANOVA tests revealed that biliterate students (those who could read as well as speak/listen in Spanish, n = 44) significantly outperformed their non-Spanish-literate bilingual counterparts on English measures of English decoding, syntax, morphology, and reading.

14

Caregiver input before joint attention: the role of multimodal motherese

Pam Rollins, University of Texas, Dallas

The Emergentist Coalition Hypothesis (ECH) suggests that young infants learn words associatively by relying on perceptual cues and only at 18-24 months do they shift to a more referential strategy and rely on social cues. This naturalistic pilot study extends experimental work to a more ecologically valid environment.

Questions investigated were:

(1) Do caregivers of 9-month-olds spontaneously engage in attention-focusing behaviors that would make objects perceptually salient

(2) If so, are these behaviors associated with later lexical skills?

Fifteen dyads were videotaped in spontaneous play interactions when infants were 9 months old. Videotapes were transcribed and coded for three mutually exclusive categories of caregiver conversational style and two modality types. Style measures were (1) child-centered talk about the infant's focus of attention (CCIFA), (2) child-centered talk about non-observable thoughts, feeling and markings; and (3) directives. Modality measures were multimodal (spoken words with object movement) and unimodal (spoken word alone). Number of Different Word (NDW) at 30 months was the outcome measure.

Caregivers used multimodal and unimodal input while engaging in all three conversational types. Only multimodal child-centered talk about infants' focus of attention related to NDW at 30 months ($r=545$, $p = .04$). Caregivers also spontaneously engaged in multimodal CCIFA, an attention-focusing interaction that heightens the perceptual salience of objects in the young infant's environment. While caregivers also engaged in other

types of interactions with their young infants, only multimodal CCIFA related to later vocabulary skills. These results are consistent with the Emergentist Coalition Hypothesis.

15 *A developmental look at the role of quantity and quality of child-directed-speech in vocabulary development*

Meredith Rowe, *University of Maryland*

Catherine Snow's previous work highlights the importance of sophisticated vocabulary exposure for later language development (Weizman & Snow, 2001). This study takes that work a step further by examining the sophistication of children's own vocabularies across the early years of language learning. Sixty-two families were followed longitudinally and visited for 90 minutes every four months between child ages 14 and 46 months (9 visits per family). All videotapes were transcribed and all dictionary words spoken by the children at each visit were further analyzed using Rasch Analysis. Words spoken by one child at any visit were then considered spoken (or known) from that visit on. The analysis of this cumulative vocabulary over time resulted in a ranking of words at each age based on a scale from most common (used by many children) to least common (most rare or sophisticated). Children were also rank ordered based on their degree of vocabulary sophistication. We developed and applied a coding scheme to these words to describe what kinds of words are most and least common at each child age. We then plotted growth in rare word use (rankings) for each child over time and compared this to growth in word types (or diversity) over time. Finally, we examined relations between rare word use and later vocabulary skill (as measured on the PPVT). Results suggest that there is added value in looking at vocabulary sophistication in addition to diversity in seeking to understand the nature and course of lexical acquisition.

16 *Does maternal schooling and literacy play the same role in mother-child communication in low-income US and Venezuelan families?*

Beatrice Schell-Anzola¹, Meredith Rowe², Barbara Alexander Pan¹, Robert A. LeVine¹, ¹*Harvard University*, ²*University of Maryland*

Parent-child communicative interaction is examined in many child language studies, as it is found to contribute to language acquisition (Snow, 1977). Studies within and across socioeconomic groups show marked differences in quantity and quality of parental input favoring more educated parents (Hoff, 2003; Rowe, Pan & Ayoub, 2005). However, little is known about the extent of individual variation in parental input and child language skills within low-income samples, particularly when parental schooling is very limited. In our study, we address this issue by examining maternal communication with children and children's language abilities in two low-income/education samples: one in the Northeastern United States (n=45) and one in Caracas, Venezuela (n=43). Mother-child dyads were visited in the home at child age 14-15 months and were videotaped interacting with books and toys. Videotaped interactions were transcribed using the CHAT conventions of CHILDES (MacWhinney, 2000) and analyzed for maternal and child talk (tokens and types) and pointing.

Results show large variation in maternal and child communicative measures. Within each sample, mothers and children who talked more pointed more, and each sample showed positive relations between maternal and child talk and pointing. Further, maternal schooling was positively related to maternal talk and pointing. In the lower-level education Venezuelan sample, the relation between schooling and maternal communication was mediated by mothers' literacy skills, whereas in the US, literacy was not a significant predictor after controlling for schooling. Implications of the effects of maternal schooling and literacy skills on children's language socialization are discussed.

17 *Comparing vocabulary in narratives written by English-Language learners and native English speakers*

Rebecca Silverman¹, David Coker², ¹*University of Maryland*, ²*University of Delaware*

Despite wide recognition of the importance of writing in schools and in the workplace (National Commission on Writing, 2003), the developmental research on writing has lagged behind empirical work on oral language and reading (Graham, 2006). In particular, there has been little work on the development of written vocabulary and its importance to writing quality (Olinghouse & Leaird, 2009). This project was designed to investigate the written vocabulary of both English-language learners (ELLs) and monolingual English speakers.

A cross-sectional sample of 190 students participated in the study with 75 in second grade, 58 in third grade, and 57 in fourth grade. Eighty-nine ELL and 101 monolingual English students in grades 2-4 completed the narrative task of a standardized test of writing achievement, which requires students to write a story in response to a picture (TOWL-4; Hammill & Larson, 2009). The narrative samples were used to investigate the diversity, breadth and depth of students' written vocabulary. In addition, we examined relationships between measures of vocabulary and overall writing quality.

The results revealed grade-level differences in writing quality and vocabulary for both groups of students, with native English students typically scoring higher than ELLs. In addition, we found a measure of vocabulary depth to be predictive of writing quality. The results provide additional evidence of the importance of vocabulary to writing for all students and highlight the need for more longitudinal research on vocabulary acquisition and writing development.

- 18 ***Relationships between naturally-occurring social cognition and language in children's early peer play***
Joan Test, *Missouri State University*

Between the ages of 12 and 36 months, children progress from coordinating actions with others to coordinating consciously with others' thoughts about actions as they play with peers. During play, children gain an active action-based understanding of others' minds. While actions and observations of actions contribute to understanding others' minds, language may also contribute. This study explores interrelationships between language and social cognition during peer play to further understand how these two domains interact in development.

Twenty-eight children (14 male) ages 11 through 40 months were videotaped for 45 minutes in everyday situations at their child care center monthly for six months. Behaviors showing evidence of social understanding or cognitive processing of social information were coded, and children's language was transcribed and coded/analyzed using measures of language development (MLU, vocabulary size) and content or function (relatedness to play topic, expression of thoughts, attempts to coordinate play). Relationships between language and social cognitive behaviors were examined through correlations and sequential analysis.

Children's vocabulary size and verbal expression of emotions were significantly associated with a number of social cognitive behaviors. In addition, controlling for age, children with more advanced language used more social cognitive behaviors and higher-level coordinated actions in their play. Peers' verbal expressions of thoughts preceded coordination of actions. Language ability and use, particularly vocabulary, is related both sequentially and in rate of development to children's social-cognitive abilities seen during early peer play, suggesting a pattern of interrelated development of language and social cognition during early peer interactions.

- 19 ***"I do agree": Academic discourse development in teenagers' persuasive writing***
Paola Uccelli¹, Martha Shiro², Christina Dobbs², Jessica Scott², ¹*Harvard University*, ²*Universidad Central de Venezuela*

This study examines adolescents' developing skills in academic writing, specifically stancetaking markers and sentence-level features. Stancetaking, defined as a linguistic and social act, requires particular uses of evaluative language and intersubjective considerations of audience (Du Bois, 2007). Skilled academic writing (AW) follows discourse conventions shared by expert professional communities (Hyland, 2005). AW draws from an expanding repertoire of discourse skills that develops throughout the school years (Snow & Uccelli, 2009). Focusing on the critical but understudied adolescence period and on a school-relevant genre, this study answers the following questions:

- a. What is the frequency and variety of stancetaking resources and sentence-level features in adolescents' persuasive essays?
- b. Do frequency and variety of stancetaking or sentence-level features change from the beginning to the end of one school year?
- c. To what extent are adolescents' persuasive essays genre-appropriate as evaluated by mature academic writing standards?

One hundred persuasive essays, produced by fifty U.S. inner-city high-school students in response to a prompt at the beginning and ending of their senior year, were qualitatively analyzed for: position (agree, disagree, undecided), prompt description (i.e., repetition, paraphrase, explanation), and reference to audience. Sentence-level features (i.e., lexical density, syntactic complexity) were explored using CLAN analyses (MacWhinney, 2000) and repeated-measures ANOVA. Inter-individual variation was higher than intra-individual variation for lexical and grammatical features. Only lexical density displayed a significant increase. Essays predominantly expressed agreement, prompt repetition, and self-centered stances, with minimal incorporation of audience's perspective or counterarguments. Pedagogical implications are discussed in relation to language and socio-cognitive development.

- 20 ***Oral proficiency and reading comprehension in Cantonese-speaking ELLs in Canada and the U.S.***
Yuuko Uchikoshi¹, Stefka Marinova-Todd², ¹*UC Davis*, ²*University of British Columbia*

Despite the growing research examining Chinese speakers learning English (ELLs), only a few studies have measured the English reading comprehension of this population. This study explores the relationship between reading comprehension and language and literacy skills in the home language (L1) and school language (L2) of 130 Cantonese-speaking second-grade ELLs in Canada and the United States. By comparing samples across the two countries we hoped to: (1) reveal aspects of the language and literacy development of ELLs that are common in both countries; and (2) establish whether any observed differences are attributed to the educational experiences and educational policies in each country.

Participants were tested on L1 and L2 oral proficiency, phonological awareness, decoding, and reading comprehension. Although the ELLs in both countries had oral proficiency scores below the norm for English monolingual children, their decoding and reading comprehension were within normal range. Furthermore, multiple regression analyses revealed that in both countries, ELLs' English reading comprehension was predicted by English decoding and listening comprehension but not by English phonological awareness. In America, a combined measure of L1 and L2 oral proficiency was an additional predictor, while in Canada, L2

oral proficiency and L1 phonological awareness were additional predictors of English reading comprehension. These findings suggest that English oral proficiency becomes more important for the English reading comprehension of Cantonese-speaking ELLs in both countries, especially as they become more efficient decoders. Differences in the degree of L1 literacy instruction explained the role of L1 factors that appear to influence reading comprehension across the two countries.

21 **Early literacy in Hindi: The role of oral reading fluency**

Shaher Banu Vagh¹, Gina Biancarosa², ¹Assessment Survey, Evaluation (ASER) Center, ²University of Oregon

Oral reading fluency of connected text (ORF) is a widely acknowledged, robust indicator of skilled reading in English, but little is known about the role of ORF for Indian languages such as Hindi. In contrast to English, Hindi encodes information at the syllable level but has markers to distinguish features at the phoneme level. Hindi is also distinguished by a 52 character (akshar) orthography and a non-linear writing system. Given the large number of children learning to read and write in Hindi, this study aimed to investigate whether ORF is as robust a predictor of skilled reading in Hindi as it is in English.

Using data from a randomized evaluation of a reading program for grade 1-4 children in rural areas in the Indian state of Bihar (n=7158), the incremental and unique contribution of reading fluency at different levels -- akshars, barakhadi (set of consonant-vowel units), lists of words and of nonwords, and ORF -- to children's comprehension ability were explored. Preliminary correlational analyses indicate that ORF is most strongly related to comprehension. In fixed-order regression analyses, ORF explained a unique significant 3% of variation in comprehension even after controlling for all other reading skills, but none of the other fluency measures explained additional variation after ORF was controlled. Moreover, not all children who read with speed and accuracy demonstrated good comprehension. Results suggest that ORF is a robust predictor of skilled reading in Hindi, but that, as in English, fast accurate reading is necessary but insufficient for ensuring reading comprehension.

22 **Relationships between narrative production, word definition, and receptive vocabulary in a South African sample**

Ingrid Willenberg, Macquarie University

Although narrative production and word definition tasks each require highly specific skills, they are both forms of extended oral discourse that reflect children's awareness of written discourse. Few studies have examined the nature of the relationship between these abilities and also the extent to which they are influenced by vocabulary knowledge.

This longitudinal study examined the relationships between narrative production, word definitional skills and vocabulary knowledge in grades R and 3. Participants were 70 children from low- to low-middle SES backgrounds from Cape Town, South Africa. Their mean age in grade R was 6;3 years and in grade 3, 9;3 years. Fictional narratives were elicited using picture stimuli and vocabulary knowledge was measured using the PPVT. Noun definitions were elicited using stimuli from the Weschler Intelligence Scale. Narratives were coded for length, content, macrostructure, evaluation, and written discourse features. Word definitions were coded for inclusion of superordinate terms, core elements of meaning and functional descriptions.

In grades R and 3, there were statistically significant correlations between measures of narrative quality (macrostructure, evaluation and written discourse features) and word definition skill (superordinate terms and inclusion of core meaning elements). There were also significant correlations between PPVT scores and measures of narrative ability and word definition skills.

The findings show that production of quality narratives, relatively sophisticated word definitions and receptive vocabulary are related skills. Moreover, there are indications that these associations become more robust during the early years of school.

Poster Session 3

BILINGUAL FIRST LANGUAGE ACQUISITION

35 **Frog, where are you?: Language production in young school age L1 Irish speaking bilingual children in a narrative task**

Sarah-Ann Muckley, Stanislava Antonijevic, National University of Ireland

This study uses picture supported narrative retell as a context to investigate the language production of five and six-year-old typically developing bilingual L1 Irish speakers (N=10). It is the first study to systematically investigate multiple aspects of language production in this population. Knowledge of typical language development is sought in order to enable reliable identification of atypical language development and to guide intervention for children with language impairment. Descriptive statistics are presented relating to multiple measures of mixed code use, productivity, syntactic complexity, and grammatical accuracy. In addition, this study returned several major findings regarding relationships between these language domains. Firstly, it was found that grammatical accuracy has no relationship with mixed language use but does have a negative

relationship with the proportion of complex syntax which is coordinate syntax (an early developing syntactic form in English). Furthermore, productivity correlates positively with syntactic complexity and grammatical accuracy. Finally, a positive relationship was found between mean length of utterance measures and syntactic complexity. The most common grammatical error types were initial mutation, simple preposition and verbal noun. Each participant used at least two different types of complex syntax. These findings provide a stepping stone on the road to describing typical language development and identifying the characteristics of language impairment in bilingual L1 Irish speakers.

36 *The expression of motion events in bilingual first language acquisition*
Helen Engemann, Henriette Hendriks, *University of Cambridge*

Recent research on crosslinguistic diversity has revived debates concerning the relative impact of language-specific and universal constraints on language acquisition. The expression of motion events presents us with a striking typological contrast: 'satellite-framed' languages (Germanic) typically encode Manner and/or Cause in verbal roots and Path in satellites outside the verb while 'verb-framed' languages (Romance) express Path in the verb and encode Manner and/or Cause separately (e.g. gerunds or adverbials). The present study examines the implications of these typological properties for bilingual first language acquisition of English and French.

In an elicited production task, bilingual and monolingual learners of English and French (N=12 per group) described animated cartoons showing an agent acting upon objects in a certain Manner (e.g. push, pull) causing them to move according to a certain Manner (e.g. roll, slide) along a certain Path (e.g. up, down, into, across):

L1 (controls): English and French monolingual children (aged 4 - 10)
2L1: English-French bilingual children (aged 4 - 10)

Monolingual children demonstrated the expected typological contrast from early on. Bilinguals' responses manifested a unidirectional pattern of crosslinguistic influence, showing both quantitative and qualitative divergences from monolinguals. Whilst bilinguals' English descriptions closely mirror those of monolinguals, children' French productions displayed a persistent preference for satellite-framing principles of organising information, reflecting the greater transparency of the English system in this domain.

Our findings indicate that typological properties not only guide the process of first language acquisition, but also affect crosslinguistic interactions in bilingual development in systematic and predictable ways.

37 *Standardised English language tests useful for bilingual children with an exposure to English of more than 60%*

Andrea Krott³, Caroline Floccia¹, Kirsten Abbot-Smith², Allegra Cattani¹, Frederique Arreckx¹, ¹*University of Plymouth*, ²*University of Kent*, ³*University of Birmingham*

Over half the speech therapists in the UK have at least one bilingual child on their caseload. Standardised language tests usually do not exist in the child's 'other' language. We investigated the fruitfulness of using standardised English language tests with bilingual children, with special focus on their exposure to English. 34 British monolingual and 20 bilingual 2½-year-olds were tested on the auditory sub-test of the Pre-School Language Scale (PLS), the British Picture Vocabulary Scale (BPVS) and a word production test which has been standardised for German (SETK). Parents completed the Communicative Development Inventory (CDI) and a questionnaire which calculated exposure to English as a percentage of language input. For word production, the bilingual children scored significantly lower than the monolinguals on both the SETK and the CDI. In contrast, there were no significant differences for comprehension, measured by the PLS or BPVS tests, and the results for the comprehension CDI approached ceiling. However, the bilingual group showed a great deal of variation. Regression analyses showed that among age, gender, exposure to English, and birth order only exposure to English significantly predicted PLS and SETK scores, while both exposure to English and age significantly predicted CDI production scores. This suggests the importance of exposure for the decision to test bilingual children on standardized monolingual tests. If a bilingual 2½-year-old is exposed to English more than 58% of the time, monolingual norms on comprehension tests such as the PLS might be useful. However, this needs to be validated with a larger-scale study.

38 *The Effect of Language Context on Bilingual Word Recognition*
Giovanna Morini, Rochelle Newman, *University of Maryland*

The input children receive from caregivers is often in the form of sentences that refer to a specific "target word", as opposed to words in isolation. There are still unanswered questions regarding the extent to which hearing words in sentences facilitate language acquisition. Children being raised in multilingual households receive even more "complex" input, and must acquire multiple "labels" for the same objects (one for each language), and in some situations deal with input that contains code switching. We explore the effect that language context might have when identifying high-frequency words in 20-month-old Spanish-English bilinguals and English monolinguals. Infants saw colored pictures of cats and dogs presented in pairs and simultaneously heard speech stimuli in three possible conditions: (i) *simple word* (e.g., *doggy!*), (ii) *same-language sentence* (e.g., *where's the doggy?*), or (iii) *mixed-language sentence* (e.g., *dónde está el doggy?*). Six trials of each condition were randomly presented, while eye-gaze and fixation data were recorded using an

ASL-D6 eye-tracker. Data collected so far from monolinguals (n=7) show that children's accuracy was higher for the *same-language* and *isolated-word* conditions (61% and 60%), and decreased in the mixed-language condition (55%). In the case of bilinguals, strongest recognition effects appeared in the simple word condition (56%), rather than either sentence condition (47% and 51%); however, these effects are based on a very small sample (n=5); more complete data will be presented in July. These results so far suggest that 20-month-old bilingual and monolingual children might be relying on different linguistic cues during word recognition.

COGNITION AND LANGUAGE DEVELOPMENT

39 Do children find it easier to learn verb meanings for 'punctual / change-of-location' actions than for non-causative events?

Kirsten Abbot-Smith¹, Mutsumi Imai², Samantha Durrant³, ¹University of Kent, ²Keio University, Shonan-Fujisawa, ³University of Plymouth

Three-year-olds have been found to mistakenly map a new verb onto a novel object despite hearing the verb in a transitive sentence (Imai et al., 2008). Five-year-old English-speaking children, however, pointed above chance to the correct 'same action-different-object' clip. However, the actions used in Imai et al.'s studies were not prototypically causative as the object was not affected by the action. In each of the current studies, in one condition we replicated the 'continuous action' clips used in Imai's study (= replication condition). In the other condition we used actions which were prototypically causative, in being punctual actions involving a change of location to the object (= punctual condition). We hypothesised that the children would point correctly more often with the 'prototypical' punctual action than in the replication condition. The reverse was the case. Study 1 found that English 5-year-olds pointed correctly significantly more often in the replication than in the punctual condition; in the latter they pointed at chance. Study 2 found that performance did not improve when we removed the first segment of the actions (in which the actor stood holding the object prior to acting). Study 3 found that 5-year-olds pointed at chance even in the replication condition if a few minutes intervened between the learning and test episodes. We conclude that the perceptual nature of the punctual event makes it difficult even for 5-year-olds to process and map the verb, which in turn suggests that temporal duration and repetition may influence the ease of verb learning.

40 Do Turkish Learners Employ the Accusative Case in Finding the Agent?

Yelda Semizer¹, Ayşe Candan², Ercenur Ünal³, Letitia R. Naigles⁴, Aylin C. Küntay³, ¹Bogaziçi University, ²Cornell University, ³Koç University, ⁴University of Connecticut

We explore whether Turkish-learners make use of the accusative case in finding an agent missing in transitive sentences. Turkish has been proposed by previous researchers to be a language where the accusative will serve as a strong cue to argument relations. In the current study, we reevaluate Turkish learners' comprehension of transitive sentences in the form of N-Naccusative-V and Naccusative-V in an intermodal preferential looking (IPL) paradigm.

The participants are 1-year-old (n=37), 2-year-old (n=64), 3-year-old (n=70), and 5-year-old (n = 15) Turkish learners. They watched side-by-side videos representing six reversible events (e.g., a bird pulls a horse vs. a horse tickles a bird). During the control trials, these events were paired with a non-directing audio (e.g. Bak, itiyor! 'Look, pulling!'); however, during the test trials, the events were paired with either a N-Naccusative-V sentence (e.g., kuş at-ı itiyor '(a/the) bird (is) pushing (a/the) horse' or a Naccusative-V sentence (e.g., at-ı itiyor '(a/the) bird (is) pushing (a/the) horse'.

The children's eye movements were filmed for later coding. The dependent variable was the percent of time the child spent looking at the directing audio.

The results show that only the 3-year-olds exhibited a near-significant preference for the match in the N-Naccusative-V version of the audio; moreover, this preference was more pronounced during the second half of the trial. For the Naccusative-V version, only the 5-year-olds showed a preference for the match, indicating robust employment of the accusative case-marking cue.

41 Information processing in Dutch children with SLI

Annette Scheper, Juliane Cuperus, Heleen van der Vlugt, Annelies Bron, Annemiek ter Wal, Brigitte Vugs, Koninklijke Kentalis

Children with specific language impairment (SLI) have receptive and/or expressive language deficits and related cognitive deficits. These children have impaired language-specific processing deficits, but also domain-general processing deficits, such as deficits in executive function. Executive functions refer to attention control, shifting attention, inhibition and planning. Attention and executive processes are closely intertwined with phonological short-term memory (STM) and working memory (WM), both important factors for processing language. The building of syntactic and narrative structures requires relating linguistics units across a number of intervening words and syllables and a lengthy time-span.

In the current study, profiles of executive function in 75 Dutch children aged 6;0 to 9;0 years with SLI are performed for different type of language problems on word, sentence and narrative discourse level. Bus and

frog story are used to measure narrative abilities. Auditory and visual attention, phonological STM, auditory WM and visuospatial STM are obtained to measure executive skills. No deficits were found in the visuospatial STM. A factor analysis identified 4 underlying dimensions in the group of SLI. The production of ungrammatical sentences and sentences with mazes did not highly correlate with deficits in executive function in SLI. However, inability to narrate the plot highly correlated with executive dysfunction. A weak retelling of the plot correlated with disabilities in phonological STM and auditory WM, whereas a weak generation of the plot correlated with auditory inattention. These results try to determine how varying profiles of information processing are related to a child's classification as SLI.

42 Children's emerging understanding of different time metaphors

Lauren J. Stites, Seyda Özçaliskan, *Georgia State University*

Time is commonly described in terms of spatial motion across different languages of the world, as either (1) moving-time ('the weekend approaches'), (2) moving-ego ('we are coming up on the weekend') or (3) sequence-as-relative position-on-a-path ('weekend follows Friday'). Here we ask when children first understand each of the different time metaphors and which cognitive and linguistic factors best explain their trajectory of development. To explore these questions, we tested 60 3-, 4-, 5-, and 6-year-old children (N=15/age) learning English, using a story-comprehension and an explanation task. Each child was presented with six stories—each followed by a forced-choice question about the time metaphor in the story—and six open-ended explanation questions, two per metaphor type. In addition, we assessed each child's understanding of the time concept, using a time conservation task (Piaget, 1969), as well as their receptive vocabulary (PPVT). Our preliminary results showed early understanding: children could correctly identify the meaning of a time metaphor significantly above chance by age five and could provide explanations for the different time metaphors by age six. This understanding, in turn, was related to children's grasp of the concept of time. Interestingly, children's comprehension varied by metaphor type as well, with the mastery of moving-time metaphors emerging first, followed by moving-ego and sequence-as-relative position-on-a-path metaphors, respectively. These results thus suggest that children can understand a range of spatial metaphors for time at a very young age, and this understanding is closely tied to their cognitive understanding of the time concept.

43 When no means no: A comprehension study

Keith Austin¹, Anna Theakston¹, Elena Lieven², Michael Tomasello², ¹*University of Manchester*, ²*Max Planck Institute for Evolutionary Anthropology*

When learning a language, a child is faced with the task of understanding the meaning of different positive and negative communicative markers (e.g. vocal and gestural). Relatively little is known about how these representations develop and how children come to understand the ways these markers convey beliefs and desires. A comprehension study was used to assess when children are capable of making positive and negative inferences and which type of marker is most salient when making these judgements. 144 children aged: 1;8-1;10, 2;0-2;2 and 2;4-2;6 were split into three between group conditions (gesture, single word and multiword proposition). Each participated in a search task, in which an experimenter responded in a positive, negative or neutral way to a question, regarding the location of a hidden object. For negative judgements, the results revealed that children aged 1;8-1;10 were capable of comprehending gestures with high proficiency, but were unable to process either type of verbal markers above chance. This gestural dominance was temporary, as by the age of 2;0-2;2, children were capable of making negative inferences equally with all three response types. In contrast, children took longer to acquire positive markers and did not show an initial comprehension advantage for gestures. The acquisition of gestural and single word positive markers improved with age, whilst the comprehension of propositional utterances remained relatively unchanged. The data, show that children's ability to comprehend communicative markers is influenced both by the polarity of the response and by the means used to express it.

44 Development of Verb Learning: The Changing Role of Syntactic Variation

Rachel Albert, Jennifer Schwade, Nicole Kardassakis, Heidi Waterwall, Michael Goldstein, *Cornell University*

We assessed toddlers' abilities to generalize a novel verb after being trained in one of four conditions of differing variability. Children aged 28-30 months (n=63) or 33-36 (n=55) months were assigned to one of two Syntax conditions (Variation or Repetition) and one of two Exemplar conditions (Four-Exemplar or One-Exemplar). An experimenter demonstrated two novel actions using one stuffed animal to act on another. One action was labeled with a novel verb (dwickling) and the other with a familiar verb (playing). In the Variation condition, the actions were labeled in a rich syntactic context using partially overlapping sentences. In the Repetition condition, actions were labeled using exact repetition. Children in the Four-Exemplar condition saw one animal perform the actions on four different animals; the One-Exemplar condition used the same pair of animals throughout training. A composite learning score was created for each child based on six learning measures: production of target action, production of target verb, correct looking to target action (Trial1, Trial2), correct pointing to target action (Trial1, Trial2).

A 2(Age) x 2(Syntax) x 2(Exemplar) ANOVA on learning scores showed that the older children significantly outperformed the younger children, $p < .001$. Children showed better performance when trained with four

exemplars than with one exemplar, $p=.001$. A significant Age x Syntax interaction ($p=.028$) revealed that older children trained with Variation outperformed children trained with Repetition, $p=.043$. Taken together, these results suggest that the ability to generalize a novel verb varies with child age and the variability of a verb's initial presentation.

45 ***Explanations and late multimodal development: evidence from French children***

M. Guidetti¹, A. Reig Alamillo², J.-M. Colletta³, ¹University of Toulouse, ²University of Mexico, ³University Grenoble 3

Like adults, children gesture as they talk. The aim of this research is to find evidence of developmental changes affecting the multimodal construction of explanations. Even if literature on later multimodal development is scarce, it has shown that this later development is contingent upon the characteristics of the communicative activity in which children engage. As so, co-speech gesture develops with age in the context of a narrative activity and plays a crucial role in discourse cohesion and the framing of verbal utterances. To see if it was the same in an explanatory activity, 84 participants, divided into two age groups (6 and 10 years old), were asked to watch a cartoon and then to tell the story to the experimenter. As soon as the child had finished telling the story, the experimenter asked him/her some questions, chosen with the aim of collecting 1- the formulation of a hypothesis, 2- a procedural explanation, 3- a reference to the character's beliefs and 4- a causal explanation. Linguistic (as clauses and personal pronouns among others) and gestural variables (as type of gesture produced) were analysed. Results showed that contrary to what was expected, age had small effects. Clauses were the same length in the two age groups. Personal pronouns were produced significantly more by older children. But the type of co-speech gestures were different following the type of question asked. Ultimately, this study adds evidence to the intricate relationship between the development of gestural and linguistic abilities related to explanations.

46 * ***Comparing Infants' Learning of Statistical Regularities in Auditory and Visual Sequences with Complex, Familiar Stimuli***

Jennifer B. Misyak, Lauren L. Emberson, Jennifer A. Schwade, Morten H. Christiansen, Michael H. Goldstein, ¹Cornell University

To examine the nature of learning mechanisms supporting language acquisition, statistical learning (SL) was compared across perceptual modalities in twenty-eight infants ($M=9.06$ months, range: 247-306 days). Using infant-controlled habituation, infants were exposed to either spoken nonwords or face-photos. Stimuli within modalities were arranged in sequential pairs (bigrams) and presented in continuous pseudo-random order, resulting in sequences with higher transitional probabilities defining within-bigram transitions. Stimuli were presented at speeds conducive to learning within each modality.

At test, infants were presented with two types of sequences (consistent or inconsistent with the bigrams). Analyses were performed on mean differences in looking times ("D") between test trial-types, and restricted to infants who habituated ($n=18$; auditory: $n=10$).

Age and D were strongly correlated in the auditory ($r=.67$, $p=.03$), but not visual, condition. We classified infants into younger/older groups, using the age midpoint of habituated auditory infants as a cutoff. All groups demonstrated a familiarity preference for bigram-consistent test sequences, except for older auditory infants, who showed a novelty preference.

Comparing learning (absolute value of D) across age-by-modality groups, two tendencies emerged: 1) learning in auditory, but not visual, SL improved with age; 2) visual SL was better than auditory SL in younger, but not older, infants. Consistent with the view that SL is supported by distinct mechanisms across modalities, these exploratory results suggest that auditory and visual SL may develop differentially, with no early advantage for auditory SL and with later changes possibly relating to speech processing developments around nine months.

47 ***The relationship between working memory and syntactic complexity in children with Specific Language Impairment***

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There is evidence in the literature of interaction between Working Memory (WM) and syntactic complexity, but the nature of this relationship is not clear. We investigated the impact of increasing syntactic complexity and WM load on language comprehension in 13 children with specific language impairment (SLI) and age-matched typically developing adolescents (TLD). A sentence judgment task was used with the following constructions: coordinate (CO), subject-relative clauses (SR), and object-relative clauses (OR). Sentences with relative clauses contain a trace marker that must be indexed, making them more difficult to process than CO sentences. Additionally, OR clauses contain elements that violate standard canonical order so children cannot use that as a comprehension strategy. For each subtest, reaction time (RT) and accuracy were

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recorded. We expected that children with SLI would show slower RTs and a greater number of errors on all sentence types than their peers, with OR sentences being the most difficult to process as those sentences are the most demanding on WM. The findings indicate that RTs in both groups were longer for OR sentences than SR sentences. As expected, the TLD group judged sentences more accurately than the SLI group. Syntactic complexity had a larger impact on accuracy in children with SLI than TLD: children with SLI performed significantly more poorly on OR sentences than SR sentences, while children with TLD performed similarly in those two structures. The data show a difference in performance pattern for the children with SLI than for TLD.

CULTURAL AND SOCIAL FACTORS

48 *A cross-linguistic study on the acquisition of mental state words*

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With the emergence of language, children's reasoning about the mind becomes explicit. The present study was aimed to explore cross-linguistic similarities and differences in the acquisition of mental state terms in four languages.

The Mental Lexicon Questionnaire (Bretherton & Beeghly, 1982), a parental checklist which includes 78 internal-state words, was adapted in French, German, and Italian. The results demonstrated that internal state language is well developed by the middle of the third year of life. On average, English-speaking infants (n = 94, mean age = 32.16 months, SD = 1.41) produced 64% of the internal state words included in the checklist. French-speaking infants (n = 77, mean age = 32.08 months, SD = 1.62) produced 51% of the terms, Italian children (n = 27, mean age = 30.17 months, SD = .32) 58% of the terms while German-speaking infants (n = 69, mean age = 29.80 months, SD = .44) produced 66% of the terms. Furthermore, there was an invariant sequence across languages in the acquisition of specific internal state language categories: Children first used words about perceptual (e.g., feel), physiological (e.g., hurt), volitional (e.g., want) and emotional states (e.g., sad), followed by moral terms (e.g., good). The production of cognition terms (e.g., know) lagged significantly behind the production of terms from the other categories (all p<.001).

In conclusion, consistent with research on children's theory of mind, the present findings results show considerable cross-cultural convergence in the acquisition of internal state terms.

49 *A Study of the Relationship Between Preschool Chinese-speaking Children's Metaphors and Their Social Cognition*

Li Zheng, Nanjing Normal University

Preschool children's language teems with metaphors. Is the generation of children's metaphors subject to their development of social cognition? The present research studies the relationship between children's use of metaphors, social cognition and social cognitive skills. A large part of human cognition is hidden in the depth of mind, but metaphors can turn the hidden knowledge in the subconsciousness into perceivable knowledge. A concept may have quite different implications, and the implication chosen when a metaphor is used is called "the first implication", the choice of which mirrors the level of social cognition. The present research selects 360 Chinese children of ages two to six, who are even divided into four groups. Questions like "What would you like your mother to be like?" and "How is your happiness like?" are then asked, and the metaphors uttered by these children are recorded so as to analyze their cognition of the essential nature of such concepts as "mother" and "happiness" implied in their answers.

Our research establishes a strict evaluation system, endowing different metaphors with different values. The statistics we obtained shows that: 1st, social cognition reflected in metaphors varies markedly with age. Children of two have the lowest marks while those of six have the highest. Children's understanding of "mother" undergoes the change from "intimate" to "precious", and that of "happiness" from "simple satisfaction" to the extraction of its "free, unrestrained" nature. 2nd, this change is not subject to children's gender. 3rd, compared with those used by adults, metaphors uttered by children reflect the rhetorical prototype common to Chinese culture. 4th, as children grow, they are increasingly accepting the symbolic meaning of lexicons endowed by social culture and using less and less metaphors that go against the norms of social culture.

50 *The use of questions by Aboriginal pre-school age children and their caregivers in a Walmajarri community*

Karin Moses, La Trobe University

Aboriginal children have often been characterised as being reluctant to ask and answer questions in the classroom. This tendency has usually been explained in terms of socio-linguistic differences. It has been claimed that adult Aboriginal people ask few questions, that they discourage their children from asking questions and that Aboriginal people feel under no social obligation to answer questions. This paper examines the way in which six Kriol-speaking pre-school age children and their seven caregivers ask and respond to questions. The data was collected in Yakanarra, a Walmajarri community in the Fitzroy Valley of the Kimberley region of Western Australia over a period of three years during which time the participants were audio- and

video-recorded every six months. The findings suggest that much of what has previously been said about Aboriginal people's use of questions may need to be reconsidered. Despite the variation that existed in the group, these children and caregivers from Yakanarra provided no evidence that Aboriginal people are reluctant to ask or respond to questions. In terms of frequency and function, questions appear to be as much a part of these Kriol-speaking preschool children's conversations with their caregivers as they are of the conversations of English-speaking children with whom they can be compared. The findings mean that the reluctance of Aboriginal children to ask and answer questions in the classroom can no longer be explained in terms of a learned and preferred Aboriginal conversational style brought to the school from the home.

51 *Difficult sounds in Ibibio monolingual children: Pedagogical and clinical implications*
Ekaete Akpan, *University of Port Harcourt*

This study aimed at establishing difficult sounds in the speech of the Ibibio monolingual children. Our problem in Nigeria is that there is no norm set like in developed communities for planning language teaching programmes and for screening children for language disorders. Thus, there is the need to establish a linguistic norm from which deviations can be studied and addressed. The subjects used for this work were made up of twenty-five (25) male and twenty-five (25) female Ibibio normal monolingual children between the ages of 2 ½ and 4 ½ years, with no formal education. The target sounds in this study were 27 phonetic sounds of Ibibio with 6 sub-variations bringing the number to 33 sounds: 17 phonetic consonants and 10 phonetic vowels. The test material was made up of one hundred and sixty two (162) single words which were mainly nouns, with a few verbs. Controlled elicitation through imitation method was used to elicit data. Percentage, mean, variance, and standard deviation were used for the data analysis. The results show the difficult vowel sounds to be the central and the mid vowels, with [u] as the most problematic. In consonants according to place of articulation the uvular sound [R] is the most difficult being a properly back sound; in manner of articulation the trill and tap are the most difficult sounds. The study has both pedagogical and clinical implications.

FIRST LANGUAGE ACQUISITION

52 *The path children follow in the acquisition of the Turkish causative*
Mine Nakipoglu, Özge Sarigul, Neslihan Yumrutas, Esra Yildiz, *Bogazici University*

Investigation of the path children follow in the acquisition of irregularities in morphology has proven to provide crucial insights into the nature of mental representations for morphemes. This study presents acquisition data pertaining to an irregularity in the Turkish causative and argues that type-frequency shapes the acquisition path of the causative.

The causative-affix in Turkish shows variation with respect to the stem that it is attached to. While vowel-ending verbs and multi-syllabic verbs ending in /r/, /l/ take {-t}(1), all consonant-ending multisyllabic-verbs and the majority of monosyllabic-verbs take {-Dlr} as determined by consonant and high-vowel harmony rules(2).

- (1) uyu/uyu-t 'sleep/make so. sleep'
- köpür/köpür-t 'bubble/lather'
- (2) eğlen/eğlen-dir 'enjoy/entertain'
- gül/gül-dür 'laugh/make so. laugh'

This distribution is obscured by the presence of 16 consonant-ending monosyllabic-verbs which take {-lr/-Ar}(3) and 5 monosyllabic-verbs which take {-lt}(4).

- (3) bat/bat-ır 'sink(int)/sink(tr)'
- ak/ak-it 'flow/stream'
- çık/çık-ar 'exit/take off'
- kork/kork-ut 'fear/frighten'
- sark/sark-it 'dangle(int)/dangle(tr.)'

Evidently, the child has to tackle why some monosyllabic-verbs with almost identical stem-final phonological forms such as at 'throw', bat 'sink' surface as at-tır 'make so. throw' but bat-ır or çık 'exit', yık 'destroy' surface as çık-ar but yık-tır 'cause to destroy'. We predict that as -Dlr attaches to the majority of verbs it may be considered as the default and children may overregularize non-Dlr-taking verbs. By evoking causative-use through picture-description tasks, we tested 30 Turkish-speaking children (age-range 2;4-6;1) and found that {-Dlr} is chosen as the default and non-Dlr-taking verbs tend to be overregularized with a rate of 30% for lt-taking verbs (e.g. *sark-tır) and with a rate of 13% for lr-taking verbs (e.g. *çık-tır).

53 *A developmental study of referential strategies in the Thai Frog Stories*
Theeraporn Ratitamkul, *Chulalongkorn University*

When children recount a story, they have to constantly make a decision concerning referential choices. This study aims to examine how children acquiring a language with a rich referential system such as Thai make referential choices in their story telling, and how this ability develops with age. Discourse factors that influence children's choices are also explored.

Data came from the Thai Frog Stories (Zlatev & Yangklang 2001), in which participants told a story stimulated by a picture book. Narratives of 40 Thai-speaking children (aged 3;6 to 11;4) and 10 adults were analyzed, focusing on animate referents in a subject position. A subject in each sentence was coded for its linguistic form

(proper name, lexical, pronominal, or null). Contexts in which subjects occurred were also specified. Following Jisa (2000), the contexts were Introducing, Reintroducing, Promoting, and Maintaining. Results showed that children in all age groups and adults' selection of referential terms depended on discourse contexts. Referents in different contexts assumed varying degrees of cognitive salience, which affected choices of referential expressions. It was found that explicitness of referential forms negatively correlated with salience of referents. Furthermore, comparing to adults, 4- and 6-year-olds exhibited a preference for lexical forms even in a context where less explicit forms were acceptable. This preference declined in 9-year-old and older children, whose use of proper names could also be observed. It was revealed that at 9 years of age, children's referential strategies in narratives have become adult-like and showed patterns of the Thai language.

- 54 ***The influence of input on the acquisition of liaison in two girls aged 3;0 and 3;4***
Chabanal Damien, *Université Blaise Pascal*

Studies on the acquisition of liaison based on usage based theory propose a three-stage developmental scenario. In stage 1, learning is context-based and depends on the frequency with which liaison is heard. The more liaison is present in a child's input, the more it would be memorised and reproduced more rapidly. We wanted to verify directly the effects that speech directed at a child has on the acquisition of liaison, by studying the dense corpus. This study describes the links between the production of obligatory and optional liaison executed properly by two francophone girls, aged 3;0 and 3;4 and their parents. The corpus of one week's family interaction contained approximately 16 hours of recordings. Obligatory liaison was classified according to four syntactic contexts (determiner-noun, personal pronoun-verb...), and optional liaison according to six (adjective-noun...). We compared the percentage of correct liaisons produced by the girls with those of their parents within these contexts. A positive and significant correlation was noted between these two values for Lola and her parents (Spearman rank correlation : $Rho = 0.827$, $p = 0.0142$) and for Prune and her parents ($Rho = 0.973$, $p = 0.0035$). The child therefore reproduces the same proportion of liaisons as the parents and in all the syntactic contexts. Furthermore, in both cases, certain contexts of optional liaison systematically showed a lack of liaison.

- 55 ***Production enhances non-word recognition***
Tania Zamuner¹, Mike Page², ¹*University of Ottawa*, ²*University of Hertfordshire*

Recently, Keren-Pornoy et al. (2010) found that children's non-word repetition is closely linked to their previous production experience, illustrating the role articulation plays in phonological development. What is lacking though, are studies that directly compare receptive knowledge with and without production. This study examines the role of production in lexical acquisition with 4 to 5-year-old Dutch children. During training, children were involved in teaching non-words to an animated dog. The non-words were presented auditorily by computer and children were asked either to repeat the non-words (Produced) or to be silent (Heard). Producing a non-word entails hearing another token of that non-word. To control for this, during training Produced non-words were presented twice and Heard non-words were presented four times. During a later recognition test, children were presented with non-words and were asked whether the dog was taught them. Children were tested on the trained non-words (sook, taan) and distractors (moel, riel). The first analyses compared children's responses to trained non-words versus distractors. Children gave significantly more 'yes' responses to trained non-words (sook, taan > moel, riel), illustrating that children were able to perform the task. The second analyses compared the number of 'yes' responses to non-words that were Produced versus Heard during training. Children were significantly better at identifying the non-words that were Produced during training. The findings indicate that production enhances learning for recognition. These findings will be discussed in relation to different accounts such as articulatory representations of speech and short-term memory and the phonological loop

- 56 ***Acquisition of plural noun and past tense morphology in Dutch: The roles of phonology and frequency***
Judith Rispens¹, Elise de Bree², Annemarie Kerkhoff², ¹*University of Amsterdam*, ²*University of Utrecht*

In Dutch, noun and verb morphology interact with phonology. For pluralization, metrical stress and the final phoneme of the singular noun determine the choice of the suffix (-en pet-petten, caps or -s kikker-kickers frogs). Past tense is expressed by the suffix -te or -de depending on voicing of the verb stem (e.g. maak-te made; hoor-de heard). This study aims at disentangling phonological (metrical stress, phonology of final phoneme) cues and frequency factors (lexical frequency and phonotactic frequency) in noun/verb morphology during development. Plural noun morphology and regular past tense morphology was assessed using wug-tasks in 46 five-year and 51 eight-year old Dutch children so that two stages of development were investigated. The nouns and verbs were controlled for lexical frequency, as well as the phonological factors reported above. Novel nouns and verbs were also tested and controlled for these phonological factors, as well as for phonotactic frequency (PF) of the novel noun / verb. Lexical frequency significantly influenced noun pluralization and past tense production but the latter only in the older children. Novel pluralization was significantly influenced by metrical stress in the two age groups. High

PF facilitated novel noun pluralization in the five-year old children. Novel verbs with high PF of stem+suffix were inflected significantly more accurately for the past tense in both age groups. These results show that development of noun/verb morphology interacts with phonology, but also with frequency cues of which phonotactic frequency seems more important at an earlier stage of development than lexical frequency.

57 *Does putting make a good pudding? Detecting word-medial mispronunciations of voicing in monomorphemic and bimorphemic forms in Dutch*

Helen Buckler¹, Paula Fikkert¹, ¹Max Planck Institute for Psycholinguistics, ²Radboud University

Dutch has a medial voicing contrast in monomorphemic words like *gieter* and *ridder*, and bimorphemic words like *petten* and *hoeden*. There are two important differences between these pairs: (1) bimorphemic words consist of a stem plus *-en* affix, while monomorphemic words are not decomposable; (2) the stem of bimorphemic words like *hoeden* shows alternation: in the singular the voiced stop is realized as voiceless [hut]; in the plural the voicing contrast is maintained [hudən]. There is no voicing alternation in monomorphemic words. Acquisition of morphophonological alternations relies on children knowing the underlying phonological representation of word-final obstruents. Such evidence only becomes apparent with awareness of inflected forms.

This study investigates Dutch 36-month-old children's recognition of monomorphemic and bimorphemic words in a 'looking-while-listening'-paradigm using a Tobii eye-tracker. We tested their sensitivity to mispronunciations of voicing on coronal stops in intervocalic position in monomorphemic (e.g. *pudding*/**putting*, *gieter*/**gieder* 'pudding', 'watering-can') and plural forms (e.g. *hoed-en*/**hoet-en*, *fluit-en*/**fluid-en*).

Our results show (1) a significant effect of morphology, suggesting children decompose complex forms into stem+affix during speech processing, rather than activating unanalyzed forms, while they do not decompose monomorphemic forms; (2) an asymmetry in children's response to mispronunciations of monomorphemic words: they are sensitive to a change from /t/ to [d], but not vice versa, suggesting different representations for voice and voiceless sounds. In plural forms children are not sensitive to mispronunciations in either direction. This suggests some knowledge of alternations in inflectional paradigms which they are not yet able to use correctly.

58 *From one place to the next*

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Many phonological systems treat coronal consonants as special. In acquisition, for instance, Dutch 14- to 24-month-old children typically notice a change from labial to coronal, but not vice versa in word learning and recognition. Possible explanations for this asymmetry are differences in perceptual saliency, frequency, or phonological processes. While the first account implies that this asymmetry is universal, the latter two suggest language-specific patterns. In Dutch, word-initial labial and coronal stops do not differ much in frequency, but phonologically (coronals regularly undergo assimilation and have wider phonotactic distributions). This may lead to a less well-defined coronal category in Dutch.

A first step to disentangle accounts is to test whether similar asymmetries occur in languages with different distribution and/or phonological properties. In Japanese, coronal stops are more frequent than labial stops, and neither undergo place assimilation.

In two separate experiments, we tested Japanese 18-month-old children on their mispronunciation detections in a 'looking-while-listening' paradigm using a Tobii eye-tracker. In Experiment 1, children learned two word-object pairings, both words starting with coronal stops (*taasa/daNna*), and were subsequently tested on their recognition of those words produced either correctly or incorrectly (*paasa/baNna*). In Experiment 2, correct and mispronunciations were reversed.

Looking proportions to target indicate that infants notice a mispronunciation of coronal as labial ($p=.005$), but not of labial as coronal ($p=.327$). This is the reverse pattern from that found in Dutch. These results do not support a universal saliency account, but suggest that asymmetries are due to the language specific phonetic and/or phonological systems.

59 *Does novel word learning depend on phonological skills or on phonological short-term memory? A study with 4-to-5-year-old French speaking children*

Daniela Gabriel Mounir, Lucie Schoenhals, Pascal Zesiger, University of Geneva

The skills that are involved in lexical acquisition in 4-to-6-year-old children have given rise to several hypotheses. Some authors argue that phonological awareness (PA) plays an essential role in the word learning process, whereas others claim that phonological short-term memory (PSTM) is the most important factor. Others yet, suggest that the influence of PA and that of PSTM abilities are both part of an underlying phonological factor. The aim of this study is to assess the role of these skills in predicting the performance of French-speaking school beginners in a novel word learning task. For this purpose, we tested 37 4-to-5-year-old children with several tasks including various PSTM tasks, 2 phonological tasks (discrimination and syllable suppression), as well as a novel word learning task. The results of the stepwise regression analyses show that after controlling for non-verbal intelligence, phonological skills explain a significant part of variance of the novel

word naming score, while PSTM skills explain a significant part of variance of the novel word recognition score. These results suggest that phonological and PSTM skills differentially contribute to lexical development in children aged 4–5 years. These results have practical implications for the assessment and intervention for children with language impairment.

60 Relationship between parent-rated productive vocabulary size and phonological complexity in Swedish infants

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The Swedish Communicative Development Inventory (SECDI) is an important tool to assess infants' productive vocabulary as reported by parents. The instructions SECDI gives to parents and their intuitive judgements naturally favour a strong semantic perspective. This study investigates the relationship between the reported productive vocabulary size and the phonological complexity of infant utterances. Productive vocabulary size was assessed in 17- to 18-month-olds (N=330) and in 20- to 21-month-olds (N=85). It is hypothesised that words with low phonological complexity are more frequently reported by parents and that phonological complexity will increase with infant age. Productive vocabulary size was measured from parental reports submitted via an online version of SECDI. To evaluate phonological complexity, only the part with single words was used – apart from 16 items consisting of lexicalised phrases, family names or multiple alternative utterances that were excluded. Phonological complexity was computed as the sum of the number of syllables (1 to 4), consonant clusters (0 to 4), and fricatives (0 to 3) occurring in each of the remaining 694 words. It ranged from 1 to 9 (low 1-3; high 7-9). Parents reported significantly more words with low phonological complexity. There is a significant interaction between the complexity level of the reported words and infant age. Words with more syllables, consonant clusters or fricatives were less frequent in the parental reports. This shows that data acquired with SECDI is not necessarily limited to a semantic perspective but can even provide information about phonological complexity.

61 Other-repairs in adult-child interactions: insights about adult's representations of children's linguistic development

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In Western cultures, children's language acquisition evolves at the crossroads of their cognitive and linguistic development and of their active participation in dialogues with adult interlocutors who adjust to them. Analyzing adults' repairs of children's productions can give us some insights on their representations of the children's linguistic development.

In the present study, we analyze the evolution of repairs in mother-child interactions in three longitudinal follow-ups from the Paris Corpus (Morgenstern & Parrisé, 2007) on the CHILDES database (MacWhinney, 2000) between the age of 1;6 and 3;0, a period during which we observed important differences between their linguistic developments. In addition, the three children evolve in family environments with different conceptions of childhood. These linguistic and social differences are particularly interesting for the study of the relationship between the development of cognition, language and communication skills in interaction (Ochs 1984). Other-repairs are analysed, and coded according to their linguistic level (phonological, morphosyntactic, semantic, or pragmatic). We concentrate our analyses on the high correlation between the adults' types of repairs and the linguistic tools (phonological system, grammatical markers, diversity of the lexicon, constructions) at the children's disposal. The linguistic level of repairs changes as the children grow up. Repairs on phonology decrease as repairs on morpho-syntax and semantics increase. Pragmatic repairs appear at later stages. The comparison between the three children suggests that the linguistic level targeted by the adults and the quantity of repairs evolve according to two main factors: the children's actual linguistic, cognitive and social skills; the adults' conception of the children's competence.

62 Acquisition of Elliptical Constructions in Child Mandarin

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This study investigates Mandarin-speaking children's knowledge of the parallelism constraint on VP ellipsis (VPE), focusing on the contrast between VPE (1a-b) and the null object construction (NOC) (1c) as follows:

- (1) Xiao-xiong neng ban liang-ge xiangzi. 'Little Bear could move two boxes.'
 a. Xiao-xiang ye shi. 'Little Elephant also [did it].'
 b. Xiao-xiang ye neng. 'Little Elephant could also [VP].'
 c. Xiao-xiang ye ban-le. 'Little Elephant also moved [e].'

The *ye shi* structure in (a) can represent all constituents after the subject of the first conjunct, and is thus taken as a counterpart of VPE like (b). Structures like (c) are treated as NOCs in Xu (2003) (for a different view, see Huang 1988, 1991), and can be free from the parallelism constraint. Using a truth value judgment task, we examine at what age and to what extent children are sensitive to the constraint distinguishing VPE from NOCs. In the story of (1), Little Bear could move two boxes, but Little Elephant could move only one. It is found that younger children (3;5-3;9, mean=3;7) rejected the three constructions 58%, 52% and 55% of the time respectively ($F(2,30)=.049, p>.05$). Older children (3;11-4;6, mean=4;0) rejected them 79%, 90% and 48% of

the time respectively ($F(2,39)=5.529, p<.01$). Children around 4 were sensitive to the parallelism constraint and could distinguish VPE from NOCs. Younger children's responses were insensitive to this constraint. Since negative evidence for learning constraints lacks in the input, the results provide support for the UG-based account of grammar growth (Wexler 1999).

63 *Did she blink the tree or blink around the tree?: The development of sentence frame effects on motion verb interpretation*

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Most English descriptions of motion events express manner in the main verb and path in a prepositional phrase, as in (a) She skips out of the house. However, the same event can be described differently: (b) She exits the house. Naigles and Terrazas (1998) found that English-speaking adults viewing motion events usually interpreted novel motion verbs as referring to the manner of motion; however, given a transitive sentence (b), they interpreted them as path verbs. Our question is: How does this pattern develop?

The current study explores motion verb understanding in English-speaking grade-schoolers aged 6-11. Sixty one children viewed 16 live-action events showing spontaneous volitional motions and heard 8 novel verbs in manner frames ("He's daxing up the stairs"), and 8 in path frames ("He's kradding the garage"). Side-by-side videos then showed the actor performing the same manner but a different path, or performing a different manner along the same path. The accompanying audio asked the child to find the action matching the verb screen (e.g. "Choose kradding.")

Children of all ages chose more manner than path interpretations in the "manner" condition, and this bias increased with age. Children aged 10-11 also chose more path interpretations in the "path" condition. Eye movement data show that children looked quickly to the matching screen when the audio was presented, then shifted quickly to the non-match. Overall, they spent more time looking at the matching screen. English-speaking grade-schoolers thus show sensitivity to both frame and language patterns.

64 *Connective use in stories by children with and without language impairment*

Phyllis Schneider, *University of Alberta*

Speakers may make the connections among ideas more or less explicit through their use of connectives -- words that relate two statements by explicitly specifying their relationship. The use of connectives can facilitate listener comprehension. Connectives mastered earlier (e.g., and) are somewhat less helpful to the listener because they indicate only nonexplicit connections between utterances; later-developing connectives (causals, adversatives) may be more helpful because they indicate more explicit relations. Later-developing connectives are associated with literate language.

Differences in connective use between children with and without language impairment have been reported. Several authors recommend including connective use in clinical assessments of discourse. However, to date there is no comprehensive normative information about connective use; thus it is difficult to say whether connectives would be helpful in identifying impairment.

This study investigated the feasibility of using connectives in narrative assessment. Research questions: Do connectives show a developmental trend from preschool to school ages? Do typically developing children differ from children with language impairments in connective use? Participants were 377 children aged 4-9 who contributed stories for the norming of a narrative assessment instrument. Fifty children per age group were typically developing; the rest had been identified as having language impairment. Each child told stories from pictures. Their stories were transcribed and analysed for presence of a set of connectives expressing explicit meaning relations. There was both an age and language group difference for connective rate. Thus connectives show promise as part of a narrative assessment, particularly for children aged 7-9

65 *This is a question? The influence of non-canonical input and functional factors on the L1-acquisition of polar question constructions*

Ursula Kania, *University of Leipzig*

The present corpus-based study addresses how children acquire polar question constructions within a usage-based framework of language acquisition. In previous research, non-canonical questions (e.g. rising declaratives and reduced questions) were either not considered or analyzed as errors, although such constructions are frequently used in adult discourse. Moreover, the discourse-pragmatic characteristics of the constructions under investigation were largely neglected, although they are closely associated with children's intention-reading skills, which play a crucial role within the usage-based approach.

For the current analysis, a total of 88697 polar question constructions was extracted from the high-density Thomas corpus available on CHILDES. Utterances were coded for form and discourse-pragmatic function. A second coder coded 10% of the utterances for reliability (Cohen's Kappa >0.8).

The results show that

- non-canonical constructions are more frequent in caretaker-child interaction than is commonly acknowledged (overall, about a third of all questions addressed to the child are non-canonical)

- the development of particular constructions in the child's language mirrors the functional rather than the formal frequency of these constructions in the adult input

It is argued that non-canonical (question) constructions form an integral part of the adult target inventory and

that the functional frequency of constructions exerts a considerable influence on language development. It is suggested that these aspects can be integrated into a more comprehensive account of the acquisition of (question) constructions, especially since construction grammar offers the opportunity to investigate formal as well as functional characteristics of all constructions encountered within one coherent framework.

- 66 ***Predictors of 4-year-old Turkish-speaking children's vocabulary and narrative skills***
Sevcan Ayas Koksall, Nazli Baydar, Aylin Kuntay, *Koc University*

Vocabulary competence and narrative skills at preschool years are important contributors to later literacy development and school achievement. This study investigates the factors that may explain the sources of variability in vocabulary and narrative skills of 4-year-old children living in Turkey such as family socioeconomic background, maternal narrative skills, and having a stimulating home environment. 108 children and their mothers from a larger sample of Early Childhood Developmental Ecologies in Turkey (ECDET) study were visited in their home at two time points, when the children were 3 years old and then again when they were 4 years old. The children's receptive vocabulary was assessed when they were 3 and 4. In addition, narratives from mothers and children were collected using a picture book, "Frog, where are you?" (Mayer, 1969). Multiple regression analyses indicated that maternal language stimulation and maternal narrative skills were significant mediators of the relation between family socioeconomic conditions and children's receptive vocabulary. Furthermore, learning materials offered to the children were important predictors of children's receptive language skills. Moreover, family socioeconomic background affected children's narrative skills via maternal narrative skills as reflected in measures of plot complexity. The findings provide evidence for the contribution of distal factors such as family socioeconomic background and proximal factors such as maternal narrative skills, maternal language stimulation, and learning materials available to the children in determining preschool Turkish speaking children's language skills. The variability of both vocabulary and narrative competence in 4-year-old children is explained using an ecological perspective to language development.

- 67 ***A stealer is not a man that steals: formal structure and semantic content when defining words of different morphological categories***
Milagros Albert, Lilianna Tolchinsky, *Universidad de Barcelona*

Word definition has been widely used to assess lexical development, intellectual functioning and language competence of children. This ability is highly correlated with children's reading and school achievement. Claims on definition well-formedness (presence of a superordinate term and a relative clause) and on the kind of features that shows the level of conceptual-semantic organization (e.g., functional, definitional) are mainly based on definitions of nouns. Our goal is to examine the extent to which syntactic and semantic characteristics of the defining statement depend on the morphological category of the definiendum. Two hundred and fourteen native Spanish speakers, aged 6 to 7 years, participated in the study. They were asked to define 20 nouns, 7 verbs and 5 adjectives of increasing difficulty. This configuration reflects the distribution of morphological categories on lexical databases. Results show that the morphological category of the definiendum significantly affects the variety of syntactic constructions, the level of syntactic complexity and the semantic content of a definition. Definition of nouns showed greater variety and complexity than definition of adjectives and verbs. Likewise children's definitions for nouns contained more superordinate terms and definitional features than their definitions for adjectives and verbs (e.g., for nail "device made of iron that has little circles"; for brave "It is a courageous man" and for to isolate "island"). Our findings suggest avoiding the use of formal analysis of definitions which are based only on structures containing a relative clause and advocate for the need of including different morphological categories in evaluating children's definitional abilities.

- 68 ***The acquisition of the passive in European Portuguese***
Antónia Estrela, *Universidade Nova de Lisboa*

The actual typology of the Portuguese passive refers to syntactic, adjectival, pronominal and infinitival passive. The restrictions on syntactic passive are not described exhaustively. Are they due to the nature of the subject, the semantic/ aspectual nature of the verb or verbal polysemy aspects? The thematic and argumental nature of the passive constituents is also a proficuous domain of research. The most recent research has shown that the internal complexity of passives may compromise their production and comprehension. Some linguists argue that late development of the verbal passives is due to the maturation of argumental chains; others mention a major difference in the comprehension and production of verbal passives whether the by phrase is agent or experiencer (movement wouldn't be the problem, but the transference of thematic roles). We tested the comprehension of verbal BE passives with and without by-phrase with 72 children from 3 to 5 years old, through Picture Selection Task. Our results point to a comprehension of these passives at 4 years old (75% of correctness). There is no relevant difference between the comprehension of passives with and without by-phrase. At 3, children behave at chance level with both the constructions. We conclude that argumental chains are not problematic for 4 year old children. As 3 year old behave at

chance level in sentences with and without by-phrase, more experiences are needed to understand the source of this difficulty.

- 69 **Early interpretation of stress and pitch contrasts in European Portuguese**
Sónia Frota, Cátia Severino, Susana Correia, *Universidade de Lisboa*

The acquisition of phonology requires learning to interpret phonetic variation. Cross-linguistically, prosodic properties may vary both in their acoustic correlates and the phonological domains they signal (e.g. stress and pitch may signal word or phrasal contrasts; pitch may be a cue to stress). Recent research has shown that English infants at 1;00 use lexical stress in word learning and at 2;00 they are able to disregard pitch variation as inherent to novel words. Stress in European Portuguese (EP) is a word-level property and pitch signals utterance meanings, like in English, but pitch accents are not a cue to stress. Pitch contrasts are produced early in EP (1;05), whereas level stress and WS forms predominate in early word production. In this study, we examined whether EP-speaking children were sensitive to the penult/final stress contrast and the declarative/interrogative pitch contrast in a word learning task. Using an eyegaze-based procedure, one of two word forms with contrasting stress or intonation (MIlu and miLU with declarative H+L*L% or interrogative H+L*LH%) was associated to an object, whereas a different object was introduced but remained unlabeled. In the test phase, both trained and stress/pitch deviant pronunciations were presented, and looking-time was measured with a SMI eye-tracker. Three groups of subjects aged 1;00, 2;00 and 3;00 participate in the experiment. Preliminary results show that 1 year-olds are sensitive to both stress and pitch contrasts, but sensitivity to pitch decreases with age whereas sensitivity to stress remains, suggesting that children constrain their hypotheses about lexical prosody around 2;00.

- 70 **Early lexical and morphological development assessed by using the Turkish Communicative Development Inventory: A large sample study**

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We will introduce the characteristics and the first set of results obtained from the adaptation of the MacArthur-Bates CDI-I and CDI-II to Turkish, the Turkish Communicative Development Inventory-I (TCDI-1) for 8 to 16 months and TCDI-2 for 16 to 36 months. In the adaptation, vocabulary items were extracted from 5 different child-adult interaction corpora in Turkish, using the MB-CDI as a guide. The grammar section included nominal and verbal morphology and examples of complex constructions. The forms were finalized by pilot testing of 150 mothers of various educational backgrounds. A clustered stratified sampling procedure was used to recruit mothers of three different educational backgrounds from 4 major cities in Turkey. Trained psychology students interviewed the mothers to fill out the checklists. A total of 1,107 mothers responded to TCDI I; 2,422 responded to TCDI II. A demographic questionnaire was filled out to determine family living and child-care arrangements, language(s) spoken at home, and child health issues. A shortened Turkish adaptation of the HOME scales was implemented to determine aspects of the child's language learning environment. The results revealed age- and gender-related trends in all categories of lexical development, similar to trends in other languages. More analyses are being conducted to determine the differences of vocabulary composition of Turkish children from CDI data collected in languages such as American-English and Danish, using the CLEX databases. The order of acquisition of nominal and verbal morphemes obtained from past studies of naturalistic samples was confirmed in this large sample of parental reports.

- 71 **Iconicity in Lexical Acquisition: How Do Children Understand the Sound-Symbolic Words varying in Degree of Iconicity?**

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A number of studies have shown children are sensitive to sound-symbolism (non-arbitrary correspondence between the sound and meaning). Sound-symbolic words abound in productions at early stages of lexical development. Investigation of conventional and non-conventional sound-symbolic words may serve as a window to understand the role of iconicity in language acquisition. Japanese have tripartite classification of mimetics, reflecting different degrees of direct resemblance between sound and meaning: phonomimes (expressing sounds), phenomimes (expressing manners of actions) and psychomimes (expressing emotions). Phonomimes is considered most iconic because they directly imitate nonlinguistic sounds. Psychomimes should be less iconic, as there is no actual sound involved in emotions. We investigated whether the level of iconicity is reflected in children's understanding of mimetics. Eighteen Japanese mimetics, 6 each of phonomimes, phenomimes and psychomimes were converted to a novel mimetics maintaining the original sound-symbolism. Two animation videos were created, one symbolically-matching and the other non-matching to the novel mimetic and were presented to children between 37 to 71 month-old. In each pair, children were asked to select the video depicted by the novel mimetics. Children's ability to match the word and the referent varied as a function of the level of development and the mimetic type. They selected the matching video regardless of their age for the phonomimes, but their success to detect the correct video was significantly related to the

month-age for the psychomimes. These results suggest children bootstrap themselves using different levels of iconicity to climb the ladder into the abstract symbolic system of language.

72 *The contribution of grammatical and discourse-pragmatic effects to the acquisition of referential choice in child English*

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Children acquiring a first language omit arguments more frequently than their adult counterparts. The grammatical approach predicts that subjects will be omitted more frequently in the context of non-finite verbs, while the discourse-pragmatic approach predicts that subjects are more likely to be omitted when referents are accessible. This study examines the connection between referential form, verb finiteness, and discourse pragmatics in order to provide a more complete picture of language development.

Four monolingual English-speaking children were videotaped in spontaneous interactions with their caregivers. From this data, a total of 1938 third person subjects were analyzed at two age ranges (T1: 2;0 to 2;7; T2: 3;0 to 3;1). All subjects were coded for discourse-pragmatic information and grammatical form. All verbs were coded for tense and agreement.

Findings show that the children omit more subjects in the context of non-finite verbs (T1: 48% and T2: 25%) than in the context of finite verbs (T1: 12% and T2: 1%) as predicted by the grammatical account. However, when each feature was analyzed for accessibility by verb finiteness, an accessible value for three features (i.e., animacy, contextual disambiguation, and linguistic disambiguation) showed a significant correlation with non-finite verbal contexts, suggesting a connection between these features, verb finiteness, and low information referents. Moreover, when four or more discourse-pragmatic features were inaccessible, subjects were more likely to be realized overtly in finite and non-finite contexts. Findings suggest that a fine-tuned analysis combining aspects of grammatical and discourse-pragmatic accounts could more accurately explain the acquisition of referential choice.

LANGUAGE DEVELOPMENT IN ATYPICAL POPULATIONS

73 *Creative errors in spontaneous speech in Japanese specific language impairment: a case study*

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One of the research strategies which might identify and explain the linguistic properties of Specific Language Impairment (SLI) would be to investigate SLI in a variety of languages. However, there have only been a few studies on the linguistic characteristics of SLI in Japanese. The purpose of this study was to investigate the characteristics of SLI in Japanese by analyzing the errors in spontaneous speech. The participant was a female Japanese child diagnosed as having SLI, according to the criteria of Tallal, Townsend, Curtiss and Wulfeck (1991). Her spontaneous speech in conversation with her tutor was tape-recorded at her home once a week. The recording session was from 15 to 30 minutes. Her linguistic errors from the age of 11 to 13 were transcribed and analyzed. The total number of errors was 152, 112 and 140 at ages 11, 12 and 13, respectively. As expected, many types of grammatical errors were observed. The most interesting finding was that creative errors were observed frequently at every age (e.g., compound verbs which do not exist in Japanese, curious verb phrases and various types of expressions which are never used by Japanese speakers). The percentages of creative errors were 41.4% (63/152) at age 11, 36.6% (41/112) at age 12, and 26.4% (37/140) at age 13. These results suggest that creative errors are one of the characteristics of SLI in Japanese and are produced when such children cannot implicitly express what they would like to say.

74 *(Re) telling a story: the role of auditory attention and memory in Dutch children with SLI*

Iris Duinmeijer, Annette Scheper, Koninklijke Kentalis

Narrative tasks have proven to be ecologically valid in detecting language disorders, measuring communicative skills and predicting future academic performance. However, research into the comparability of different narrative tasks has shown that outcomes are dependent on the type of task that is used. Although many of the studies detecting task differences mention the fact that tasks place a different demand upon cognitive abilities like attention and memory, few studies have made a task comparison taking into account the cognitive abilities of influence. Such a comparison might be urgently needed for children with SLI, who are characterized by language problems, but often have problems in the cognitive domain as well. In the current study, a task comparison was performed between a story retelling task (bus story) and a story generation task (frog story) in both a group of children with SLI (n=34) and an age-matched typically developing group (n=38). Apart from the two narrative tasks, auditory attention (TEA-Ch) and verbal short term memory (WISC digit span, Dutch version of the CVLT-C) were measured. Children with SLI scored significantly worse than the control group on several narrative measures and attention and memory scores. Furthermore, the results of the SLI group show that on the level of plot structure, the story generation task correlated with auditory attention, while the story retelling task correlated with verbal short term memory. Children with SLI are thus having

problems with narratives in general, but their performance is dependent on the specific elicitation task used for research or diagnostics.

75 *Taking into account mutual intentions in natural setting: A comparative study of the negotiation of oppositional episodes in autistic and typical children*

Marie-Hélène Plumet¹, Edy Veneziano², Solenne Pingault³, ¹Université Paris Descartes-INSERM, ²Université Paris Descartes-CNRS, ³CH Charles Perrons

Communicative dysfunctions in autism are often attributed to impaired Theory of Mind (ToM). However, very few studies investigate autistic children's communicative engagements in ecologically valid and socially meaningful contexts. This paper focuses on oppositional episodes occurring in everyday family life. These episodes, clearly identifiable and very frequent in familiar settings, are particularly demanding in communicative adaptation. Within a socio-cognitive and pragmatic approach to communication, we argue that the way children and their partners negotiate oppositional episodes, and in particular how they provide and deal with justifications, reveals children's level of 'ToM in action'. The study compares 10 children with autism (5 to 11 yrs) to 15 typically developing children (2 to 8 yrs), 10 matched on verbal age and 5 younger. All children were videotaped at home during spontaneous interactions with familiar partners. The data analyzed consist in an hour of interaction per family, filmed during meal and play contexts. All naturally-occurring oppositional episodes (protests, refusals and denials) were coded exhaustively according to well defined criteria (inter-rater reliability: .85), noting in particular justifications and manners of insistence or acceptance, until the explicit or implicit resolution of the episode. On this basis, four specific measures of communicative functioning were elaborated. Results show differences but also resemblances among groups and verbal-age levels. In particular, in families with a verbally advanced autistic child, both children's and partners' justifications are less persuasive than in verbally-matched control families. The measures of pragmatic functioning are examined for their relevance to communication and ToM's understanding by autistic children.

76 *Inferential abilities of kindergarten children with specific language impairment*

Pamela Filiatrault-Veilleux, Geneviève Tarte, Chantal Desmarais, Université Laval

There is some evidence that preschool children with SLI have difficulty making emotion inferences. In this study, we extend information on the topic of inferential abilities in young children with SLI children by examining three types of inferences, i.e. world knowledge, elaborative, and evaluative inferences. METHODS: Participants are 50 children assigned to three groups: 13 children with SLI (mean age 5; 8), and two groups of typically developing children, i.e. (a) 21 age-matched (mean age: 5; 5) and (b) 16 language-matched (mean age 4; 3). The children completed an experimental task consisting of 20 questions designed to measure the three types of inferences in the context of dialogic reading task. RESULTS: Comparisons carried out with ANOVA revealed that, for the 20 questions, the SLI children obtained significantly lower scores than in the age-matched comparison group and comparable scores to the language-matched group. Hence, when comparing the two typically developing groups, inferential abilities of the 4 year old group were significantly below that of the kindergarten children, suggesting that it is possible to measure a gradual acquisition of inferential abilities. Results for world knowledge and elaborative inferences also revealed significant differences between groups that follow the same pattern as for the 20 questions. However, a different pattern emerged for evaluative inferences where the 4 year olds obtain better results than the SLI children. CONCLUSION: This study contributes to the understanding of the inferential comprehension difficulties of kindergarten children with SLI. In light of these results, some elements to include in a clinical evaluation of these children are suggested.

77 *Morpheme in noise perception in cochlear-implemented and language-impaired children*

Annemiek Hammer¹, Martine Coene², ¹Vrije Universiteit, Amsterdam, ²The Eargroup, Antwerp-Deurne

Background: Grammatical morphemes are difficult to acquire for cochlear-implemented (CI) and language-impaired (LI) children. We hypothesize that for CI children morpheme perception, and subsequently acquisition, is especially difficult when morphemes are embedded in noise. We label this the Morpheme-In-Noise perception Deficit (MIND) hypothesis. Due to their hearing loss, CI children are not able to use short temporal 'release of masking' to detect speech cues, whereas LI children are. This study investigates the perception of morphemes in noise in CI and LI children.

Method: We used a forced-choice picture pointing paradigm to test the perception of the Dutch noun plural (e.g. kippen chickens) and diminutive (e.g. kipje). The target morphemes were presented with the singular form and a distracter, phonemically matched to the target. The morphemes were presented in fluctuating and stationary noise. The study included 15 Typically Developing (TD) children, 7 CI and 7 LI children aged between 4 and 7 years.

Results: The CI and LI children were less accurate in morpheme perception than their TD peers. TD and LI children showed better performance in fluctuating noise as compared to stationary noise. This was not observed for the CI children. Significant group differences were found on fluctuating noise.

Conclusion: This small scale study shows that CI children have more difficulties perceiving morphemes in noise as compared to TD and LI children. These results support the MIND hypothesis. As everyday speech is

embedded in noisy environments, this could explain the difficulties in grammatical morpheme acquisition in cochlear implanted children.

- 78 ***Use of prepositions by monolingual Spanish-speaking children with and without Language Impairment***
Alejandra Auza, *Universidad Autónoma de Querétaro*

Different studies regarding difficulties in Spanish-speaking children with Language Impairment (LI) have reported a non-conventional use of prepositions. A reduced proportion of correct responses as compared to their typical language developing (TLD) peers has been reported (Restrepo & Kruth, 2000; Sanz-Torrent et al, 2007), although prepositions are difficult for typical children too, given the diversity in forms and functions within the category. The aim of the study was to analyze and compare the use of prepositions in three groups of children between 4;0 and 8;0 years of age in a story retell task. The hypothesis was that all groups would generate errors, but the amount of errors would differentiate children with LI from children with TLD. The story was told individually to each child, based on a storybook with pictures. The child was asked to retell the story, which was audio-taped for reliability. Each sample was transcribed with the SALT system. As expected, results showed that all children committed mostly omissions, but substitutions and commissions were observed too. Children with LI generated a significantly bigger amount of errors as compared to their peers. Interestingly, polysemic prepositions were the most difficult although errors were found too, in transparent prepositions. The discussion is centered on the semantic and relational characteristics of prepositions and how this multifaceted category is vulnerable to errors in children with and without LI, especially for the former group. This work contributes to the understanding of the acquisition of prepositions in monolingual Spanish-speaking children.

- 79 ***Sentence production profiles in children with SLI: Effects of task choice on production of verb argument structure***
Carol-Anne Murphy, *University of Limerick*

A group of children with SLI (N=18; C.A. 6; 05-10; 02) were assessed to differentiate among profiles and patterns of sentence production ability with follow-up assessment to determine stability. The assessment battery included a task to explore sentence generation (from verbs covering a range of semantic and syntactic classes). Narrative data (picture-supported Cinderella) was obtained from each child. Scores for argument structure complexity (total arguments & adjuncts by number of utterances including thematic embedding) and argument omissions were calculated for sentence generation and narrative. Instances of incorrect argument structure (thematic role assignment) were noted. Results: For the majority of subjects higher complexity scores were obtained on the narrative on both occasions. The pattern for argument omissions was inconsistent. Children who produced examples of incorrect argument structure were more likely to do so in the sentence generation task. A post-hoc analysis of verb usage comparing sentence level versus narrative production was undertaken. The results indicated that the majority of verbs used by all subjects in the narrative were high frequency. This contrasted to the sentence generation task, where high and low frequency verbs were required and where a greater range of verb classes was represented than in the narrative. While the narrative task facilitated assessment of ability to produce sentences of greater complexity the sentence generation task was a better probe of verb specific difficulties. Assessment of sentence production in children with SLI should incorporate a range of tasks including probes of specific verbs to differentially diagnose strengths and weaknesses

- 80 ***Patterns of gaze to speaking faces in children with autism spectrum disorders***
Julia Irwin, Lawrence Brancazio, Lauren Tornatore, Jessica Ross, *Haskins Laboratories*

Using eye tracking methodology, gaze to a speaking face was compared in a group of children with ASD and children and adults with typical development (TD). Gaze to the face was observed under four different listening conditions: audiovisual (AV) speech in clear auditory listening conditions, AV speech in auditory noise, visual only (lipread) speech and AV non-speech. The children with ASD looked less to the face of the speaker and looked less to the speaker's mouth than the TD controls. Further, the children with ASD showed a more dispersed, less consistent pattern of gaze at the face of the speaker. Notably, no significant group differences were observed in the non-speech control condition, indicating that the atypical gaze patterns children with ASD showed were specific to the speaking face. All participants gazed more to the speaker's mouth as the auditory signal became more difficult to hear (AV clear < AV noise < lipreading). Because the children with ASD, like the TD controls, increased gaze to crucial articulatory information as the auditory signal became more difficult to hear suggests intervention to train gaze to the mouth of a speaker may provide greater access to visible articulatory information in children with ASD.

- 81 ***Comparing specific profiles of phonological and morphological development in Down syndrome***
 Eliseo Diez-Itza¹, Manuela Miranda¹, Aranzazu Antón¹, Verónica Martínez², ¹University of Oviedo, ²University of Barcelona

The framework of this research is the specificity paradigm based on the study of atypical language development in a variety of syndromes. The main goal was to explore the relationships between the specific profiles showed by a group of Spanish-speaking Down syndrome subjects in the levels of phonology and morphology.

The method is based on the register, transcription and analysis of linguistic corpus in the framework of the CHILDES Project. The corpus was obtained from 12 subjects divided in three age groups (children, adolescents, and adults). Two speech samples of circa 1500 words were elicited from each subject within a year interval in natural settings of spontaneous conversation with the researcher. The samples were analysed according to a system of categories of phonological and morphological processes. The synchronic profiles were explored using the methods of cluster analysis, and differences between groups were statistically contrasted in order to assess cross-sectional changes in the profiles.

Results show a higher proportion of processes in the level of phonological production, and a marked pattern of persisting processes at the syllabic level. In parallel, Down syndrome subjects show specific difficulties and a strong trend to omit unstressed words, such as articles, conjunctions and prepositions, together with a better preserved and developing competence in the use of categories, such as verbs, that are nuclear to syntactic construction.

The comparison of phonological and morphological profiles suggests that grammatical impairment, considered highly specific of Down syndrome, may be strongly related to more basic prosodic deficits in phonological representations

- 82 ***Functional categories in the grammar-pragmatic interface: an account of learning disability and Pragmatic Language Impairment***
 Jacqueline Rodrigues Longchamps, Leticia M. Sicuro Corrêa, *Pontifical Catholic University of Rio de Janeiro*

This paper aims at providing evidence for the role of functional categories and relevance in the characterization of learning disability and in the identification of Pragmatic Language Impairment. Both deficits have been reported to present difficulties related to inferences and integration between new/given information in language comprehension – evidence of difficulties at the grammar-pragmatic interface. Functional categories of the lexicon codify intentional information that is relevant for reference and enable inferences to be made concerning the speaker's point of view. Relevance Theory provides the means of relating pragmatic factors with the information provided by functional categories in language production and comprehension. Two experiments conducted with two groups aged 7-11 (learning disabled/control) are reported. Experiment 1 aimed at verifying the extent to which children rely on definiteness and aspectual contrasts in the elicited production of short narratives in two conditions: picture-story telling and recall. The dependent variables were the number of adequately selected morphological markers of definiteness and aspect. Experiment 2 aimed at characterizing the cost of inferential processing based on grammatical contrasts of definiteness, aspect and mood in comprehension. The number of prompts required for target inferences to be made was the dependent variable. Both "group" and "type of elicitation" gave rise to significant effects in Experiment 1. In Experiment 2, the number of prompts proved to be a reliable indicator of children's reliance on grammatical markers as cues to pragmatically relevant inferences. A criterion for identifying pragmatic specific language impairment in the context of overall learning disability is suggested.

- 83 ***Acoustic characteristics of maternal speech to young children with typical development and young children with autism***
 Heidi Flores, Jacob Burack, Aparna Nadig, *McGill University*

This study compares acoustic properties of maternal speech to children with autism spectrum disorder (ASD) or typical development (TD). It involves 20 2- to 6-year-olds with ASD and 30 1- to 3-year-olds with TD, matched on language ability, and their mothers. We examine the extent of child-directed (CD) speech modification produced by individual mothers, relative to their adult-directed (AD) speech. CD speech samples were collected in a 10-minute storybook session where mothers read to their child. AD speech samples were collected via a 5-minute interview between experimenter and mother using structured questions about the storybooks. Words produced in both CD and AD contexts were extracted and analysed in PRAAT for mean pitch, pitch range, and duration. Acoustic properties were expected to be higher/longer for CD relative to AD speech. Preliminary analyses (ASD=4; TD=15) show that mean pitch and pitch range are significantly higher for CD compared with AD speech, but only for mothers of TD children as a group. Notable patterns of individual differences were observed within both groups of mothers. Eight mothers in the TD group and 2 in the ASD group consistently increased pitch in CD relative to AD speech. Seven mothers in the TD group increased their pitch range whereas mothers in the ASD group did not. Data collection is ongoing and results of the acoustic analysis on CD speech modification by each mother will be compared with her child's vocabulary development over a 1 year period. Greater vocabulary gains are predicted when mothers use CD speech.

- 84 ***The predictive value of the development of early vocalizations in very-low-birth-weight children***
 Suvi Stolt¹, Liisa Lehtonen², Leena Haataja², Helena Lapinleimu², PIPARI Study Group², ¹*University of Turku,*
²*Turku University Hospital*
- Background and aims: There is a higher risk for language problems in very low birth weight (VLBW, birth weight ≤ 1500 g and/or born < 32 gestational weeks) children than in full-term children, but there are only a few studies that provide information on early language development in this group. The aim of the present study was to get information of the early vocalization development during the first year, and to analyse the predictive value of this development to the language skills at 2;0 in VLBW children.
 Methods: The early vocalization development of 32 VLBW children and 35 full-term controls was followed using the validated maternal rating method, The Checklist of Early Vocalization. At 2;0, the language skills of the children were measured using the Reynell Developmental Language Scales and the Finnish version of the Communicative Development Inventory.
 Results and conclusions: There was no significant difference between the groups in the ages when the children acquired different vocalization subtypes, or in the rate of early vocalization development, if the corrected age was used for VLBW children. The rate of early vocalization development correlated significantly with all of the language variables measured at 2;0 in VLBW children, but not in the control group. The findings suggested that the VLBW children as a group acquire different vocalization subtypes according to the parallel schedule as full-term children. Furthermore, the results proposed that the very slow vocalization development predicts later, weak language performance in VLBW children
- 85 ***Occlusive sound perception in children with hearing aid and cochlear implant***
 Eliane Delgado-Pinheiro, Larissa Berti, Fernanda Antônio, *Universidade Estadual Paulista*
- Words with occlusive sounds represent a group with low degree of difficulty for speech perception. However for deaf children is important to stimulate the recognition of this sounds. The aim of this study is to verify the ability of deaf children to recognize words with occlusive sounds. This experiment was conducted with 19 children: ten normal hearing; four with profound hearing loss using cochlear implant and four with profound hearing loss using hearing aid. The acoustic stimulus was presented by children and they needed to choose the correct picture on the computer. The percentage of correct answer was 91, 94.1 and 74.1, respectively for normal hearing, hearing aid and cochlear implant groups. It was found differences between normal hearing versus cochlear group (p<0.001) and hearing aid versus cochlear group (p<0.001), but no differences were found among normal hearing versus hearing aid (p>0.05). The worst performance of cochlear implant group was probably because these children were later submitted to the cochlear implant surgery. However, these children are able to distinguish words with occlusive sounds. Moreover it was verified that the contrast of greater difficulty in the identification task for normal hearing children were /p/ x /d/, /p/ x /t/ and /t/ x /d/ and for implant cochlear group: /g/ x /b/, /d/ x /t/, and /k/ x /t/. The use of hearing aids and cochlear implant associated with speech and language therapy can help these children to perform perceptual identification of the speech sounds almost as well as normal hearing children.
- 86 ***The contribution of grammatical and discourse-pragmatic effects to the acquisition of referential choice in child English***
 Mary Hughes¹, Shanley Allen², *Boston University,* ²*University of Kaiserslautern*
- Children acquiring a first language omit arguments more frequently than their adult counterparts. The grammatical approach predicts that subjects will be omitted more frequently in the context of non-finite verbs, while the discourse-pragmatic approach predicts that subjects are more likely to be omitted when referents are accessible. This study examines the connection between referential form, verb finiteness, and discourse pragmatics in order to provide a more complete picture of language development.
 Four monolingual English-speaking children were videotaped in spontaneous interactions with their caregivers. From this data, a total of 1938 third person subjects were analyzed at two age ranges (T1: 2;0 to 2;7; T2: 3;0 to 3;1). All subjects were coded for discourse-pragmatic information and grammatical form. All verbs were coded for tense and agreement.
 Findings show that the children omit more subjects in the context of non-finite verbs (T1: 48% and T2: 25%) than in the context of finite verbs (T1: 12% and T2: 1%) as predicted by the grammatical account. However, when each feature was analyzed for accessibility by verb finiteness, an accessible value for three features (i.e., animacy, contextual disambiguation, and linguistic disambiguation) showed a significant correlation with non-finite verbal contexts, suggesting a connection between these features, verb finiteness, and low information referents. Moreover, when four or more discourse-pragmatic features were inaccessible, subjects were more likely to be realized overtly in finite and non-finite contexts. Findings suggest that a fine-tuned analysis combining aspects of grammatical and discourse-pragmatic accounts could more accurately explain the acquisition of referential choice

LITERACY AND LANGUAGE

- 87 ***Creative Writing Strategies of Young Children: Evidence from a Study of Chinese Emergent Writing***
Si Chen, *East China Normal University*

The ways in which learning graphical representations can encourage the development of creativities in Chinese young children remain to be fully explored. Previous research on children's writing focused on children's symbolization with syllabic languages, providing little information regarding Chinese young children's symbolization and creative writing strategies in writing with a logo language. This study explores how Chinese children, as active learners and inventive thinkers, could develop their writing skills from simple drawing and scribbling to emergent writing skills, to commanding the Chinese writing system finally. The creative strategies children used in writing Chinese characters are also focused.

This study investigated children's emergent writing by examining qualitatively how children express their meanings through symbols and representations including "proper" Chinese characters and drawings. The subjects of the study are 105 writing samples collected from 32 Chinese kindergarten children aged from five to six. The data reveals that children can use creative writing skills to communicate when they meet with characters they were not able to write. Based on the phonological and orthographic features, children can use (1) pictures of objects or (2) pictures of objects which have the same pronunciation of the target characters, and (3) alternative character which has the same pronunciation. The different strategies they use reflect that in this creative writing process, children are not only familiar with Chinese language but also open their minds and brought all their innovative thinking skills into play.

- 88 ***The development of complex text construction in Icelandic: Vocabulary and syntactic density in written compared to spoken narratives and expository texts***
Hrafnhildur Ragnarsdóttir, *University of Iceland*

In a study of the development of text construction proficiency from middle childhood to adulthood we compared the vocabulary, syntactic density and length of two different GENRES (narratives and expositories) in written and spoken MODALITIES in four 20-subject AGE-groups: 10-, 13-, 16-year-olds and adults. All participants received the same elicitation material and produced four texts each: written and spoken, narratives and expositories. As hypothesized, a three-way ANOVA (MODALITY x GENRE x AGE) revealed significantly higher scores in written texts on all measures of vocabulary (VocD, lexical density, WdLen) in all age-groups, and shorter and semantically and syntactically denser expositories than narratives. A GENRE x MODALITY interaction indicated greater syntactic complexity of written compared to oral expositories. AGE x MODALITY interaction on vocabulary measures confirmed that written texts are the privileged arena for long-term vocabulary development. We interpret these results as reflecting different processing constraints of written vs/spoken texts and greater cognitive load of expositories vs/narratives. Age had significant main effects on all indicators of text quality. Post hoc tests yielded three subgroups on most measures: 1) 10-year-olds, 2) 13- and 16-year-olds, 3) Adults. Contrary to our prediction and results from parallel studies in other languages, there was no indication of a turning point in the development of complex text construction between ages 13 and 16 in the Icelandic sample. One possible explanation could be a curricular emphasis in the final years of obligatory education in Iceland overemphasizing lower-level aspects of writing and composition in preparation for a National test in 10th grade.

NEUROCOGNITIVE CORRELATES

- 89* ***Event-related gaze analysis in infant eye-tracking studies***
Ellen Marklund, *Stockholm University*

Eye-tracking is useful in behavioural first language acquisition studies, since it makes it possible to interpret responses of pre-verbal infants. Although data obtained from a high-resolution eye-tracking system offers a range of possible analyses, total looking time towards different areas of the screen is still the most commonly used measurement in infant studies. The present study investigates the possibilities of event-related gaze analysis in an attempt to better make use of the advancing technology. Infants' ability to match intensity across modalities was tested using both traditional visual preference analysis and event-related gaze analysis. Total looking time towards target (visual size and auditory intensity match) versus non-target was measured, and it was established that infants (n=58, 7.3 months, range 4 to 10 months) look significantly longer to target. The visual stimuli were then organized horizontally on the screen according to size, and auditory stimuli with different intensity levels were presented to the infants. The average horizontal gaze shift (normalized for initial position on the screen) at auditory stimuli onset was plotted over time. As predicted, infants (n=25, mean age

* *Student Poster Competition*

7.9 months, range 7 to 9 months) shift their gaze towards the visual stimuli matching the auditory stimuli in magnitude, although the results are only significant during very short intervals after stimuli onset. In conclusion, the event-related gaze analysis method seems promising since the results are in line with those from the traditional preferential looking paradigm in the present study, suggesting that further fine-tuning of the analysis method is worth pursuing

SPEECH

90 *Phonetic and Phonological Characteristics of Childhood Apraxia of Speech in French-Speaking Preschool Aged Children*

Line Charron¹, Ismaël Mériouma-Carron², Marie Gosselin², Andrea A.N. MacLeod², ¹*Institut de Réadaptation de Déficiences Physiques de Québec*, ²*Université Laval*

The characteristics of Childhood Apraxia of Speech (CAS) have yet to be identified for French speaking children. Generalising from English data is problematic due to important differences between the English and French phonetic and phonological systems (e.g., more frequent multisyllabic words in French than English; absence of lexical stress in French). The goal of the present study is to provide a description of the phonetic and phonological characteristics of CAS in children acquiring French as their first language.

Ten children with CAS participated in the present study. Children participated a picture naming task that targeted all French phonemes in word initial, medial and final position. The children's productions were phonetically transcribed. These transcriptions were used to identify the Phonological Characteristics (i.e., phoneme inventory, consonant accuracy, a description of error patterns, and a measure of syllable accuracy). An acoustic analysis was conducted on a subset of stop consonants in word initial position to provide a description of the Phonetic Characteristics of their speech.

Results reveal that more complex words are produced with more errors than simpler words. The higher rate of errors in complex words may be due to the complex motor planning required to produce the sequence of phonemes and co-articulation between these phonemes. In addition, French children with CAS produce more voicing errors than what has been reported for English.

A better understanding of the characteristics of CAS in French will strengthen our understanding of this disorder from a cross linguistic perspective. In addition, these results will contribute to improving the assessment of children with CAS in speech-language pathology.

91 *Does speaker exposure enhance infants' word recognition?*

Marieke van Heugten, Elizabeth Johnson, *University of Toronto*

Between-speaker variation in the acoustic realization of words due to factors such as speaker gender and dialect have been claimed to seriously impede infants' word recognition. Here, we assess this alleged difficulty and examine whether prior exposure to a speaker's voice may allow infants to adapt to that speaker, thereby enabling them to better deal with acoustic variability during word recognition. Canadian-English-learning 15-month-olds were tested using the Headturn Preference Procedure. Infants listened to lists of words generally known at 11 months of age (e.g., daddy, bottle) and lists of words that are largely unfamiliar to 11-month-olds (e.g., mitty, shammy). These word lists were either presented in their own variant of English (i.e. Canadian English) or in a foreign accent (i.e. Australian English). Comparable to previous studies, infants presented with the words in their own dialect preferred to listen to familiar over unfamiliar words. Preliminary results of infants tested on Australian English, in contrast, did not display this listening pattern, suggesting that without prior access to speaker characteristics, word recognition is limited to infants' own dialect. In a follow-up experiment, infants will listen to the same Australian-accented stimuli; however, they will first be exposed to a recorded version of 'the very hungry caterpillar', read by the same Australian speaker. If this prior exposure to a speaker allows infants to later recognize words, this would indicate that infants, similar to adults, are able to accommodate unfamiliar speakers and that they would be better equipped to deal with indexical information than previously thought.

POSTER SESSION

16:45 – 18:30
IASCL Central - Foyer
Poster Session 4

BILINGUAL FIRST LANGUAGE ACQUISITION

01 *Anaphoric reference of null and overt subject pronouns in the acquisition of Basque*

Maialen Iraola Azpiroz, *Universität Konstanz*

Studies in L1 acquisition overwhelmingly conclude that very young children know the morphosyntactic properties of S(subjects). No such consensus exists when it comes to discourse-pragmatic rules. Bilinguals acquiring a null-subject language (NSL) together with English showed overproduction of overt Ss in the NSL as a result of crosslinguistic influence from English (see Serratrice et al. on Italian-English bilinguals 2004). Among the different factors that contribute to this interface vulnerability, processing strategies such as Carminati's P(osition) of A(ntecedent)t S(trategy) (2002) have been proposed. In Italian, null pronouns show a strong bias towards the antecedent in [Spec IP], while overt pronouns tend to refer to an antecedent lower in the sentence. Drawing on Carminati's theory, this study presents interpretations of overt and null third person S pronouns in a Picture Selection Task by 21 native Basque children (6-7 years) and 10 adults. In contrast to NSs, which are coreferent with the S in children and adults, overt Ss are not interpreted equally: for adults, the overt S does not corefer with the S, confirming the PAS, whereas for children, in line with Sheldon's Parallel Function Strategy (1974) it does. These patterns in a situation of contact between two NSLs (Basque and Spanish) replicate results of previous studies and call into question the crosslinguistic interference of the non-NSL as the recurrent explanation for the target-deviant pattern. The asymmetry found between NSs (target-like) vs. overt Ss' interpretation (non-target-like) in children's data are discussed in terms of asynchronous development between narrow syntax and syntax-pragmatics interface.

02 *Interlinguistic influence on the distribution of null subjects in child bilingual English*

Anahi Alba de la Fuente¹, Raquel Fernández Fuertes², Juana M. Licerias¹, ¹*University of Ottawa*, ²*Universidad de Valladolid*

Research on bilingual L1 acquisition has recently discussed the different vulnerable areas of possible crosslinguistic influence (Hulk & Müller 2000, Paradis & Navarro 2003, among others). Along these lines, the goal of this study is to characterize the influence from Spanish into English in terms of the overproduction of null subjects in bilingual English (the syntax-pragmatics interface). Thus, we analyze two sets of data available through CHILDES: a) bilingual (English/Spanish) data from two children (FerFuLice) and b) monolingual data from two Spanish children (Ornat & Aguirre) and two English children (Brown). We predict that the bilinguals will not produce more null subjects in English than the monolinguals since (i) in Spanish, null subjects are an operation of the computational component and core syntax operations are not subject to crosslinguistic influence (Hulk & Müller 2000), whereas overt subjects are regulated by the pragmatic interface; and (ii) null subjects in adult English do not provide sufficient ambiguous input. These predictions are supported by our findings and, thus, we propose that the locus and the directionality of interlinguistic influence are related to both lexical realization (i.e. lack of lexical differentiation of English subjects) and type of operation (i.e. the core syntactic nature of Spanish null subjects). We further show that existence of two different types of subjects (strong pronouns with pragmatic value and weak pronouns –person morphemes on the verb) has a facilitating effect so that bilingual English has fewer null subjects than monolingual English and for a shorter period of time

03 *Italian clitic placement and the Interface Hypothesis: Evidence from Croatian-Italian simultaneous bilinguals*

Tihana Kras¹, Maja Milicevic¹, ¹*University of Rijeka*, ²*University of Belgrade*

The Interface Hypothesis predicts that purely syntactic properties should be fully acquired in bilingual L1/L2 acquisition and retained in L1 attrition, whereas interface properties involving syntax and another cognitive domain may be associated with residual/emerging optionality. The reported study tests whether the predictions of this hypothesis hold for bilingual L1 acquisition of accusative clitic placement in Italian, regarded as a purely syntactic phenomenon.

Italian object clitics occupy different verb-adjacent positions, depending on the type of the clause. In finite clauses they appear to the left of the highest finite verb, whereas in non-finite clauses they occur to the right of the infinitive. In two types of non-finite clauses clitics exhibit exceptional behaviour: in restructuring constructions they can either precede the finite verb, giving rise to clitic climbing, or follow the infinitive; in causative constructions they must climb to the finite verb.

Two groups of children aged 13-14, monolinguals and simultaneous bilinguals, used Magnitude Estimation to judge the acceptability of Italian accusative clitics placed before, within and after the predicate in finite,

restructuring and causative clauses. In the bilinguals' other language, Croatian, object clitics occupy the second position in all types of clauses. The bilinguals behaved like monolinguals in all contexts except for causative constructions, where in the present tense they had problems distinguishing between licit and illicit positions of the clitic. This finding suggests that some aspects of accusative clitic placement may not be in place in end-state bilingual grammars of Italian, which constitutes potential counter-evidence for the Interface Hypothesis.

04 *Phonetic complexity in the first words of Spanish-English bilingual toddlers*

Cynthia Core, *The George Washington University*

Several recent articles have focused on the relationship between the lexicon and phonology (cf Stoel-Gammon, 2010). This study describes the complexity of first words attempted in English and Spanish by 53 bilingual toddlers. We asked the parents of bilingual toddlers to report (from their written baby books or diaries) the first words their children produced in Spanish and English. Phonetic complexity values for each adult form of the word were calculated using Stoel-Gammon's (2010) Word Complexity Measure for English words, and a modified version for Spanish words. Complexity values are based on word patterns, syllable structures, and sound classes of a word and are based on sound acquisition norms and developmental patterns observed in young children. English words attempted by children were significantly more complex than Spanish words; (English Mean Complexity 1.64, Spanish Mean Complexity .64; $p < .01$). Consistent with previous research, there were fewer multisyllabic words attempted in English than in Spanish (English 1.64 syllables, Spanish 1.94 syllables; $p < .01$). Bilingual children produced first words in each language at about the same age (Mean age for English 10.79 months, Spanish 10.63 months; $p = .71$). Children who produced higher complexity words in one language did not necessarily do so in their other language. This paper describes one dimension on which early words in two languages differ in the vocabularies of young bilingual children. These findings may help understand ways that crosslinguistic differences affect language learning in young children.

05 *Speech development of monolingual and bilingual toddlers: Event-related potential responses and Language measures*

Carol Tessel, Yan Yu, Nancy Vidal, Jennifer Gerometta, *CUNY*

Several studies suggest that speech perception in bilingual versus monolingual infants develops differently (e.g., Bosch & Sebastian-Galles, 1997). The current study employed Event-related Potential (ERP) Mismatch responses (MMRs) to investigate developmental changes in speech processing from 16 months to 3 years of age in monolingual and bilingual toddlers and to explore whether bilingual exposure to Spanish and English affects processing of vowel sounds that are phonemic only in English. Over 60 toddlers (between 16 months and three years of age) listened to 250ms-long, phonetically similar English vowel contrasts (I vs. E) presented in an oddball paradigm while ERPs were collected. English-learning children were recruited from monolingual English-speaking household, and bilingual children were from Spanish-English household. Language samples and a battery of language-related tests were administered. The correlation of language production and ERP responses were investigated. ERP results show that a positive MMR followed by a negative MMR were obtained from the majority of monolingual and bilingual children across all the age groups. The latency of these MMRs shifted earlier with increasing age. A number of children from the bilingual group demonstrated later p-MMR responses than the age-matched monolingual controls. The shortening of peak latency of the p-MMR is likely to be due to the increase in amplitude and shortening of latency of the following n-MMR. We hypothesize that this n-MMR is the precursor of the adult MMN and can serve as an index of the development of phonological categories

06 *Accelerated bilingual first-language acquisition: the Structural Transfer Hypothesis*

Lisa Hsin, *Johns Hopkins University*

Cross-linguistic interference is commonly found in bilingual first-language acquisition. Usually, a child acquires the target uses of a given syntactic construction in one language later than a monolingual child would (e.g. object drop, Müller & Hulk 2001). Sometimes bilingual children systematically produce types of utterances that monolinguals rarely, if ever, produce (e.g. Döpke 1998). These are taken to be the result of simultaneous acquisition of two distinct grammars (e.g. Paradis & Genesee 1995). In this study, I present novel data from CHILDES corpora of spontaneous child speech showing that bilingualism can also accelerate first language acquisition of syntax. Contrary to predictions of cross-linguistic interference, English-Spanish bilingual children produce virtually perfect wh-questions in both languages from the earliest stages of development, while English monolinguals make frequent errors of auxiliary omission as late as age 3. I propose the Structural Transfer Hypothesis (STH) to account for this difference. Previous studies have proposed that morphosyntactic cross-linguistic interference occurs at the syntax-pragmatics interface when there is an overlap of linear order for some construction in both languages (e.g. wh-questions). In the STH, I retain the 'interface' condition but modify it to accommodate both delay and acceleration; I discard the 'linear order' condition in favor of a premise concerning shared hierarchical structure. I entertain several major theories of syntactic development and argue that the English-Spanish data

are only compatible with the Gradual Structure-Building Hypothesis (e.g. Radford 1990). Finally, I formulate predictions of the STH with respect to further bilingual wh-question patterns in other language pairs.

- 07 ***Bilingual experience and executive functioning in 18-month-old infants***
Diane Poulin-Dubois, Jessica Yott, *Concordia University*

Bilingual children have been shown to outperform monolingual children in tasks measuring cognitive skills. We examined if this advantage is observed in 18-month-old infants who have had much less experience in language production. A series of executive functioning and theory of mind tasks were administered to monolingual (N= 28) and bilingual (N= 27) infants. The bilingual children were exposed to a second language (French or English for the majority of children) a minimum of 20% of the time as reported in a detailed language exposure questionnaire. The three executive functioning tasks (multilocation search, detour, and invisible displacement) were downward adaptations of EF tasks originally designed for 2-year-olds and assessed inhibitory control and working memory. The theory of mind task measured the understanding of intentions with a behavioral enactment task. Bilingual and monolingual children performed similarly on all the tasks, confirming that bilingual advantages in cognitive abilities can only be observed after children have acquired experience with language production. These findings are consistent with recent research showing small cognitive benefits in 24-month-old bilinguals (Poulin-Dubois, Blaye, Coutya & Bialystok, in press). However, they challenge recent research reporting better cognitive flexibility in 7-month-old bilingual infants (Kovacs & Mehler, 2009).

- 08 ***Comparing the evaluative means used by CI children and bilingual hearing children in stories they produced in sign language and in spoken language***
Ritva Takkinen, *University of Jyväskylä*

This paper discusses evaluative expressions used in frog stories told in Finnish Sign Language (FinSL) and Finnish by three hearing-impaired children (7, 10, 11 years) with cochlear implants and three age-matched hearing bilingual children. Signed and spoken languages provide both lexical and paralinguistic means to convey evaluative information. What kind of developmental steps can be detected at different ages? Do the lexical and paralinguistic means overlap? Do children with CI and native bilingual children differ in their usage of different means?

The narratives were videotaped, and the signed stories were transcribed in ELAN format and the spoken stories in CHILDES format. The oldest of the children using CI used both lexical and prosodic means of evaluation in the FinSL story in a more balanced way than the younger children, who used mainly lexical means. In the Finnish stories all the children relied much more on lexical means, especially when evaluating the characters' actions. It will be interesting to compare the results to the means used by hearing bilingual children.

Defective hearing of the prosody of speech may be one reason why the children with CI used few prosodic evaluative means in Finnish stories. The small number of prosodic means in FinSL of the two youngest children may have been caused partly by the non-native language environment and partly by their younger age.

CHILD SECOND LANGUAGE ACQUISITION

- 09 ***Is a weak L1 categorically different from a cL2?***
Marta Saceda Ulloa, Conxita Lleó, *University of Hamburg*

According to some researchers (Meisel, 2007; Wattendorf, 2010), the acquisition of a language after the age of three is no longer considered a L1 but a (c)L2. The defining difference between them is that, in most cases, learners never achieve the same level of proficiency in an L2 as in their L1. On the other hand, a lot of work (Kehoe & Lleó, 2005, Lleó & Rakow, 2007, Silva-Corvalán, 2003) has demonstrated that, in many cases, the weak first language of simultaneous bilingual children shows phono-prosodic, morpho-syntactic, lexical and orthographic problems resembling difficulties in L2. This study compares a weak L1 to a cL2 acquired after age 3. Our research question is whether the phonological acquisition of a cL2 is categorically different from a weak L1.

To answer this question, we compared Spanish data from three different populations: simultaneous German dominant Spanish-German bilinguals, German children exposed to Spanish after age 3;0 and Spanish monolinguals (as controls). The study focuses on phonological areas which differ between the two languages, namely spirantization, resyllabification, aspiration and point of articulation. Results show that simultaneous bilinguals do not perform more "native-like" than cL2 learners and, therefore, we conclude that a weak language tends to resemble an L2 at least in some phonological aspects, suggesting that the differences in phonological acquisition between L1 and L2 are continuous rather than categorical.

10 **Comparison of adjective agreement in bilingual Spanish-French children and monolingual French children**

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Many children attending Montreal schools use a language other than French at home, and are exposed to French when entering kindergarten only. Language assessment thus represents a challenge for professionals. Specific language impairment diagnosis in a context of second language learning may be problematic and the use of standardized tests may under-evaluate children's real capacities. Proper evaluation of bilingual children's second language acquisition must be based on solid knowledge of typical second language acquisition, which is the purpose of the present study. Ten Hispanic children, aged 4 to 6 years, exposed to French for about one year performed elicitation tasks for French noun phrases with color and size adjectives, masculine or feminine, variable or invariable (e.g., La petite maison blanche 'the little white house'). Results were compared to those of monolingual French children matched on age, sex, and parents' education level. Global analyses on scores (presence of all elements, respect of agreement and word order) reveal that bilingual Spanish-French children perform below French children. Repeated measures analyses of variance (ANOVA) were computed on correct scores for feminine and masculine adjectives (variable and invariable), gender effects, adjective variability and group. Variable feminine adjectives were more difficult to produce for bilinguals (31,67%) than for monolinguals (83,33%). These results allow for the identification of normal difficulties in variable adjective agreement within noun phrases in children learning a second language.

11 **"Putting all pieces together": developing connectivity in native and nonnative discourse**

Melina Aparici¹, Elisa Rosado², Lilianna Tolchinsky², ¹Universitat Autònoma de Barcelona, ²Universitat de Barcelona

Clause packages (CPs) are discourse units beyond the clause or sentence whose internal architecture builds up by means of inter-clausal connectivity devices. Our goal was to determine the influence of age, discourse genre and modality of production on the internal architecture of CPs in native and nonnative discourse. Sixty nonnative Spanish speakers (L1= Korean) divided by age (9, 12, year olds and university adults) from three levels of L2 competence (beginner, intermediate, and advanced) and 60 Spanish native speakers matched by age participated in the study. After watching a soundless video on conflict situations at school, they had to render their spoken and written reflections on the topic of conflicts (expository texts) and narrate a personal experience in such sort of situations. The internal architecture of the CPs in the 480 texts was characterized by means of a four-scale typology of inter-clausal relations, from linear clause linkage -juxtaposition and/or coordination– up to nested clauses -at least one level of subordination for two conjoined clauses. Results show that complexity of CPs increases with age but is affected neither by genre nor by modality in both native and nonnative discourse. However, the distribution of the types of inter-clausal linkage differs in L2 as compared to L1. Contrary to expectations, nonnative attainment of a connected discourse does not differ significantly by level of L2 competence. Although patterns of CP complexity show similar trends in L1 and L2, an influence of the L1 in nonnative overall discourse organization is also revealed.

12 **Development of Luxembourgish in young L2 learners**

Gudrun Ziegler, Marnie Ludwig, Université du Luxembourg

Exploring the impact of language norms on second language development, the current study investigates learners' systematic developmental errors in Luxembourgish as a second language. The study draws from a longitudinal corpus collected within a Luxembourgish primary classroom (K1). The group of students (n=16) is characterized by extensive heterogeneity of linguistic backgrounds. Taking into account the unique linguistic environment in Luxembourg and the multilingual schooling practices, the current study sets out to document for the first time properties and patterns in norm errors with regard to Luxembourgish (a national language since 1984) which is used as a (to be learned) vehicular language in the primary context alongside with German, which is introduced as the language of literacy.

The comparative analysis of interview data from six primary school children (age: 6) focuses on the quantitative as well as qualitative indicators of language development, paying particular attention to multilingual issues which are tangible from the coded data set. Besides the Luxembourgish language, this concerns mainly German, French and Portuguese. The analysis specifically highlights

a) Syntactic-pragmatic interface of language development, when young learners of Luxembourgish as a L2 orient to the norm of Luxembourgish (e.g., self-correction) as a (not stabilized) standardized language in the construction of their discourse

b) Systematic errors in the (particularly rich domain of) choice of grammatical gender and number, both in nouns and determiners used by the early L2 learners;

c) Potential correlations between (displayed) norm orientations, systematic language change (e.g., code-switching from/to Luxembourgish to a specific language at a particular grammatical moment) and their relevant discursive/syntactic systematics.

The study points to the importance of norm orientation in the socio-discursive construction of children's talk at specific points/in specific areas for the development of the target language. Specifically, the findings highlight the fact that the children's choice of certain syntactic structures entails a non-orientation to the standardized (yet non-stabilized) norm of the target-Luxembourgish.

COGNITION AND LANGUAGE DEVELOPMENT

13

Ordering effects in complex sentences

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Studies on adults have shown that subordinate clauses in initial position tend to encode given information whereas subordinate clauses in final position tend to encode new information. This goes in line with a general tendency to put given before new information as new information is less available and needs more time for cognitive activation. The present study investigated whether children are already sensitive to these structures from their ambient language and how this is reflected in their speech. This study analyses corpus data from one German-speaking (2;0-5;0) and one English-speaking child (2;0-4;11). We investigated whether the position of German wenn-and English when-clauses can be associated with their information status (i.e. given or new) and whether there is a difference between the two languages. The data for both children revealed no significant difference across position types. However, we found a significant difference in the general distribution of given and new information across wenn-and when-clauses. The majority of German wenn-clauses encoded new information whereas the majority of English when-clauses encoded given information. These biases towards new information and given information in the data of the children can be clearly related to their caretakers' speech, suggesting that children are already sensitive to information structure but might develop a more fine-grained sensitivity to it (on the complex sentence level) only later. As the data of both children are similar to that found in their ambient language, this study also discusses the question of the differences between child-directed and adult-directed speech.

14

Language and performance on nonverbal and verbal Theory of Mind Tasks

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As most false belief tasks are verbal, there is a growing need for nonverbal tasks as a means of understanding Theory of Mind (ToM) development. Nonverbal tasks can yield insight into verbal task demands that may hinder demonstration of ToM understanding among young children or those with linguistic deficits. The present study examines the relationship between concurrent verbal and nonverbal ToM tasks as well as grammar and vocabulary. Fourteen 46-53- and sixteen 54-83-month-old English-speaking children completed three verbal (Sally-Ann, Unexpected Contents, Mean Monkey) and two nonverbal (a variation of Call & Tomasello's Monkey Hiding Task & a silent video enactment of a Sally-Ann task) ToM measures. Two language measures were used (PPVT-IV and de Villier's Sentential Complements Task (SCT)). Controlling for age, children's combined performance on verbal ToM tasks was positively correlated with nonverbal ToM scores. Providing additional evidence for the relationship between complex grammar and ToM performance, children's combined verbal ToM scores were positively correlated with SCT scores, but not with the PPVT. However, neither the PPVT nor the SCT were correlated with combined nonverbal ToM scores. Chi-square analysis indicated that low scorers on nonverbal Monkey trials were more likely to also score low on verbal trials, even though there was no overall significant difference between performance on verbal (mean 60% correct) and nonverbal (mean 63% correct) composites. This study provides continuing support for the importance of sentential complements facility in passing verbal ToM tasks, and suggests that verbal and nonverbal ToM tasks may be tapping different processes.

15

Working memory in young children with SLI

Brigitte Vugs, Juliane Cuperus, Marleen Vissers, *Royal Dutch Kentalis*

With regard to the nature of SLI there is growing evidence that working memory (WM) might be contributing to the problems these children encounter. Findings from different studies indicate strong links between WM and SLI. The goal of the present study is to explore this relation in young children. As substantial language growth occurs during the preschool years, especially this may be a critical period at which WM and language interact. Increasing evidence implicates that the WM problems exhibited by children with SLI are diverse, involving different mechanisms of WM (phonological short-term memory (STM), WM capacity, central executive and attention control). Although results are not always consistent there is some evidence that, besides clear deficits in the verbal domain, visuospatial STM and WM might also be involved. The present study includes 60 children with SLI and 60 TD children aged 4:0 – 5:11 years. All children are tested with a Dutch translation of the AWMA, SON-R 2½-7, Peabody, Reynell and Schlichting. In addition parents completed the BRIEF-preschool and SDQ. Analysis of the results shows significant differences between young children with SLI and the controlgroup on phonological STM, verbal WM and visuospatial STM. Significant differences are also found on behavioural measures of executive functions: inhibition, shifting and working memory. Especially the difference in visuospatial STM is interesting as it raises the question whether SLI is associated with 'domain specific' (verbal) or 'domain general' impairments in WM. Different possible explanations for these findings in young children with SLI will be discussed.

- 16 ***Understanding belief reasoning: German children's understanding of the discourse particle 'doch'***
Daniel Schmerse, *Max Planck Institute for Evolutionary Anthropology*

Discourse particles typically express the epistemic attitude of discourse participants with respect to the propositional content of an utterance. The stressed German discourse particle 'doch' functions as a marker of belief correction. We tested whether German preschoolers can infer from utterances with 'doch' that a speaker is correcting his own belief given that mastery of linguistic constructions for belief representation is just emerging in preschool years. Forty-eight children (4;9-5;3 years; 24 boys, 24 girls) participated in an object-choice task, in which a hand-puppet (i.e. the speaker) was searching for a toy that was hidden in one of two boxes. We manipulated the belief state of the speaker who expressed either a positive belief (condition 1) or a negative belief (condition 2) about which box contained the toy ("I believe it's in this box" (implying not in the other one) vs. "I don't believe it's in this box"). Subsequently, in both conditions, the puppet looked into the box and uttered the exact same statement marked with the particle 'doch' (The toy is DOCH in X's box). The task for the child was to identify the box that contained the toy (not knowing before which of the characters was X). In condition 1 an adult control group chose consistently the other box and in condition 2 the same box. In accordance with the adult data, there was a significant effect of the type of belief statement on children's choice ($F(2)=10.01$, $p < 0.001$). Children preferred the other box in condition 1 and the same box in condition 2. These results suggest that German children are able to use discourse particles as grammatical means for indicating the epistemic states of others.

- 17 ***The referential status of "c'est" in French speaking toddlers' discourse***
Anne Salazar Orvig¹, Stephanie Caet¹, Cristina Corlateanu¹, Christine da Silva¹, Rouba Hassan², Julien Heurdiere¹, Jocelyne Leber-Marin¹, Marine le Mené¹, Haydée Marcos³, Aliyah Morgenstern¹, ¹Université Sorbonne Nouvelle, ²Université Lille 3, ³CNRS

Presentative constructions "c'est+X" are one of the very first types of utterances produced by children acquiring French at the transitional stage before the onset of adult syntax. In adult language, this construction is considered either as a frozen structure (where "ce" has no referential status) or as the combination of a full demonstrative "ce" and a copula.

Studies on reference in children narratives have shown that "c'est" is used (in simple or cleft structures) to introduce new referents. However, these studies do not focus on the referential status of "ce" but on the noun phrase introduced by the presentative. The aim of our study is to describe the referential features of the first uses of "c'est".

Occurrences of "c'est" were studied in dialogues of 26 French speaking children, aged between 1;10 and 3 years, according to four axes : their referential status, the attentional and discursive context; the relation to the interlocutor's discourse and the presence of simultaneous gestures. At each step, "c'est" was compared to the demonstrative "ça" and of the 3rd person pronouns.

Results show that young children mainly use "c'est" constructions to speak about previously mentioned referents. This occurs significantly more often than for demonstratives, even though less overwhelmingly than for 3rd person pronouns. When "c'est" refers to a brand new referent, it is very often associated to a gesture that anchors the referent in the intersubjective space. Discussion deals with links between grammar and pragmatics at the first stages of language development.

- 18 ***Bound morpheme parsing: Evidence of paradigm learning by 11-month-old French-learning infants***
Alexandra Marquis, Rushen Shi, *Université du Québec à Montréal*

Little is known about how infants begin to establish morphosyntactic representations. Most research on this question focuses on speech production by older children. Using a visual fixation procedure, we examined French-learning 11-month-olds' parsing of inflectional morphemes. French bound morphology often involves resyllabification of the root and vowel allophonic alternation (e.g., /sɛd/-/se.de/). In Experiment 1, infants were familiarized with a nonsense root [glyte] or [tride], and then tested with sentences containing the roots conjugated with the frequent French morpheme /e/ ([glyte]-[tride]) or the nonce morpheme /u/ ([glytu]-[tridu]). The inflectional process included the following phonological operations: a) resyllabification of the root coda with the vowel suffix, and b) root vowel allophonic alternations [gLYt]-[glyte], [trId]-[tride]. Results show that infants parsed the French morpheme /e/ from the roots, but did not parse the nonce morpheme /u/. Experiment 2 tested the hypothesis that morpheme parsing is based on the distribution of highly variable roots with a morpheme. To do so, we presented infants with a 2-minute pre-training phase containing many other novel words all ending with /u/, followed by the same familiarization phase and the [glytu]-[tridu] test sentences as in Experiment 1. Results reveal that after the pre-training, infants learned to parse /u/ as a separate morpheme. Taken together, our experiments demonstrate that preverbal infants can parse bound morphemes even when both resyllabification of the root coda and vowel allophonic alternation are involved. Infants rely on variable roots to learn bound morphemes, and can generalize this knowledge for parsing new words that contain the morphemes.

- 19 **Neurobiological correlates of developmental changes in spoken word processing**
 Yan Yu¹, Michelle MacRoy-Higgins², Valerie Shafer¹, Richard Schwartz¹, Judy Flax³, April Benasich³, ¹City University of New York, ²Hunter College-CUNY, ³Rutgers University

Fast and efficient lexical processing as observed in the adult word processing may have a protracted developmental course given its dependence on both brain maturation and lexical experience. To investigate the development of lexical processing in preschool and school-aged children, we recorded event-related potentials (ERPs) to auditory words paired with a preceding picture that matched the word ("duck" and picture of a duck) or was unrelated to the picture ("duck" with picture of a bowl) from 3 years of age to adults in a passive task. Adults showed an expected superior-posterior increase in negativity (N400) to the unrelated picture-word pairs around 300 ms following word onset. The 3- to 11-year old children (N=19) showed a significant increased negativity to the unrelated word beginning 420 ms following word onset at sites near the vertex (CZ) rather than at more posterior sites. Some teenagers (14-17 years) began showing more adult-like topography of the N400 response and more adult-like latencies for earlier obligatory components. With increasing age, children also showed a general decrease in amplitude of an anterior-superior positivity and posterior-inferior negativity to the words in general. These results indicate that lexical processing can be assessed in a task requiring no response, and, thus, can be used to assess less mature populations. They also reveal greater age-related differences, particularly in topography, than found to similar picture-word pairs in the Cummings, et al. (2008) study, which required a match versus mismatch decision.

- 20 **The right visual field attentional bias in reading: a study in skilled reader and dyslexic children**
 Eric Siérouff, Laure Bricout-Tomasi, Miléna Riva, Paris Descartes University

Reading performance is better in the right visual field (RVF) than in the left visual field (LVF). This RVF superiority might reflect an asymmetric distribution of attention: when subjects are engaged in a linguistic task, like reading parafoveal words, the left hemisphere is activated, resulting in a bias of attention in favor of the RVF. Little is known on the development of this bias and our first goal was to investigate RVF bias in 6- to 10-year-olds in comparison with young adults. Four-letter words were presented unilaterally, bilaterally or accompanied with a distractor made of 4 xs in the opposite visual field, in a parafoveal word identification task. The presentation duration of words was adapted to each participant in order to obtain about 50% of correct identification. We evaluated the RVF bias by the stronger distractor effect in the LVF. We found a similar RVF bias in children and in adults. Our second role was to study the distribution of attention during reading in 8- to 11-year-old dyslexic children, compared to age-matched skilled readers. We found that dyslexic children, contrarily to the skilled readers, did not show a RVF bias, thus may distribute attention more equally between visual fields. Many investigators have hypothesized a failure of left-hemisphere posterior brain systems to function properly during reading in dyslexia. A possibility is that the absence of RVF bias in dyslexics might be the result of left hemispheric dysfunctioning.

- 21 **A conversational intervention procedure as a tool for improving and evaluating narrative skills: A study of 5-to-8 years old French children**
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By age five children have acquired basic narrative skills and are able to report events temporally framed within a narrative structure. However, at least when they have to produce autonomous narratives on the basis of images, until 8-9 years many children have difficulties in telling coherent and causally-motivated stories, particularly when the internal states of the characters and a mentalistic understanding of the world are involved. The aim of this study is to contribute further results concerning the role of a dialogical intervention procedure soliciting children's attention on the reasons of the events of a story on children's production of complex mind-oriented narratives.

To this effect, 140 French-speaking children aged 5 to 8 years (35 children at each age level) followed an experimental procedure devised in earlier studies. They were first exposed to five pictures (the "stone story" whose main point is a misunderstanding between two characters) presented sequentially. After the pictures had been removed, all children were requested to tell the experimenter the story (*first narrative*). Then, 25 children at each age level were asked questions soliciting the reasons of the key events in the story (the conversation group) while the other 10 (the control group) played a memory game with the story pictures and other similar cards. Then, all children were asked to narrate once again the story (*second narrative*). One week later children were asked to tell the story a third time (to test the stability of the eventual changes obtained immediately afterwards) and to tell a new story analogous to the stone story (to test the generalization power of the conversational intervention). Narrative skills were analyzed for causal and evaluative relations (explanations, internal states, false beliefs and overall coherence).

Results show that from age six on, the conversation group improved, significantly more than the control group, the overall coherence and mind-oriented causal plot of the story in their second narrative. A relation between improvements and success in ToM tasks is observed. Results also show stability and generalization of the

changes confirming the importance of the conversational intervention in improving the coherence of children's narratives and its usefulness as an assessment tool.

CULTURAL AND SOCIAL FACTORS

- 22 ***The acquisition of conversational management abilities: evidence from preschoolers' peer interaction***
Juliane Stude, *Technical University of Dortmund*

Successful communication is not only a matter of exchanging information, but also consists of organizing the interaction itself, e.g. by offering explicit comments about the ongoing discourse. The purpose of this study was to explore by means of conversation analysis to what extent the acquisition of conversational management abilities can be traced back to supportive interactional structures inherent to children's peer talk. Several approaches have emphasized the relevance of social interaction between adults and children to the process of language acquisition. However, due to the absence of a competent adult and the assumable lack of scaffolding, it is valid to question why child-child interaction should contribute to language development. This study argues that the adult's acquisitional contribution with respect to providing linguistic models is still at work in spite of the adult's absence.

Based on a corpus of spontaneous interactions (> 30hrs) recorded in routines in the preschool classroom this study focuses on the practices in which children refer explicitly to the ongoing discourse. Findings show that teacher-child discourse is mainly steered by the teachers, while children's participation can be described as predominantly responsive. In contrast, children's peer interaction is characterized by an abundance of conversational management activities that mainly occur in sequences where children try to negotiate participants' social roles. In sum, the findings reveal how children being faced with the task to organize multiparty discourse by themselves may benefit from previous experience gained from adult-child interaction and how they at the same time establish their own peer culture

First language acquisition

- 23 ***Phonological specificity for onset and offset consonants in French-speaking 14-, 18- and 24-month-olds***

Jane Lubna Johr, Daniela Gabriel Mounir, Lucie Schoenhals, Ingrid Fourier, Pascal Zesiger, *University of Geneva*

The degree of specificity of infants' phonological representations remains a matter for debate: are words initially coded in a global format, with a degree of phonological specificity that increases under the pressure of vocabulary size or neighbourhood density? Does specificity vary as a function of word familiarity? Or are words already represented in a detailed format at the beginning of the second year of life? The available evidence on this issue is still limited, and concerns primarily English and Dutch. In this paper, we report the results of an experiment performed with 76 14-, 18- and 24-month-old French-speaking infants using the Intermodal Preferential Looking paradigm. The infants were presented with pairs of pictures along with a spoken word (well-pronounced, or mispronounced) corresponding to one of the pictures. The mispronunciations resulted from modifying one articulatory feature (place or voicing) of the initial or final consonant of familiar, mono- and disyllabic words (i.e. *table* → *dable*, *voiture* [*car*] → *voitule*). The results indicate that 18- and 24-month-old toddlers look significantly longer at pictures corresponding to well-pronounced words than at those corresponding to mispronounced words for both onset and offset consonant changes. These results suggest that the representation of the initial and final consonant in familiar French words is fully specified at these ages. The data of the 14-month-olds are currently being processed.

- 24 ***Acquisition of Turkish morphophonology by identical twins***

F. Nihan Ketzrez, *Istanbul Bilgi University*

Research on twins' language development suggest that twins, when compared to singletons, go through the milestones of language acquisition much later and are more likely to be diagnosed with speech disorders. These problems are attributed to biological factors such as preterm birth and low birth weight or to psychosocial reasons such as insufficient and distracted time spent with adults. In this case study, we examine two identical twin Turkish boys' morphophonological development (*k-ğ* (dorsal) alternation as in *köpek-köpeği* and coronal, labial, palatal final (de)voicing as in *kanat-kanadı*, *kitap-kitabı*, *ağaç-ağacı*) between the ages 4;0 and 5;0 and compare their development with 10 singletons in the same age. An elicited production test is conducted with both real and novel words. We observe that, although the twins are born with interterm, with normal birth weight and do not experience any neurological problems, they are lagging behind the singletons. For example, while 100% of four year-olds can do *k-ğ* alternation in real words, the correct response rate in twins is 47%. Their delay is attributed to their exposure to each others' incorrect language. Their performance get better in time, and the emergence of the alternations follow an order (dorsal > labial > palatal > coronal) that overlaps the frequency of such alternations in the target grammar, thus provides further evidence that input language plays a significant role in language development.

- 25 ***The role of prosody in the acquisition of filler syllables during the transition period between prelinguistic stage and linguistic stage in French***
Guillaume Roux, *Université Paul Valéry Montpellier*

Filler syllables are contemporary with the first words period (linguistic stage). However, during the prelinguistic stage, syntactic and lexical elements can't be identified, that's why it seems interesting to observe a common element to both the stages like prosody. At a prosodic level, filler syllables are less accentuated than lexical words, and appear, in French, especially in iambic V'CV disyllables. Yet, are there previous elements that would indicate that the prosodical structure of filler syllables might emerge during the prelinguistic stage? A longitudinal approach of four monolingual French children, Marie (corpus of Lyon, CHILDES database), Madeleine, Theophile (Corpus of Paris, CHILDES database), Elouan (Corpus of Montpellier), video-recorded between the age of twelve and twenty-two months has been chosen. 5216 disyllables were identified with CLAN program, and 2806 of these disyllables were prosodically and phonologically analysed with Praat program: 1851 disyllables with a filler syllable were identified in the linguistic stage and prosodically analysed according to their metrical structure and their global melodic contour. During the prelinguistic stage, 955 disyllables with a syllable that involve phonological and distributional analogies with filler syllables were identified and analysed in the same way. It appeared that in both the stages, for the four children, there were a large proportion of iambic structures and simple rising contours. So, there would already exist, during the prelinguistic stage, the basis of the prosodic and phonological structure of the disyllables with a filler syllable that would emerge during the linguistic stage.

- 26 ***Sound structure impact on morphology: Acquisition of Danish noun plurals as a test case***
Laila Kjærboek, Hans Basbøll, *University of Southern Denmark*

Reduction processes in Danish conspire to make the syllable structure opaque, and we therefore expect specific properties of Danish to be difficult to acquire.

Hypothesis and predictions:

- If the plural suffix is subject to dropping, there is less transparency. Since e-schwa is often dropped opposed to a-schwa, the a-schwa suffix should be acquired early (these are the only non-null native plural suffixes in Danish)

- Phoneme change in the stem is a strong opacifying factor, much more than deletion of a thematic final element, or change in word prosody.

- Since plural formation with changes of phonemes in the stem has less transparency, plural formation with umlaut and r-insertion should be late, as against plurals with only prosodic or no stem changes.

Empirical method: We present two types of data: (a) experimental data from two different experiments (176 and 83 children respectively aged 3-10 years); (b) longitudinal data consisting of spontaneous child directed speech and child speech with four children in the age of 1-3 years.

Our analysis of the Danish morphological system is sound-based, taking the view of the language acquiring child. Results and conclusion: We have found striking common patterns across data types. The plural suffix a-schwa is dominating and is overgeneralized. The stem changes r-insertion and umlaut (change in the sequence of phonemes) delay the acquisition, whereas syncope, stød-change and change in a-quality/vowel length (involving prosody) have no impact on the acquisition.

- 27 ***Lexical tone perception in non-tone-learning infants***
Jun Gao¹, Rushen Shi², Aijun Li¹, ¹*Chinese Academy of Social Sciences, Beijing*, ²*Université du Québec à Montréal*

Infants can discriminate both native and non-native phonetic categories at the onset of language development, and from 6 to 12 months of age, phonetic perception becomes gradually tuned to the native language (e.g., Werker & Tees, 1984). However, recent work suggests that not all contrasts are perceivable at the early stage. Some acoustically similar contrasts become perceivable or better perceived contingent upon experience (e.g., Kuhl, et al., 2006; Sundara, et al., 2005). Existing studies are nearly all on consonants and vowels. Little is known about infants' perception of lexical tones, and reported results are mixed (e.g., Mattock & Burnham 2006; Tsao, et al., 2010). Our study examined the perception of Mandarin Tone2-Tone3 contrast (acoustically similar) and Tone1-Tone4 contrast (acoustically distinct) by 4.5- and 11-month-old non-tone-learning babies. This design allowed us test two competing hypotheses: 1) non-tone-language infants decline uniformly from being universal listeners (i.e., perceiving all tones at 4.5 months) to language-specific listeners (unable to perceive tones at 11 months), 2) regardless of input, infants become better at perceiving tonal contrasts as their perceptual system matures, especially for more dissimilar contrasts. Participants were habituated to multiple exemplars of one tone and tested with new exemplars of that tone versus exemplars of the contrasting tone. Results support Hypothesis 2: 4.5-month-olds failed to discriminate both tonal contrasts; 11-month-olds showed evidence of distinguishing the distinct pair only. These findings demonstrate that no innate predisposition exists for perceiving lexical tones; rather, tonal perception evolves with input exposure and the maturation of the perceptual system.

28 Acquisition of syntactic agreement in infants

Marilyn Cyr, Rushen Shi, Université du Québec à Montréal

Syntax structures are defined in terms of distributional relations between categories, which are independent from semantics and phonology. For example, within a noun phrase in French, masculine determiners precede masculine nouns and feminine determiners precede feminine nouns. In the present study we hypothesized that infants can acquire gender agreement between determiners and nouns, based solely on distributional information.

In a visual fixation procedure, French-learning infants aged 14, 17, 20 and 30 months were familiarized with pseudo-nouns preceded by masculine versus feminine indefinite determiners in French. The pseudo-nouns were carefully controlled so that they contained no phonological or prosodic cues to gender, leaving only the distributional information of the determiners with the pseudo-nouns. Infants were then tested on the same pseudo-nouns with definite determiners, also masculine and feminine. In grammatical test trials, the gender pairings were consistent with those of the familiarization, while in ungrammatical test trials, the gender pairings were inconsistent with those of the familiarization.

Only infants aged 20 and 30 months distinguished between grammatical and ungrammatical trials, showing knowledge of distributionally based gender agreement. Previous work showed the acquisition of gender agreement using multiple cues (Gerken et al., 2005). It is possible that infants first require combinations of cues (e.g. distributional and phonological) to acquire gender agreement. However, multiple cues are often unavailable. Furthermore, the mature grammar requires the infant to learn the distributional rules of agreement. The distribution-only based agreement knowledge that we showed here represents a more advanced, abstract knowledge than that involving multiple cues

29 Phonological neutralization and the representation of lexical tones in toddlers

Jun Gao¹, Rushen Shi², Aijun Li¹, ¹Chinese Academy of Social Sciences, Beijing, ²Université du Québec à Montréal

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30 Multiple vocabulary spurts in Japanese children

Yasuhiro Minami, Hiroaki Sugiyama, Tessei Kobayashi, NTT Communication Science Laboratories

Vocabulary spurt is the term used to describe the rapid increase in word-learning speed at around 18 months of age. However, it still remains controversial whether this increase is a discrete or a continuous change (Ganger & Brent, 2004; McMurray, 2007). To investigate the phenomenon of vocabulary spurt, this study analyzed longitudinal data from Japanese children's vocabulary with a Kalman filter, which is one of the most common signal processing methods for estimating the internal characteristics of erroneous time series data. We asked 14 monolingual Japanese-speaking mothers to report the acquisition date, pronunciation, and meaning of newly learned words that their children produced from 10 to 24 months via a web diary that we constructed for this project. Smoothed vocabulary-learning speeds were calculated from the longitudinal data of each child using two different filters: strongly and weakly smoothing Kalman filters.

Results showed that a rapid increase in word-learning speed occurs during 16 to 21 months of age, when the data were smoothed strongly. This confirms the existence of a vocabulary spurt in Japanese children. More interestingly, when the data were smoothed weakly to clarify the detailed structure of the vocabulary spurt, we found new evidence for multiple changes in word-learning speed. That is, most children revealed multiple vocabulary spurts with a continuous speed increase after 15–18 months of age. Taken together, these findings suggest that vocabulary spurt is not simply an increase in word-learning speed but a phenomenon generated intricate internal mechanisms of word learning.

- 31 ***Imageability and inflections: children acquire inflected forms of highly imageable words earlier***
Filip Smolik, AS CR, Prague

A number of factors have been suggested to be responsible for the timing of grammatical morpheme acquisition. Besides input frequency, semantic and syntactic generality have been examined multiple times, but with conflicting results. No previous studies tested whether the acquisition of bound grammatical morphemes is affected by the semantics of the stems with which they combine. The present study focused on this question, examining the effects of word imageability on the emergence of their inflected forms.

The study used data from the Manchester corpus in CHILDES (12 children observed over 1 year). Cox regression was used to examine the effects of imageability and other predictors on the acquisition of inflected forms. Imageability ratings from the MRC psycholinguistic database were used (scores from 100 to 700). Further predictors were the age of acquisition of the bare stem, and maternal input frequency of the inflected form. All nouns and verbs that occurred in each child in the uninflected form were used in the analysis. There was a strong effect of imageability on the chance of observing the plural form and the possessive form. In verbs, the effect of imageability was significant for past tense forms only, but not for progressives and third person singular forms.

The study suggests a new perspective on the role of semantic factors in morphological acquisition. While previous proposals suggested that semantic generality facilitates acquisition, the present results suggest almost the opposite. The results provide new evidence that semantic processing is relevant for the acquisition of inflectional morphology.

- 32 ***Non-adjacent dependency learning and grammatical categorization in 11-month-old infants***
Cristina Name¹, Rushen Shi², Elena Kouluaguina², ¹Federal University Of Juiz De Fora, ²UQAM

In previous artificial language experiments 12-month-olds showed the ability of categorizing novel words to grammatical classes by associating the shared phonological feature of these words (syllable number) to adjacent functor-like items. Using a preferential looking procedure, we examined if infants can form grammatical categories by tracking non-adjacent dependencies between functors and suffixes of content words. Such non-adjacent relations are common in natural languages. Stimuli were determiners and multiple pseudo-nouns in Brazilian Portuguese, with a Det-N structure. Participants were 11-month-old Canadian infants with no prior exposure to Portuguese. One group of infants was trained with one grammar, which presented 2 determiners (*nosso, seu*) each preceding *e*-ending pseudo-nouns, and 2 other determiners (*esse, meu*) each preceding *a*-ending pseudo-nouns, e.g., *nosso bafe, meu goka*. The Det-N pairings for the same words were reversed in the other grammar (*nosso/seu* with *a*-ending nouns; *esse/meu* with *e*-ending nouns; e.g., *nosso goka, meu bafe*), for training another group of infants. During the test phase, both groups of infants heard new *e*- and *a*-ending pseudo-nouns paired with the same determiners in two trial types: trained pairing (grammatical) versus un-trained pairing (ungrammatical). We found that infants discriminated the grammatical and ungrammatical test strings; they listened longer to the new test phrases in the un-trained grammar ($p=.004$). It is striking that after only a brief exposure to an unknown natural language, infants aged 11 months are already capable of tracking non-adjacent dependencies and use this information to categorize new words to appropriate grammatical classes.

- 33 ***Child Relative Clauses: Variable Input and Language Change***
Anca Sevcenco, Larisa Avram, Ioana Stoicescu, University of Bucharest

The study of the ways in which children's linguistic system differs from that of their parents can provide valuable information about language change. Variable input often triggers differences in the early system. The unstable input children receive can determine changes in their internal grammar. We investigate how children handle input instability, seeking to identify to what extent ambiguous external cues can predict diachronic change.

Romanian direct object relatives are introduced by (i) a relative pronoun preceded by the Acc preposition *pe* (+PE relatives) or (ii) a complementizer without the preposition (–PE relatives). Grosu (1994) argues that –PE relatives result from a non-movement derivation whereas +PE relatives involve movement.

We investigated the production and comprehension of direct object relatives using experimental data. The results of the elicitation task (34 children, age 5;00 -7;3) indicate that 91.16% of the object relatives children produced were –PE relatives. The comprehension data from two binary-picture comprehension tasks (57 children, age 2;11-7;5 and 26 children, age 4;00-7;5) fit the production data: comprehension does not improve if the preposition shows in the input. The difference between the comprehension rate of +PE and –PE relatives is not significant (78.8% vs. 80.29%).

These data indicate that, when Romanian children face unstable input, they will choose a simplified structure (the non-movement derivation), supporting the view that ambiguous triggers can determine a reanalysis of the language properties. Starting from acquisition data, one can predict that direct object relatives might change from a structure involving movement into a non-movement structure.

- 34 **"It's sort of a butterfly": Children are sensitive to cues of attenuated category membership**
 Marisa Tice¹, Patricia Amaral², ¹Stanford University, ²University of Liverpool

Adults often use hedges (e.g. sort of, almost) when offering children information about categories (e.g. "A moth is sort of a butterfly, but..."). We investigate whether children are sensitive to the use of these modifiers and, if so, whether they associate hedges to non-prototypical objects. In a comprehension study, 36 three to five year-olds were presented with picture sets including a prototypical object Obj1 and a competitor object Obj2. Competitor objects were non-prototypical category members (e.g. if Obj1 was a butterfly, Obj2 was a moth). Children were asked to indicate which picture best matched a "clue" given by a puppet. Critical clues were hedged ("It's sort of/almost an [Obj]"). There were also two un-hedged clues ("It's an [Obj]", "In here there's an [Obj]").

Results show that children aged three to five are significantly more likely to choose non-prototypical objects in response to hedged frames than to un-hedged ones, especially for the older children ($p < 0.001$). Younger children are more likely to choose non-prototypical objects in response to the long un-hedged label ("In here there's an [Obj]"), suggesting that length of description is used as a cue to modification, and hence as a signal to naming a non-prototypical object. Response type coding shows that hedged labels also differ from un-hedged labels in that they trigger hesitations and spontaneous justifications by the children.

From age three children can identify the function of hedged labels as signalling attenuated degree of category membership. Children use their knowledge about linguistic descriptions to learn new words.

- 35 **Different paths toward language: Identification of trajectories for language development**

Audette Sylvestre¹, Chantal Mérette², Caroline Bouchard³, François Bergeron³, Natacha Trudeau³, Ann Sutton⁴, Andrea MacLeod⁵, ¹Université Laval, ²Cirris, ³CRUL-RG, ⁴Université de Montréal, ⁵Université d'Ottawa

Problem. In English, the markers of typical language development are relatively well known. Very little information is available for French and even less information takes into account several components of the language system simultaneously. This project focuses on (1) developmental trajectories of prelinguistic and linguistic skills in children learning Quebec French between the ages of 3 and 18 months and (2) interactions between these trajectories.

Methods. Forty-five children were assessed every 3 months between the ages of 3 and 18 months. Three prelinguistic variables were used: pointing gestures, representational gestures and a composite variable that included eye gaze+communication rate+gestures. Two linguistic variables were considered: expressive vocabulary and a composite variable that included sounds+words. The MacArthur-Bates Communicative Development Inventories and the Communication & Symbolic Behavior Scales were used for data collection. **Results.** Two distinct non parallel trajectories were identified for the variable sounds+words. Confidence intervals of 95% around these trajectories, though not a formal statistical test, confirm that these trajectories do not intersect. The trajectories for representational gestures and expressive vocabulary were significantly related ($p = 0.0132$), as were the trajectories for eye gaze+communication rate+gestures and sound+words ($p = 0.0093$).

Conclusion. The non parallel trajectories show that certain skills do not develop the same way in all children. In addition, children who follow a high trajectory in one skill have a greater probability to also exhibit a high trajectory in another skill.

- 36 **Independent of meaning and form: The Acquisition of morphological structure in German 11-12 year olds**

Eva Smolka, University of Konstanz

Studies on morphological effects in Indo-European languages assume that lexical representations are determined by meaning compositionality. Morphologically complex words that are semantically related with their base (e.g. successful) are represented via their base {success}, whereas words that are not semantically related with their base (e.g. successor) must be represented as whole words {successor}.

Two visual priming experiments examined the acquisition of lexical representations of complex verbs in German. Morphological effects were tested in ninety 11-12 year-old children and compared with those in adults. Response latencies were measured when verb targets (e.g., binden, 'bind') were preceded by (a) semantically related (zuschnüren, 'lace up'), (b) morphologically and semantically related (zubinden, 'tie'), (c) morphologically related but semantically unrelated (entbinden, 'deliver'), (d) form-related (abbilden, 'display'), or (e) unrelated (abholzen, 'deforest') verbs.

Similar to adults, children showed neither semantic nor form effects, but strong morphological effects:

Morphological relatedness facilitated responses even without meaning relatedness. However, unlike with adults, this morphological facilitation was smaller than that by joint morphological and meaning relatedness. While the former finding indicates that complex verbs in German are lexically represented via their base {bind} regardless of meaning compositionality, the latter finding indicates that the children's system requires further exposure to morphological regularities so as to generalize morphological structure above and beyond meaning compositionality, as is the case in the adult system.

These data provide evidence that morphological regularities are acquired in morphologically rich systems like German.

- 37 **Most frequently occurring words in maternal infant-directed speech with four-five month Olds**
Anthea Vivona, Valerie Shafer, *CUNY Graduate Center*

The quality and content of maternal infant-directed speech (IDS) has been correlated with early speech segmentation abilities and later lexical development in infants. There is little data examining the frequency of words in the input that could be used to facilitate segmentation. The goal of this analysis was to examine which words were most frequent in the IDS produced by mothers to their four-five month old infants. Twelve mother-infant dyads participated in the study. Language samples of maternal IDS were obtained during 30-minute play sessions (15 minutes with a standard set of toys and 15 minutes with the infant's toys). The language samples were transcribed and analyzed. The word "you" was the most frequently occurring word in 100% of the samples produced during play with the infant's toys and 90% of the samples produced during play with the standard set of toys. The words "the" and "that" were in the Top 10 Words for 75% of all samples across both sets of toys. The words occurring most frequently were function words. These words could be cues that infants may initially use to segment the speech signal based on distributional properties and to identify meanings of novel preceding or following words. The high frequency of function words used with infants, as demonstrated by this analysis, may help them decode content words. Stable function words preceding and following differing content words may highlight the content words in the input.

- 38 **Acquisition of vowel length in Cantonese-speaking children**
Hui Chen, Thomas Hun-tak Lee, *The Chinese University of Hong Kong*

Vowel length in Cantonese involves both quantity and quality, and is manifested in a pair of low vowels and three pairs of mid vowels. Cantonese rhymes show little variation in duration, with long vowels being twice as long as short vowels in closed syllables, and a compensatory relationship between vowel and coda. This paper investigates when Cantonese-speaking children become sensitive to the durational aspect of vowel length, and when they can use vowel length for phonological contrast. Six sessions of longitudinal data from a Cantonese-speaking child for the period 1;6-2;7 were analyzed acoustically. A novel word experiment using the mutual exclusivity paradigm was conducted with 43 children aged between 2;2 and 3;7 (mean age 2;11) in three conditions (Contrastive, Non-contrastive, Repeat). Our durational analysis reveals significant differences between target long and short vowels as early as 1;6. The long-to-short vowel ratio in closed syllables became adult-like first in rhymes with sonorant coda (1;10), and then in rhymes with stop coda (2;1). The vowel-to-coda ratios became adult-like in long-vowel and short-vowel rhymes with nasal codas by 1;10. In the experiment, half of the 29 subjects who demonstrated mutual exclusivity bias could reliably use vowel length contrastively to distinguish novel words. Cantonese-acquiring children become sensitive to vowel length as early as two, confirming studies of English and German (Kehoe and Stoel-Gammon 2001, Kehoe and Lleó 2003). However, children before three and a half vary in their metalinguistic awareness of the contrastive function of vowel length.

- 39 **Cantonese-speaking children's comprehension of deictic locatives**
Margaret Ka-yan Lei, Thomas Hun-tak Lee, *Chinese University of Hong Kong*

The deictic specification of location in Cantonese consists of a contrast between a proximal term *nei1dou6* "here" and a distal term *go2dou6* "there". The deictic terms may occur independently, or precede or follow a noun as part of a nominal. The deictic locative nominal situates a focal object (e.g. a cup) by means of a reference complex involving a primary reference object (e.g. a table) and the deictic centre acting as a secondary external point object (Talmy 2000). This paper explores children's comprehension of the proximity contrast of Cantonese deictic terms (a) when used independently, (b) when preceding a noun in a locative nominal, as in *go2dou6 zoeng1-toi2* (there CL-noun) "The table over there", and (c) when following a noun in a locative nominal, as in *zoeng1-toi2 go2dou6* (CL-noun there) "That portion of the table". We tested 60 Cantonese-speaking children aged between 3 and 6 using an act-out task. Our results show that Cantonese-speaking children have mastered the proximity contrast of deictic locatives by 5 years of age, with over 80% of the 5- and 6-year-olds correctly distinguishing the deictic terms used in isolation, and in pre-nominal and post-nominal positions as part of a locative nominal. Half of the 3-year-olds exhibited a proximity bias, corroborating earlier studies of English-speaking children. Four-year-olds showed better understanding of the pre-nominal than the post-nominal deictic terms, indicating sensitivity to word order in deictic locatives, and an asymmetry in the cognitive processing of spatial terms at different syntactic positions.

- 40 **Young children can learn part names if they focus on object parts by adults' referential actions**
Harumi Kobayashi, Tetsuya Yasuda, *Tokyo Denki University*

This study investigated the effect of adults' referential actions on learning novel part names of unfamiliar objects. In Experiment 1, we examined functional acting on and simple pointing at either with touching the object part or without touching it with 2-, 4-year-olds and adults in part learning experiment. In Experiment 2, we examined the effect of rhythmic pointing with and without touching the part with 2- and 4-year olds. The results were that the effect of touching the object part was effective in all three referential actions, and the ability to recognize and use this touching-the-part information develops with age. 4-year-olds learned part

names when object parts were pointed with touching and 4-year-olds' response patterns were similar to adult patterns. Two-year-olds were unable to learn part names if the object part was pointed with touching, but DID learn part names if the part was rhythmically and repeatedly pointed with touching. On the contrary, if the object part were not touched, all age groups including adults tended to associate the given label to the whole object. The results were similar regardless of either the part was disembodied or the part was embodied on a different object. The study indicates that if the object part was made salient by adequate referential actions with touching the object part, young children and adults can learn novel part names of unfamiliar objects. Children's sensitivity to adults' part-oriented referential actions seems to develop between ages 2 and 4.

- 42 **Expressing motion events in Frog Stories in child Cantonese**
Cheung-shing Sam Leung, Yuen-Fan Lornita Wong, *Hong Kong Institute of Education*

Talmy's (1985, 2000) seminal work identified two types in terms of lexicalization patterns in motion events in narratives: verb-framed and satellite-framed languages. He argued that Chinese belonged to satellite-framed language. However, Slobin (2004) argued that a third type of lexicalization exists, namely equipollent-framed language, as illustrated by serial verb languages such as Thai and Chinese. The main objective in the study was to contribute to the debate by investigating how Cantonese children encode motion events. Two specific questions to be addressed in the study are: a) The linguistic devices used to encode motion events in Cantonese by children, and b) The differences/similarities between children and adults in encoding motion events. Sixty Cantonese preschool children (aged 3, 4, and 5) attending local kindergartens were recruited to participate in this pilot study (20 per each group), and twenty adults were recruited for the study as controls. The storybook *Frog, Where are you?* (Mayer, 1969) which contained twenty-four pictures without written texts was used to elicit participants' motion events description. The story was about a boy and a dog and it depicted a rich array of motion descriptions (Slobin, 1996). All the verbal productions by the subjects were recorded by a digital recorder and transcribed orthographically. With reference to Slobin (1998), we analyzed the types and tokens of path verb and manner verb. In general, Cantonese children and adults have a larger inventory of manner verbs than path verbs in describing motion events. The adult group produced significantly more types and tokens of manner and path verbs than the children groups. A total of 866 types of motion event expressions were produced by the participants. Among them 90% were serial-verb constructions. Usage of manner expression was significantly higher than usage of other types of verb patterns across the age groups.

- 43 **Morphological salience in Turkish child-directed speech**
Hatice Sofu¹, Naime Feyza Türkay¹, Sophie Kern², ¹*Çukurova University*, ²*CNRS-Université de Lyon*

Turkish, with its highly rich inflectional system on nouns and verbs, provides a perfectly convenient area for the noun-before-verb debate in children's early lexical development. In Turkish, nouns are inflected for number, case and possession, whereas verbs are marked for person, number, tense, aspect, modality, voice, negation, and interrogation. In relation to the acquisition of nouns and verbs by children, morphological transparency is an essential sub-field. It is claimed that morphological cues to verbs or nouns may be an important point to consider. In other words; children may get the benefit from morphological saliency on nouns or verbs to acquire one category earlier than the other. Child directed speech is an important source children draw on. Up to now, many aspects of child directed speech such as saliency utterance position, pragmatic intentions, and frequency of certain items have been studied in depth. However, child directed speech has not been investigated in terms of morphological properties. With this consideration in mind, we aimed to investigate the saliency of morphological cues for nouns and verbs in Turkish child-directed speech. The data based on 10 Turkish mothers' naturalistic talk to their children in two different contexts was analysed. We calculated the average number of different inflectional morphemes that Turkish mothers use per noun and verb. The results show that in Turkish mothers' talk, verbs were more inflected than nouns. Turkish mothers do not provide their children with simpler morphology on verbs. This may be an advantage for Turkish children for morphological bootstrapping.

LANGUAGE DEVELOPMENT IN ATYPICAL POPULATIONS

- 44 **Linguistic aspects of narratives of children with Autism Spectrum Disorder (ASD)**
Rama Novogrodsky, Lisa Edlelson, *Boston University*

In the current study, storytelling of children with ASD was used to explore language features that are frequent in narratives in the domains of content, structure, and use. Analyzing narratives allows us to compare different linguistic features within the same task.

Participants: 27 children diagnosed with ASD confirmed by ADI-R and ADOS, aged 6;1-14;3 (mean 9;9) and 18 typically-developing (TD) children aged 5;11-14;4 (mean 9;7). Groups were matched on age and verbal IQ (within the normal range). Each group was divided into two subgroups: younger than 9 and older than 9 years old, as this age is a developmental turning point in children's narratives.

Method: Children were asked to tell the story from the book "Frog where are you?" (Mayer, 1969). The stories were transcribed and coded. Two independent judges analyzed linguistic aspects of: a) Content: the semantic

functions of the coordinator word 'and', b) Structure: sentence complexity and morpho-syntactic errors, c) Use: ambiguous references and overuse of explicit expressions (Table 1).
 Results: No differences were found between the groups on the structural measures. However, at both ages, the children with ASD performed significantly worse than the TD children on the use and content tasks: they used more ambiguous pronouns, overused explicit expressions, and used fewer causal sentences.
 Conclusion: Narrative analysis showed specific linguistic deficits in children with ASD in the domains of content and use. The results also showed delayed developmental trajectory of these linguistic phenomena in children with ASD compared to TD children.

Table 1: Linguistic aspects of narrative analysis

Content: Example of semantic functions of the coordinator word 'and'
Sequential: "He fell in <i>and</i> he got on a rock"
Causal: "The dog tried to eat the beehive all up <i>and</i> a bee bit his nose"
Structure:
Sentence complexity: e.g. coordination, relative clause
Morpho-syntactic errors: e.g. "It was deer not a tree"
Use:
Ambiguous reference: e.g. " <i>The frog</i> was gone and <i>he</i> didn't know <i>he</i> was gone"
Overuse of explicit expressions: e.g. " <i>The boy</i> begin to sleep then <i>the boy</i> was asleep"

45 Sentence repetition and complex syntax in children with language impairment

Anne Hesketh, Gina Conti-Ramsden, The University of Manchester

Sentence repetition is a sensitive marker of specific language impairment (SLI). Repetition of complex sentences which exceed memory span may be yet more revealing, requiring linguistic processing to formulate a successful response. We explore whether sentence repetition can discriminate between subgroups of children with different cognitive and linguistic profiles.

Data are presented from 198 eleven-year-old children with an earlier history of language impairment. Their profiles have diverged to four groups, categorised by the presence/absence of language/cognitive problems (TROG and WISC subtests; cut-off -1SD). Groups are: SLI; non-specific SLI (NSLI); resolved (RSLI); resolved language, low cognition (RLIQ); plus 200 typically developing peers (TD). Profiles are compared for a) CELF-R Recalling Sentences subtest raw score; b) error type on CELF-R relative clause stimuli.

There was an overall significant effect of group on the subtest raw score. Post-hoc analysis showed that children with language difficulties scored significantly lower than children with resolved language, whatever their cognitive status; SLI=NSLI < RSLI=RLIQ < TD. On relative clause stimuli, errors included omitting and changing grammatical and lexical information (either retaining or altering meaning). Differences appeared between SLI and NSLI groups; children with SLI more often avoided complex syntax and made meaning-changing lexical substitutions.

The CELF-R Recalling Sentences score reflects grammatical, lexical and omission errors and is sensitive to continuing mild language problems. Analysing error types in sentences which place high demands on memory and language reveals further differences between groups with and without cognitive involvement, and holds promise as a tool for sensitive and predictive analysis.

46 Development of syntactic structures in narrative text writing among deaf children

Andrée Boisclair, H  l  ne Makdiss, Caroline Leclerc, Universit   Laval

To do well at school, deaf children must have a sound basis in late language acquisition. This development is important for reading comprehension, writing and solving math problems. An important aspect of late language acquisition relates to the structures of subordinate clauses. It is impossible to understand complex texts in the narrative, informative or explanatory genre without having a degree of facility in reading sentences made up of several interlinked clauses.

The questions posed are as follows: How do complex structures emerge in narrative texts written by deaf children? Which structures emerge first?

The narrative texts of five profoundly deaf pupils were analyzed over a 5-year period (the pupils were 8 years old at the beginning and 13 years old at the end). Each of these pupils had to produce a narrative text for their year-end examination and these texts were analyzed in relation to their syntactic complexification.

Two aspects were analyzed: the emergence of complex structures and the mistakes produced in these structures. The analysis shows that complex structures can, on the one hand, emerge in particular formulations or, on the other hand, follow the development described in the literature on hearing pupils. For example, the first relative clause might appear in this formulation "Once upon a time – or one day – there was a girl who" These results, like the mistakes observed, point to a functional, usage-based approach to language acquisition.

- 47 ***Wh-Question comprehension precedes production in children with and without Autism***
 Anthony Goodwin, Deborah Fein, Letitia Naigles, *University of Connecticut*

Language comprehension precedes production in typically developing (TD) children. However, children with autism (ASD) may produce speech they do not comprehend. We compared the development of children's comprehension vs. production of wh-questions. Children were tested every four months. Initially, the ASD group (n=15) averaged 41 months-of-age and the language-matched TD group (n=18) averaged 28.7 months-of-age. The wh-question task was presented via intermodal preferential looking. Silent 'hitting' events (e.g., an apple hitting a flower) were followed by test trials in which the apple and flower were shown on separate screens. During test trials, subject-wh and object-wh audios were sequentially presented ("What did the apple hit?/What hit the flower?"). Control audios were also presented ("Where's the apple/flower?"). Children's eye movements were coded off-line. At 28 months-of-age, the TD group looked longer to the correct referent during both the subject-wh and object-wh test trials ($p < .05$). The ASD group only showed comprehension at 54 months-of-age. To compare children's comprehension to their production of wh-questions, we coded 30-minute spontaneous speech samples drawn from mother-child interactions at each visit. Wh-questions comprised a small portion of the speech produced by children (TD < 6%; ASD < 2%). At each visit, more children comprehended subject- and object-wh-questions (ns from 9-16) than produced them (ns from 0-5). No children produced subject- or object-wh-questions before demonstrating comprehension of similar forms. In sum, TD children comprehend subject- and object-wh-questions earlier than children with ASD. However, comprehension of wh-questions preceded production in both groups. Therefore, these children may be learning wh-questions in the same way

- 48 ***Concurrent and clinical validity of the Korean adaptation of MacArthur-Bates Communicative Development Inventory***
 Soyeong Pae, Okjoo Kim, Junghee Song, *Hallym University*

Korean Adaptation of MacArthur - Bates Communicative Inventories (Korean M-B CDI) has been used in the field of child language and child language disorders since 1993. This study investigated concurrent and clinical validity of the Korean M-B CDI. One hundred and twenty two mothers with language-delayed children replied to the checklists and interviews individually. The number of receptive words and the number of expressive words in the Korean M-B CDI were significantly correlated with the receptive and the expressive scores of the Korean standardized test of Sequenced Language Scale for Infants ($r = .41 \sim .67$, $p < .01$). For children in the grammar stage and replied to Korean M-B CDI: the Words and Sentences, there was significant correlation between the number of expressive words and the grammar scores of the Korean M-B CDI ($r = .80$, $p < .001$). For children in the non-grammar stage, the number of receptive words was significantly correlated with game and everyday activities of the Korean M-B CDI ($r = .41$, $p < .05$). The number of receptive words differentiated Autism Spectrum Disorder group from Developmental Language Delay group and General Developmental Delay Group. Clinically, Korean M-B CDI could be used validly to assess language delayed children. Furthermore, least biased assessment procedure could be implemented if young English Language Learners with Korean background who are candidates of language difficulties could be measured with both Korean M-B CDI and English M-B CDI

- 49 ***Measuring Lexical Diversity in the Spanish and English Narratives of School-age Children with Language Impairment***
 Peggy Jacobson, Patrick Walden, *St. John's University*

Language sample analysis (LSA) has been proposed as the gold standard for assessing school-age children with language impairment (LI), particularly those from culturally and linguistically diverse backgrounds. This study uses LSA to measure lexical diversity in 45 bilingual school-age children, 25 with typical development (TD) and 20 with LI. Most were early sequential bilinguals learning English at school while continuing to use Spanish at home. Language samples based on a narrative retell task were transcribed and coded using SALT conventions. For children with TD, there were 16 in Early and 9 in Later Grades; for children with LI, there were 10 in Early and 10 in Later Grades. Overall, children with TD used a greater number of different words (NDWs) for both languages, yet results varied by grade. In English, children produced higher NDWs in the Later grades compared to Early grades, and this was true for children with TD ($p < .01$) and LI ($p < .01$). Although children with TD also produced higher NDWs in Spanish in the Later grades ($p < .01$), children with LI showed no difference in Spanish NDWs by grade. In combining each participant's NDWs in Spanish and English, we found significantly higher scores for children with TD in the Later grades ($p < .01$), but no difference between TD and LI in the Early grades. Challenges in the assessment of children who are in the process of acquiring L2 English will be discussed in relation to the existing literature on suppression and reorganization of the first language

- 50 **An ERP investigation of auditory and audiovisual speech in children with autism spectrum disorders**
Julia Irwin, Nicole Landi, Lawrence Brancazio, Amanda Kennedy, Erin Grohman, *Haskins Laboratories*

Using event related potentials (ERP), we examined whether children with autism spectrum disorders (ASD) process auditory and audiovisual (AV) speech differently than typically developing (TD) children. We employed a novel AV speech perception task that involves perceptual discrimination of synthesized auditory speech stimuli in auditory (A-alone) and AV conditions. In this novel paradigm, there were two types of stimuli: clear exemplars of an auditory token (intact /ba/), and reduced tokens in which the auditory cues for the consonant were substantially weakened so that the consonant is not detected (reduced /ba/, heard as /a/). The auditory-only condition paired the auditory stimuli with a non-moving image of a face where the visible articulatory information on the mouth was covered by an occluder. In the AV condition, the intact /ba/ or the reduced /ba/ were dubbed over a dynamic speaking face articulating the syllable /ba/. For A-alone, we observed small group differences in latency and scalp location between the two groups, such that children with ASD were slower to process speech than TD children. In the AV condition, there were more profound differences in ERP response between the groups. Specifically, for TD children, ERP waveforms to the AV condition indicated perception of /ba/ for the reduced token, however, for children with ASD the addition of the speaking face did not substantially change elicited ERP waveform response relative to A-alone, suggesting that children with ASD fail to integrate auditory and visual speech.

- 51 **Evaluation of the quality of assessment tools by international guidelines**
Malene Slott¹, Werner Vach², Dorte Bleses¹, ¹*University of Southern Denmark*, ²*University Medical Center Freiburg*

The purpose of the presented study is to evaluate the quality of assessment instruments used by Danish speech-language therapist. The study has become relevant since more and younger children are referred to speech-language therapists due to new legislation offering parents of 3-year-old children a language screening. Hence, we need information about how we treat these children due to both ethical and resource reasons.

First, in order to conduct a systematic overview, a list was compiled consisting of all the assessment instruments used for 3-year-old children. Second, the quality of the assessment instruments was evaluated using international guide-lines published by the American Speech-Language-Hearing Association (ASHA). The first result reveals that 33 instruments are used, reflecting a variety of different use and different methods; some assessment instruments are used by speech-language therapist even though they are restricted to be used by psychologists; other assessment tools are illegally translated and used; and some screening and observational instruments are used as assessment instruments. The second result reveals that most of the instruments used for assessment contain so little information that the instruments cannot be evaluated at all. The absence of information points to an untenable situation since we cannot make any conclusions about the quality of the available instruments. Hence, we have to conclude that we do not know if children, referred to speech-language therapists, are adequately identified and treated. Furthermore, this result might be the reason that speech-language therapists use all available instruments for assessment, no matter the origin of the instruments.

- 52 **Sentence processing in children with Williams syndrome using eye-tracking**
Vesna Stojanovic¹, Diane Nelson², Theo Marinis¹, ¹*University of Reading*, ²*University of Leeds*

The aim of the study was to investigate how children with Williams syndrome (WS) (a relatively rare genetic disorder) process syntactic structures involving wh-movement on-line compared to typically developing children. Seven children with WS aged between 8 and 14 and 20 typically developing (TD) children took part in the study. The experimental task was an online eye-tracking while listening task. The stimuli included 60 pairs of brief stories (30 experimental, 30 fillers) presented through headphones, while panels depicting objects mentioned in the story were presented on a computer screen. The experimental condition had three question types: 1. Ten *Wh*-object questions (*Who did the fireman scrub that day at the fire station?*); 2. Ten *Yes-no* questions to which the answer was always YES (*Did the cow cuddle the pig that day at the farm?*) and 3. Ten Object cleft questions to which the answer was always YES (*Was it the whale that the goose kicked that day near the beach?*). The results showed that children with WS process sentences involving wh-movement similarly to typically developing children although somewhat more slowly, despite the fact that comprehension is sometimes compromised in children with WS, especially with object cleft sentences. This leads us to conclude that this aspect of language processing in WS is not atypical, which has implications for current theoretical debates between neuroconstructivist and nativist approaches to language acquisition.

- 53 ***Sub-types of language impairment: Concordance of morphosyntactic and deep-structure probes***
Janice Jackson¹, Barbara Zurer Pearson², ¹University of West Georgia, ²University of Massachusetts Amherst

The practice of using morphosyntactic (MS) markers to identify language impairment (LI) in English-learning children is problematic for African-American English (AAE) speaking children. Many of the MS usages that are atypical for general American English (GAE) first-dialect speakers, such as zero present-tense copula (e.g. he 0 bad), are grammatical in adult un-impaired AAE. To avoid the ambiguity in the status of these forms, non-contrastive assessment has been proposed (Seymour, Bland, & Green, 1998), to probe fundamental "deep" syntactic, semantic, and pragmatic skills, such as are found on the Diagnostic Evaluation of Language Variation Norm-referenced, and other assessments currently being developed in the European Union.

Alternately, one can probe non-contrastive MS (for example, past-tense copula was), which unlike contrastive forms like present-tense copula, is obligatory for children learning either dialect. However, it is not known to what extent difficulties with "deep" structures (DS) co-occur with, and can potentially supplant, non-contrastive MS markers to identify impairment.

To find the level of concordance of the two types of measures, 271 4- to 12-year-old AAE- and GAE-speakers who had been diagnosed with LI were administered the Dialect Sensitive Language Test (Seymour, Roeper & de Villiers, 2000), which includes both non-contrastive MS and DS probes. Cross-tabulation revealed the occurrence of three profiles of impairment in both AAE and GAE sub-groups: DS+MS (27%), DS-only (41%), and MS-only (32%). We conclude that DS and non-contrastive MS probes (as opposed to traditional contrastive MS markers) are important components of LI assessment for both AAE- and GAE-speaking children.

- 54 ***Where do SLI children come from? Late talkers' group as a risk group for SLI***
Magdalena Smoczynska¹, Marcin Szczerbinski², Magdalena Kochanska¹, ¹Jagellonian University, ²Cork University

Several follow-up studies of English-speaking late talkers show a puzzling result of the language delay resolving in most cases: children who had been qualified as late talkers around the age of 2 are found few years later to perform on standardized language tests within a normal range, although their performance keeps being significantly inferior to that of the control group. This finding would suggest that SLI children do not come from the late talkers' group but such conclusion is contradicted by clinical evidence that in the case of most SLI children their language onset was delayed.

A follow-up study of Polish-speaking late talkers was conducted in a different context as no standardized language test exists for Polish. At the age of 2 Polish version of MacArthur-Bates CDI was used and productive vocabulary was assessed. Children below the 10th percentile formed the clinical group of late talkers and an age matched control group of children representing 'the good norm' (between 25th and 75th percentile) was selected. Both groups of 42 children in each of them, were further seen at the ages of 2;6, 3;6, 5;6, 8;0 and 8;6.

Except for 8 unquestionable 'late bloomers' who caught up by the age of 5;6, other children kept performing on language tasks significantly worse than their age controls. At least some of them seem to have SLI, although setting the threshold is very difficult. What seems puzzling is the fact that some children in the control group obtain quite low scores in language tasks as time goes by. This would mean that there can be a group of children characterized by late onset of SLI. This conclusion would be in accordance with Dorothy Bishop's warning that language impairment symptoms may change over time in response to new developmental challenges..

- 55 ***Production, comprehension and linguistic awareness of subject-verb agreement and case marking in monolingual German children with and without SLI***
Katrin Lindner, University of Muenchen

Evidence for asymmetries in production and comprehension is easy to find in studies about L1 and L2 learners and persons with language impairment, yet these asymmetries vary with regard to the domain under consideration. This poster will summarize findings with regard to subject-verb agreement and case marking in German from an experimental study of sentence interpretation (off-line), spontaneous and experimental production data of 36 typically developing children aged 2-6 (TD) and 12 aged 8-9 as well as 23 children with SLI aged 4-6 as well as children's spontaneous corrections of and comments to ungrammatical sentences in the comprehension task. While TD children are able to produce subject verb agreement by age 2;6 (up to 95%) and tend to produce case marking in NPs_{ACC} by age 3, in sentence interpretation they start to acknowledge NP_{ACC} in first position by age 5 and orient towards subject-verb agreement by age 9 (75%). In contrast, only children with SLI age 6 seem to acknowledge subject-verb agreement like their TD age matched controls in sentence interpretation yet case marking is only important if subject-verb agreement is ambiguous. Case marking is produced earlier than subject-verb agreement even by 6 years olds. Linguistic awareness in terms of spontaneous corrections and comments seems to develop earlier than performance in the comprehension task; the youngest TD child correcting an ungrammatical sentence is 2;8. But children with SLI rarely correct these sentences. Thus linguistic awareness may be a good indicator only for TD children's growing knowledge about linguistic structures.

- 56 ***Social communication abilities of children with speech, language and communication needs: Comparing children with specific language impairment and autism spectrum disorders***
 Olympia Palikara¹, Jessie Ricketts², Julie Dockrell¹, Tony Charman¹, Geoff Lindsay², ¹*Institute of Education, London*, ²*CEDAR, Warwick University*

Background: This paper examines the relationship between language and social communication abilities in two groups of children with speech, language and communication needs (SLCN); those with specific language impairment (SLI) or autistic spectrum disorders (ASD).

Methods: 284 students (7-12 years), identified by the education services with SLI or ASD were screened. Inclusionary criteria for the study included a score within the average range for nonverbal ability and language below average range (< -1SD) for the SLI group. Children meeting the criteria completed standardised measures of language. Forty seven parents completed the Social Responsiveness Scale (SRS), Social Communication Questionnaire (SCQ), measures used to assess ASD symptoms and the Children's Communication Checklist (CCC-2).

Results: The ASD group showed significantly higher difficulties on all subscales of the SRS compared to the SLI group. On SCQ, the ASD group obtained higher scores than the SLI group on all subscales. This difference was statistically significant on the subscales for reciprocal social interaction, restricted, repetitive and stereotyped behaviour but not for communication. On the CCC-2, the SLI group was significantly more impaired on speech, syntax and semantic subscales indicating greater levels of language difficulty. In the ASD group there were few associations between expressive language and SRS social cognition and autism mannerisms subscales.

Conclusion: Significant overlap in aspects of social communication was found between the SLI and the ASD group. Regression analysis revealed that measures of communication ability were significant predictors of the SRS and SCQ scores.

- 57 ***Speaker age and language choice in child-directed speech in a multilingual Australian Indigenous community***
 Deborah Loakes¹, Karin Moses², Gillian Wigglesworth¹, Jane Simpson³, ¹*University of Melbourne*, ²*La Trobe University*, ³*Australian National University*

This paper reports on a study conducted at a remote, multilingual, Indigenous Australian community in the Kimberley area of Western Australia. The study focuses on language input to young children aged from 2;5 to 4;7, by four different age groups (older children aged 7-12, and three adult groups, one between 19 and 25, one between 35 and 45 and one over 55). The study is largely a response to the fact while language acquisition in monolingual societies is well understood (especially for English-speaking communities), language acquisition in multilingual societies such as those in Indigenous Australia, where language change is rapid, are relatively understudied. In Indigenous Australian communities, children are brought into a society which is highly interactive and verbal, but where they hear input in a variety of different languages – the traditional language, the local Creole, and standard English. As such, as well as focusing on input from the primary caregiver, it is also important to address input from other family and/ or community members. This is the focal point of the study in which we discuss the way language input varies in relation to age of interlocutor within this community, and discuss the implications of this for the children's language acquisition.

- 58 ***Narrative production skills of children with Autism Spectrum Disorder and children with Specific Language Impairment***
 Heather Morris, Pat Mirenda, Paola Colozzo, *University of British Columbia*

This study investigated the narrative production abilities of three aged-matched groups of 12 children (N = 36) aged 6 to 10 years: children with autism spectrum disorder (ASD), with specific language impairment (SLI), and with typical development (TD). We expected both clinical groups of children to show deficits in their expressive narrative abilities in comparison to same-aged TD peers. However, the extent to which the two clinical groups would present with similar profiles was unclear.

All children produced two stories, one from a five-picture sequence, and the other from a single picture scene. The analyses considered multiple variables reflecting story length, story content, errors, and syntactic complexity. As expected, the TD children obtained higher scores on all measures. For most variables, the ASD and SLI groups performed similarly, including in terms of the rates and types of reference errors, and the mention of the mental states of characters—two areas where the ASD group was expected to show relatively greater difficulty. The groups did, nonetheless, differ on a few measures. The children with ASD produced more extraneous information and had an overall higher error rate than the children with SLI. In particular, contrary to expectations, the SLI group had a lower rate of grammatical errors compared to the ASD group. This study adds to the small body of research regarding the narrative abilities of verbal children with ASD. It suggests that across clinical groups, language development level rather than diagnostic labels may be more likely to influence narrative abilities.

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The effect of plausibility on sentence comprehension in children with and without SLI

Jungmee Yoon, Luca Campanelli, Naomi Eichorn, Jessica Scheuer, Ingrid Puglik, Mira Goral, Loraine K. Obler, Klara Marton, *City University of New York Graduate Center*

Children with specific language impairment (SLI) demonstrate difficulty in comprehending syntactically complex sentences and in avoiding contextual interference. This latter problem is related to their weakness in working memory (WM). Previous findings on language comprehension indicated a relationship between syntactic complexity and working memory (WM). Semantic context may contribute to processing accuracy of syntactically complex sentences and may facilitate language comprehension. Semantically implausible information may interfere, however, with children's general knowledge. Thus, children with poor interference control will perform less accurately on implausible sentences than on plausible ones in a sentence judgment task. Children with SLI were expected to show more interference than their peers. Sixteen school-age children with SLI and 16 age-matched typically developing children (TLD) completed two comprehension tasks using Embedded (EmB) and Multiple Negative (MN) sentences. Stimuli contained three sentence constructions with increasing syntactic complexity for each task (coordinate sentences, subject-relative clauses, and object-relative clauses for the EmB task, and 0, 1, or 2 negations for the MN task). Under each condition, half of the sentences were semantically plausible and the rest were implausible. We found a significant plausibility X group interaction in both tasks (EmB, MN). Children with SLI showed a stronger plausibility effect even in sentences with simple syntactic structures, whereas children with TLD showed the plausibility effect only with the most complex sentences (object-relative and double negation). Thus, children with SLI showed poor interference control even with the syntactically simple sentences. The data add further information to the literature on WM and syntactic processing.

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Expression of feeling of knowing in the speech of autistic children

Yui Miura¹, Tomoko Matsui², Yoshikuni Tojo³, Hiroo Osana⁴, ¹*Kanazawa University*, ²*Kyoto University*, ³*Ibaraki University*, ⁴*Musashino Higashi Gakuen*

When expressing (un)certainly about their knowledge or belief, children are reported to produce variety of para-linguistic cues in utterances (e.g. intonation, speed, loudness, insertion of filler, etc.). Those prosodic features were found to be associated with their introspective judgment about their knowledge, which is called the feeling of knowing (FOK). We investigated how children with Autism Spectrum Disorders (ASD) express their (un)certainly in verbal communication, and whether and how much they are able to monitor their own epistemic states. We presented ASD and control groups of children with knowledge questions (e.g. "How many feet does an octopus have?", "What do you use when hitting a ball in the tennis game?") and asked them to show how much they were sure about the answer, by choosing from 1 to 5 scales of confidence. Their verbal answers to the questions, its paralinguistic features, and the numbers they chose as an index of their certainty strength were included in the analysis. Our result revealed a distinct pattern across the group. When facing with a difficult question, our control group used more fillers and showed reluctance to answer the question, while our ASD group did less of these. As to the choice of the certainty scales, in both groups of children there was a significant correlation between the accuracy and the certainty about the answer. Nevertheless, decision made by ASD children was relatively dichotomous, while number scales chosen by typically developing children tended to be varied.

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Vocabulary growth and sentence production as precursors for developmental dyslexia in Dutch at-risk children

Evelien Krikhaar, Charlotte Koster, Pieter Been, Ben Maassen, *University of Groningen*

In the Dutch Dyslexia Project, over 300 children and their families are followed from the age of 2 months until their 10th birthday, in search for early precursors of developmental dyslexia in the pre-school years. Several experiments (brain-imaging and behavioural tests) are administered to follow auditory and visual processing and language and reading development. Results from parental reports on vocabulary growth (MacArthur-Bates Communicative Development Inventory) and analyses of spontaneous sentence production reveal the following conclusions. Children at familial risk of developing dyslexia already have delayed and deviant lexical production at 17 months, with fewer verbs and closed class elements than typically developing children. This difference becomes more extreme at later ages. In their onset of combining two words, at-risk children lag behind control children. In a more detailed analysis of their longest utterances between 23 and 35 months, at-risk children appear to produce shorter utterances, both at word- and morpheme-level and use less function words and verbal inflections. So, before the age of two, a difference can be observed between language production profiles of at-risk and control children. Now that the children have grown older, these profiles are related to reading development. The use of verbs and function words as well as mean length of utterance at 23 months correlates significantly with word and non-word reading at the end of grade 2 (8 years). The results will be discussed in perspective of the

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phonological deficit underlying developmental dyslexia, and its role in linguistic input and development in early childhood.

- 62 ***Electrophysiological indices of processing pictures and words by three-to-seven year old nonverbal children with Autism Spectrum Disorders***
 Sarita C. Austin, Michelle MacRoy-Higgins, Yan H. Yu, Valerie L. Shafer, Richard G. Schwartz, April Benasich, *The City University of New York*

It is difficult to determine the degree to which nonverbal (NV) children with Autism Spectrum Disorders (ASD) understand language using traditional behavioral methods. The purpose of this study was to use electrophysiology to assess semantic processing in NV children with ASD.

Event-related-potential (ERP) were recorded while six 3-to 7-year-old NV children with ASD and 3- to 7-year old typically developing (TD) children saw pictures of objects followed by an auditory word pair 500 ms after the onset of the picture. The first word, which is the focus of this report, either matched or mismatched the picture (e.g., picture of "duck" paired with word "duck" or word "bowl").

TD children showed a pattern of occipital positivity and anterior negativity at 200 and 400 ms to the pictures and superior positivity and inferior negativity to all words from 100 to 500 ms. They also showed evidence of an increased negativity (N400) at the vertex sites to the mismatched words, beginning 400 ms following word onset. Two of the NV ASD children showed similar patterns to the TD groups. The remaining four ASD children showed attenuated responses to the pictures at 400 ms, attenuated responses or reversed superior-inferior polarity to the words and no evidence of increased vertex negativity to the mismatched words. These results suggest that ERPs can be used to assess linguistic processing in NV children with ASD. Individual differences will be explored in terms of behavioral differences among the children and their performance on other language tasks.

LANGUAGE EVOLUTION AND LANGUAGE ACQUISITION

- 63* ***The role of predispositions and experience in birdsong and language acquisition***
 Sita ter Haar¹, Clara Levelt¹, Carel ten Cate¹, *Leiden University*

Many parallels have been found between birdsong and language. One commonality is that both systems show population specific and universal sound patterns. The population specificity can be explained by cultural transmission, whereas the universals suggest a predisposition. Here we investigate this issue for both songbirds and human infants. We tested whether human infants have a listening preference for more universal syllables (balanced for frequency) and if songbirds prefer universal note types (before being exposed to song). Additionally we studied the role of experience in human infants by investigating effects of frequency, and by testing different age groups. For similar purposes, songbirds were experimentally exposed to either specifically construed universal or non-universal songs during their sensitive phase. For testing human infants, a visual fixation paradigm was used where preferences are reflected by longer looking time. Songbirds were tested in a phonotaxis setup, where time spent in a region close to one of two loudspeakers was used as a measure for preference. Results indicate a preference for universals in 9-month-old infants. This preference shifts to non-universal syllables in 12-month-old infants. No effects for frequency were found. Songbirds prefer to listen to universal note types prior to hearing song. Exposure to song with non-universal note-types elicited a shift in preference in songbirds. The biases for universals, independent of linguistic or song exposure, indicate possible predispositions. The shift in preference to non-universals as a result of experience indicates a role for cultural transmission.

LITERACY AND LANGUAGE

- 64 ***Development of writing skill from the Vygotskian perspective: analysis of difficulties encountered by pupils in Grades 3 – 4***
 Alice Vanlint, Pauline Sirois, *Université Laval*

The Problem: Writing is a complex skill: it requires a high level of abstraction and involves simultaneously managing a great number of components (spelling, syntax, textual coherence, etc.). This study aimed to identify and analyze the strengths and difficulties encountered by pupils in Grades 3-4 with regard to the development of writing and more particularly in terms of simultaneously managing all the components involved in this skill. Methodology: The study involved 51 children in Grades 3-4. Ten of these children were identified

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as having difficulties with writing. Measures based on free narrative texts written by the children were taken at 6-month intervals. The analyses were based on two perspectives. On the one hand, the Vygotskian perspective was used to analyze the difficulties encountered by pupils from a developmental point of view. On the other hand, the concept of competence was used to establish an analytical framework for the texts produced by considering the skill of writing in all its complexity. Results: These analyses showed that children identified as having difficulties have more troubles with components related to the code than children considered to be good writers and that these difficulties are severe. However, they also showed that some children, considered to be good writers, had rarely-identified difficulties with the organization and complexification of discourse. Conclusion: The results highlight the importance of analyzing children's texts by taking into account the skill of writing in all its complexity so as to be able to provide support which is adapted to their needs.

65 **Communicative acts during play interaction between Mandarin-speaking mothers and children with Autism :**

Fang-yi Chu, Hui-ju Chen, Chien-ju Chang, *National Taiwan Normal University*

Background and Aims: Infants' interpersonal communication skills are affected by the interaction patterns with their caregivers. Yet, how mothers and infants communicate might vary across cultures. Prior research suggests that shared book reading is important for developing infants' skills required for the eventual mastery of comprehension and communication. This study aims to examine the communicative intentions and speech acts between Mandarin-speaking mothers and their infants in Taiwan during shared book reading.

Methods: Twenty-two mother-infant pairs were visited at home when the infants (Male=10, Female=12) were 14 months old. The verbal and non-verbal interactions between mothers and infants were transcribed according to the CHAT system. The verbal interchange, speech act and pragmatic flexibility in maternal and infants' talk were coded using the adaptations of the INCA-A system (Inventory of Communicative Acts-Abridged) developed by Ninio and Snow (1994).

Results: Results demonstrate that the mothers who produced more words and more utterances per turn had children producing higher number of words per turn. In terms of communicative acts, mothers spent most of their time discussing joint focus (48.79%), negotiating the immediate activity (17.11%) and directing hearer's attention (7.46%); whereas, infants mostly gave uninterpretable utterance (72.45%) and unintelligible sounds (23.42%). Different from Mandarin-speaking mothers in China (Zhou, 2008), reading written text was not a commonly used interaction strategy used by the mothers in Taiwan during joint book reading.

Conclusion: This study fills the gap of research on communicative acts between Mandarin-speaking mothers and children in Taiwan. Comparisons between results of this study and other relevant research will be discussed.

66 **Effects of joint book reading on Mandarin-speaking children's early language acquisition**

Chien-ju Chang, *National Taiwan Normal University*

Background and Aim Joint book reading has been considered as an important family practice in facilitating young children's language acquisition. Yet, there has been sparse research on the effects of joint book reading on Mandarin-speaking children's language acquisition. This study aims to fill the gap examining the synchronic and time-lag relationships between joint book reading and Mandarin-speaking children's language performance.

Method Forty-five Mandarin-speaking mother-infant dyads participated in this study. They were visited at home when the children were 14 (time 1), 20 (Time 2) and 26 (time 3) months old. The mothers were asked to read two books with their children, to fill out Mandarin Communicative Development Inventories (MCDI) and to answer questions about joint book reading practices at each visit. Children's cognitive, language, social and motor development were also assessed using Comprehensive Developmental Inventory of Infants and Toddlers (CDIIT). Verbal and non-verbal interactions during mother-child joint book reading were tape-recorded and transcribed using the CHAT system.

Results Results show that the children who had the experiences of joint book reading before birth or between the ages of 1 to 6 months outperformed in language measures than those who started reading with their mothers at the age of 7-12 months. Significant synchronic and time-lag relationships were also observed between maternal talk during joint book reading and children's language performance in MCDI and CDIIT across the three time points.

Conclusion This study has important educational implication for promoting joint book reading programs for young children. Further research was suggested to be conducted to explore the long term relationship between diverse maternal book reading styles and children's later language and literacy development.

67 **Reading and writing acquisition in deaf children: importance of linguistic foundations**

Pauline Sirois, Alice Vanlint, *Université Laval*

The Problem: Students aged 12 to 20 living with a hearing impairment have significant difficulties in writing and their reading ability rarely goes beyond the Grade 4 level. These difficulties may take root in the foundations that support written language learning. We present the results of a study that examines the links between deaf children's developmental level in these foundations when they begin Grade 1 and the development of their

reading and writing skills.

Methodology: The study was conducted among 21 deaf children and 99 hearing children. Measures related particularly to morphosyntactic development, story comprehension and conceptualization of the writing system were taken at the beginning of Grade 1. Measures in reading comprehension and writing were subsequently collected at the end of Grade 1.

Results: The analyses showed a considerable gap between deaf children and hearing children in terms of their developmental level in these foundations when beginning the process of learning to read and write. The findings also brought out a relation between the level of morphosyntactic development and story comprehension at the beginning of Grade 1 and difficulties in reading comprehension and writing at the end of Grade 1, in particular among deaf children.

Conclusion: These findings highlight the importance of providing support to deaf children before they begin the formal process of learning to read and write, particularly in morphosyntactic development and story comprehension.

68 *Prosodic status matters for word segmentation*

Sónia Cardoso, Ana Castro, *Universidade Nova de Lisboa*

This study examines the effects of prosodic status, syntactic category, and phrase and sentence position on functional words segmentation by children. Several studies report that lexical words are better recognized as words than functional words; others show that prosodic status may contribute to it. Since in European Portuguese functional words can be either clitics or prosodic words, we tested which linguistic variables play a role in functional words segmentation, focusing on phonological and syntactic features.

20 preschoolers (aged 4 and 5) and 20 schoolers (1st and 2nd grade) were submitted to a test in which oral sentences should be segmented into words. Independent variables were syntactic category, prosodic status, phonic resemblance, phrase and sentence position and age/alphabetization. Dependent variables were conventional segmentation of words and non-conventional segmentation (hypo-segmentation and syllabic segmentation).

Results show an effect of alphabetization as schoolers attain a higher rate of success than preschoolers, and no significant difference between 4 and 5 year olds is found. There is also an effect of prosodic status since prosodic words are more recognized as words than clitic forms. There are partial effects of phrase and sentence position, such as enclitic over proclitic position on clitic pronouns, and syntactic category and phonic resemblance of functional words.

In sum, it can be concluded that phonological features, in particular the prosodic status of words, play a role into word segmentation prior and during alphabetization, as well as syntactic features such as syntactic category, and phrase and sentence position.

69 *The role of lexical knowledge in the repetition of nonwords*

Tamara Kornacki, Esther Geva, Fataneh Farnia, Dana Shafman, *University of Toronto*

This study examines whether non-word repetition tasks, designed to measure phonological short-term memory (PSTM) are also influenced by familiarity with lexical representation of a given language. We hypothesized that a NWR task that is based on a typologically and etymologically different language than one's own would provide a more pure measure of PSTM than a NWR task based on a familiar language structure. Our sample included three language groups: Native English speakers (EL1), EL1 students enrolled in a Hebrew immersion program (HI), and English Second Language (ESL) students. We measured students PSTM in grade 1 using two NWR tasks, one based on the English language structure (E_NWR), and one based on the Hebrew language structure (H_NWR). We measured students' receptive vocabulary one year later in grade 2. On the Hebrew-like NWR task, the HI group outperformed the ESL & EL1 groups who had no familiarity with the Semitic language structure. Contrary to expectations EL1 and HI students, who were both native English speakers, didn't perform better than ESL students on the E_PSTM task. One potential explanation for this unexpected finding is that ESL participants had several years of exposure to the English language. Finally, the less familiar H_NWR task was a better predictor of vocabulary than the more familiar E_NWR task amongst ESL and EL1 participants. These findings indicate that regardless of language background a NWR task based on an unfamiliar language structure is a more valid measure of the phonological processing skills required for vocabulary acquisition

70 *The effect of comprehension-strategies instruction on the oral narrative skills of French-speaking kindergarteners*

Christine Devlin, Diane Pesco, *Concordia University*

The study investigated the effect of teaching narrative comprehension strategies on the oral narrative abilities of French speaking children. The sample consisted of 30 children attending two kindergarten classes in Montreal, Quebec. Children from both classes were randomly assigned to either a treatment condition or a control condition. Nine books from a children's series written by a single author were used for the intervention. The treatment group received instruction on narrative comprehension strategies using these books. The treatment group sessions covered, in sequence, four strategies associated with children's narrative skills: analyzing story grammar, recognizing causal relations, identifying characters' internal states, and making

predictions about states and events. In a final session, the four strategies were reviewed and applied to a new story. The control group heard the same stories read aloud and participated in general discussions about each story's events, but instruction on comprehension strategies was not provided. For the pretests and posttests, the children listened to a story told by the examiner using a set of pictures. They were then asked to respond to comprehension questions and to retell the story using the same picture set. MANCOVA, with pretest scores as covariate, revealed a significant main effect and univariate analysis showed an effect for the story retell task.

NEUROCOGNITIVE CORRELATES

72 ***Low-verbal children with Autism Spectrum Disorder show atypical ERP responses to the onset of meaningful sentences***

Sarah Kresh¹, Emily Zane¹, April Benasich², Richard G. Schwartz¹, Valerie L. Shafer¹, ¹*CUNY Graduate Center, New York*, ²*Rutgers University*

Shafer et al. (2001, 2005) reported a bilateral sustained anterior positivity (SAP) with relatively negative activity in posterior sites for children with and without SLI and adults in response to "the" at the onset of meaningful sentences in a story. "The" followed by nonsense syllables resulted in anterior negativity relative to posterior sites. The right SAP appeared to index semantic or discourse processing and the left SAP automatic structural processing since only the right positivity was attenuated when attention was directed away from the story. The current study examined SAPs to isolated sentences in low-verbal children with Autism (ASD) and typically developing controls.

ERPs were recorded to sentences beginning with the definite article (e.g., "The dog barks") in 3-7 year old low-verbal ASD children (n=7) and same-age controls (n=12). Most of TD (11/12) and ASD children (5/7) showed obligatory auditory responses before 200ms. The TD children (10/12) showed the bilateral SAP relative to negative activity at posterior sites beginning 300ms post-sentence onset and extending beyond 800ms. Only two of the ASD children showed the SAP pattern found for the TD group. These two also showed more typical responses to isolated words in another study.

The absence of SAPs in most of the low-verbal children with ASD suggests that the SAP indexes processing of meaning in connected speech. SAPs thus index linguistic processing at the level of the sentence

73 ***Low intensity phonological training by means of a computer based program: behavioral and neurophysiological findings from hearing impaired and normally hearing children***

Cecilia von Mentzer, Elisabeth Engström, Björn Lyxell, Birgitta Sahlén, Inger Uhlén, Petter Kallioinen, Magnus Lindgren, Marianne Ors, *IBL, Linköping*

In the present study 10 children with cochlear implants and/or hearing aids and 10 normally hearing children between 5-7 years of age received computerized phonological training 10 minutes per day during 4 weeks. All children were in the normal range of non verbal ability. The aim was to study whether phoneme-grapheme training on various linguistic levels affected their neurophysiological and cognitive development and how this was related to different aspects of reading ability. The design was A-A-B-A. Behavioral tests measuring different aspects of phonology and letter knowledge were administered at baseline 1, 2 and post intervention. Working memory, non verbal ability and reading as well as Event Related Potentials (ERP) including Mismatch Negativity (MMN) and N400 were measured at baseline 2 and post intervention. The results showed significant changes of decoding skills and working memory ability between baseline 2 and post intervention across all groups. ERP data showed differences in MMN- amplitude between the groups as well as differences in amplitude of the three conditions in N400; congruent, within or between category violations. The results will be discussed with respect to the impact of phonological intervention on neurophysiological development and development of cognitive skills.

NEW METHODS IN CHILD LANGUAGE RESEARCH

74 ***Interrelations between language delays in different language dimensions. A population based language assessment study of three year old Danish girls and boys***

Werner Vach¹, Jarrad Lum², Dorte Bleses², ¹*Clinical Epidemiology, Freiburg*, ²*University of Southern Denmark*

In 2007 Denmark introduced a nationwide language screening in all children at age 3;0. The screening is organized by the municipalities, and many of them use the screening material SI-3 consisting of a parental report combined with day care staff based testing. About a third of all Danish municipalities agreed on collecting all results in a central database. We report on results from the first 15,000 children tested. The screening material covers seven language dimensions: Vocabulary (VO), Complex Grammar (GR), Pronunciation (PR), Sound Discrimination (SO), Memory (ME), Comprehension of Concepts (CO), Pragmatic skills (PS). We were interested in studying the interrelation in delays between these seven dimensions. Our main tool was the investigation of the sensitivity to catch children with a distinct delay in one dimension

(defined as falling below the 5% percentile) by an at least moderate delay in another dimension (defined as falling below the 15% percentile), stratified by gender.

Nearly all sensitivities were higher in boys than in girls, indicating a higher individuality in the patterns of delays in the latter. Nevertheless in boys as well as in girls GR and PS turned out to have on average the highest sensitivity to catch children with delays in the other dimensions. This may reflect that normal development of GR as well as PS reflects a normal development in all other language dimensions considered and that delays in any other dimension can hamper development of GR and PS. SO and ME showed the highest degree of singularity.

NUMERACY AND LANGUAGE

75 **Number words interpretation in preschool children**

Mercedes Marcilese¹, Leticia Sicuro Corrêa¹, Marina Augusto², ¹Pontifical Catholic University of Rio de Janeiro, ²State University of Rio de Janeiro

Number words have been considered crucial for the human capacity of manipulating exact quantities. The semantics of number is, however, a controversial topic in Linguistics: for neo-griceans, numbers would have lower-bounded semantics and receive exact interpretations via the pragmatic rule of scalar implicature; for others, numbers would have exact semantics and apparent scalar interpretations would be achieved by contextual restriction or reference to subsets. It has also been claimed that the exact meaning of number words would be acquired by formal education. The present study investigates whether numerals favor an exact interpretation by 44 preschool Brazilian Portuguese speakers in two age groups (3-4-year-old and 4-5-year-old). A picture identification task was used. The linguistic stimuli consisted of two types of *there-existential* structures. Three pictures were provided; two of them contrasting the exact and the scalar interpretation of the complement DP and the other one presenting a different set with the exact quantity at stake. The independent variables were: *type of instruction* (*There are x objects in a box, which is the box?* or *Show me where there are x objects*) *age* and *number word* (one-two-three-four-five). The dependent variable was the number of exact matching responses (number-objects matching responses). The results are compatible with the idea that number words favor an exact interpretation by preschool children, though providing such an interpretation depends on the ability to ascribe a particular cardinality to a given number word and on the ability to adopt a counting strategy for solving the problem presented by the task.

OTHER THEMES IN CHILD LANGUAGE RESEARCH

76 **Two-Year-Olds' understanding of false belief, false perception and false identity: Evidence from spontaneous-looking tasks**

Yueh-Huey Wang¹, Chien-Ju Chang¹, Feng-Ming Tsao², ¹National Taiwan Normal University, ²National Taiwan University

Number words have been considered crucial for the human capacity of manipulating exact quantities. The semantics of number is, however, a controversial topic in Linguistics: for neo-griceans, numbers would have lower-bounded semantics and receive exact interpretations via the pragmatic rule of scalar implicature; for others, numbers would have exact semantics and apparent scalar interpretations would be achieved by contextual restriction or reference to subsets. It has also been claimed that the exact meaning of number words would be acquired by formal education.

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- 77 ***Code switching in Japanese-English bilingual adolescents***
Keiko Nakamura, *Keio University & International Christian University*

Although early studies on code-switching mainly focused on pairs of Indo-European languages (e.g., French-English, Spanish-English), in recent years, studies on code-switching between typologically different languages such as Japanese and English have emerged (e.g., Azuma, 1993, 1999; Fotos, 2001; Kite, 2001; Mishina, 1999; Nakamura, 2004; Nishimura, 1985, 1997).

This paper is an ethnographic study conducted in two settings: (1) an English-medium international high school setting in Tokyo and (2) a Japanese university. All of the participants were Japanese-English bilinguals (ages 13 to 19) with high levels of proficiency in both of their two languages. The data were collected longitudinally as participants interacted with bilingual friends in casual conversations. All examples of Japanese-English code-switching were coded. Two types of analyses were conducted, namely (1) a syntactic analysis (e.g., tag switching, intersentential switching, intrasentential switching) and (2) a functional analysis (e.g., affective, quoting, emphasis, borrowing/ substitution, clarification/ repetition). The syntactic analyses showed high proportions of intersentential and intrasentential codeswitching. In particular, many of the code-switches occurred extremely rapidly, in a manner similar to the Spanish-English code-switching found in Zentella (1997). Regarding the functional analysis, the results revealed a significant amount of metaphorical codeswitching. Follow-up interviews revealed that many of the participants viewed their code-switching skills positively, considering Japanese-English code-switching as a marker of covert prestige which indicated solidarity and group membership with bilingual friends, yet at the same time, showed high levels of metalinguistic awareness regarding the appropriateness and inappropriateness of code-switching in different social contexts.

- 78 ***The effectiveness of mother-child communication during a cooperative task of giving and following route directions***
Anna Rais, Ewa Wozniczka, Magdalena Smoczynska, *Jagellonian University*

Effective communication in a task-oriented situation requires both partners to adapt their contributions to each other's communication needs, and to monitor on-line the progression towards solving the task, so that difficulties that arise can be dealt with.

The experiment, carried out within a larger longitudinal project, involved 50 dyads of Polish-speaking mothers and their 5½-year-old children. Each member of a dyad had an identical schematic map of a city, with streets and city blocks distinguished by shapes, colors and landmarks. Partners were sitting facing each other, with their respective maps separated by a screen. The mother's task involved verbally guiding the child along a specific route that was marked on her map. The child's task was to follow her directions and to draw the route on his/her own map. The effectiveness of the communication was assessed by comparing the child's drawing with the model route.

Transcripts of verbal activity of each dyad were analyzed in detail, with special attention to communication difficulties arising and strategies used to cope with them. When looking for the determinants of the communication effectiveness three main factors were identified: 1) adequacy of mother's instructions, 2) the child's feedback 3) mother-child on-line cooperation. The crucial factor of the success was found to be the mother's contribution: the quality of her instructions and the appropriate quantity of information, properly distributed in time. The child's verbal activity as such did not significantly contribute to communication success. However, the child's ability to report a problem was found to be of crucial importance, as it made it possible to overcome the difficulty in a cooperative way.

- 79 ***The role of stress sensitivity in L2 English word reading***
Christie Fraser, Lesly Wade-Woolley, *OISE - University of Toronto*

Until recently, the majority of research on English phonological awareness (PA) has centered only on segmental phonology as predictors of word reading. Some current research however, has expanded the notion of PA to include prosodic sensitivity, the awareness of suprasegmental information. This includes stress and tone. Although research has suggested that stress awareness contributes to individual differences in word reading for native speakers, little research has been conducted exploring the role of prosodic sensitivity for L2 learners. The purpose of this study is to explore the role of stress sensitivity in L2 English word reading. One-hundred and four L2 English children in Grade 3 were assessed through tasks that measured skill in PA, stress sensitivity, and real and pseudo word reading. A questionnaire was completed by the parents of the participants to assess English exposure. Correlation, ANOVA, and multiple regression analyses indicated that awareness to the stress-timed patterns of English plays a significant role in word reading. Several important findings were observed. First, there were significant, positive correlations between stress sensitivity and variables related to English exposure, PA, and word reading. Second, there were significant mean differences in word reading ability for poor, average, and good decoders. Finally, stress sensitivity accounted for variance in individual differences in English word reading. In conclusion, results suggest that word level stress sensitivity may make an important and distinct contribution to L2 word reading

- 80 ***Stance and evaluative language in Spanish-speaking children's argumentative discourse***
 Rosa Graciela Montes¹, Martha Shiro², ¹*Benemerita Universidad Autonoma de Puebla*, ²*Universidad Central de Venezuela*

In this study we examine the development of children's argumentation skills and the stance-taking strategies they use in oral interactions. We analyze transcripts of 15 Spanish-speaking Mexican children, ages 5 to 12, in joint, collaborative activities. We focus on the children's argumentative strategies and evaluative language as they disagree when negotiating their control over the task-at-hand. The questions that guided our research were: a. How do the argumentative sequences initiate, unfold and close? b. What linguistic means signal disagreement? c. What strategies are used to reach consensus? d. How is the confrontation resolved when no consensus is reached? We identified sequences where an initial turn by one speaker (proponent) was followed by a dispreferred response by another (opponent), and followed the interaction until either consensus was reached or one of the speakers prevailed over the other. We examined the speech acts and the evaluative language (negatives, interrogatives, expressions of epistemic and deontic modality, evidentiality, mitigation) used. Younger children use a lesser number of modulating strategies and the disagreements escalate and often break off without reaching consensus. Older children show a wider array of modulating resources, but often seem to opt for a confrontational stance. In addition, we find that boys and girls engage in different types of disagreement. Girls reach consensus in shorter exchanges and use questions more than imperatives when they confront the previous speaker. This study can shed light on how children problematize a situation and how they structure their verbal confrontations at different ages.

QUANTITATIVE AND QUALITATIVE INPUT FACTORS

- 81 ***Maternal speech to children, and its relation to later language skills***
 Rochelle Newman¹, Nan Bernstein Ratner¹, Kerry McColgan¹, *University of Maryland*

Researchers have suggested that many features of infant-directed speech (IDS) provide benefits to a young language-learner. If true, relative use of some features should predict infants' actual language outcomes. To test this hypothesis, 120 mother-child dyads have visited our laboratory 3 times before 1 year of age. During each visit we record a free play session, which is subjected to structural and acoustic analysis. We have collected the children's MCDI outcomes at 18 and 24 months, as well as three standard measures (PPVT, EOWVT, and Mullen Scales) at 2 years of age. Data analysis is ongoing, as only a few children have reached the final visit (90 will complete by July); however, with only a subsample available for analysis (N=22), some observable trends are already approaching statistical significance. We report data from two separately-compared non-overlapping subgroups. IDS that is characterized by less lexical diversity (VOCD) (more repetition in word usage) at 7 months was strongly correlated with larger MCDI scores at 18 months ($n = 11$, $r = .53$), suggesting that early repetition of lexical targets supports children's vocabulary growth. Vowel space (as a proxy for speech clarity) shows an effect as well. Relative increases in maternal vowel space in IDS compared to adult-directed speech at the 11-month visit appear to be positively correlated with 24-month MCDI scores ($n = 11$, $r = .58$). This suggests that more highly clarified maternal articulation close to emergence of first words supports more rapid profiles of lexical growth over the next year of life.

- 82 ***The Polish Frequency List of child directed speech***
 Bartłomiej Etenkowski¹, Magdalena Luniewska¹, Joanna Szwabie³, Ewa Dabrowska⁴, Marta Szreder¹, Marek Lazinski¹, Ewa Haman¹, ¹*Warsaw University*, ²*Charles University in Prague*, ³*Adam Mickiewicz University*, ⁴*Northumbria University*

Child Directed Speech is claimed to play a crucial role in language acquisition (Clark, 1993; 2009). In particular, word frequency in CDS has an influence on word learning order and pace (Dale, Goodman & Li, 2008; Bannard & Matthews, 2008). Word frequency in CDS is a language specific factor, making it necessary to individually measure each language's frequency. This study presents the first Polish frequency list of CDS and its characteristics.

Polish is a highly inflected language. A single lexeme can have more than thirty different forms. The major benefit of the Polish Frequency List of CDS is that it contains not only inflected forms of the words as they appear in the corpora, but is also lemmatized and contains summed frequencies for the base forms (lexemes). The List is based on seven corpora. Two of them (Szuman corpus and Weist corpus) are available from CHILDES (MacWhinney, 2000). Another important source is the Polish Children's Speech Corpus (<http://www.kognitywistyka.amu.edu.pl/js/korpus.html>). Other corpora, authored by the co-authors of the list, are in CHAT format and will be added to CHILDES in the future.

All corpora used include more than 1,179,000 word tokens with more than 794,000 word tokens in CDS (speech directed to children aged between 0;10 and 7;0), about 44,000 word types, and 21,000 different lexemes. The 46 most frequent lexemes cover more than half of the CDS items in the corpora and 90% of the CDS items are covered by the first 1,811 lexemes.

The Polish frequency list, similar to the English one (Li & Shirai, 2000), will be available from the CHILDES website. This list can be used for quantitative analyses of CDS, designing psycholinguistic experiments, preparation of materials for language disorders diagnosis, therapy and countless other projects.

SPEECH

83

Toddlers' performance on clusters in production tasks: a longitudinal perspective

Margarita Gulian, Claartje Levelt, *Leiden University*

Cluster reduction is a common phenomenon in early child productions. Toddlers often say [dʌk] for truck and [si:p] for sleep. Before the target-like form is acquired there is a large variability in the performance of the onset clusters. The question in the present study is whether the error pattern is the same in different types of production tasks. For this purpose we use picture naming (PN), word repetition (WR) and nonword repetition (NWR) tasks in a longitudinal study with – at present – three Dutch L1 acquiring toddlers (age range 1;11-2;1). Recordings were made every 4 weeks, for 5 months.

Child productions were transcribed and onset clusters were scored for their realization. While the cluster realizations varied substantially, the following general pattern arose: Firstly, performance on NWR in the first two sessions was significantly better than on PN and WR. In the following session PN and WR improved to the level of NWR, after which the error rate decreased significantly for all tasks. At the final session, onset clusters were successfully acquired.

This is the first attempt to compare production tasks in a longitudinal perspective. The initially better performance on the NWR shows that the source for cluster errors mainly lies in the lexical route, which is not available in NWR (Dell et al., 2007). Phonological and phonetic encoding become more accurate and efficient over time, leading to a better performance on tasks that require, or prefer, the lexical route.

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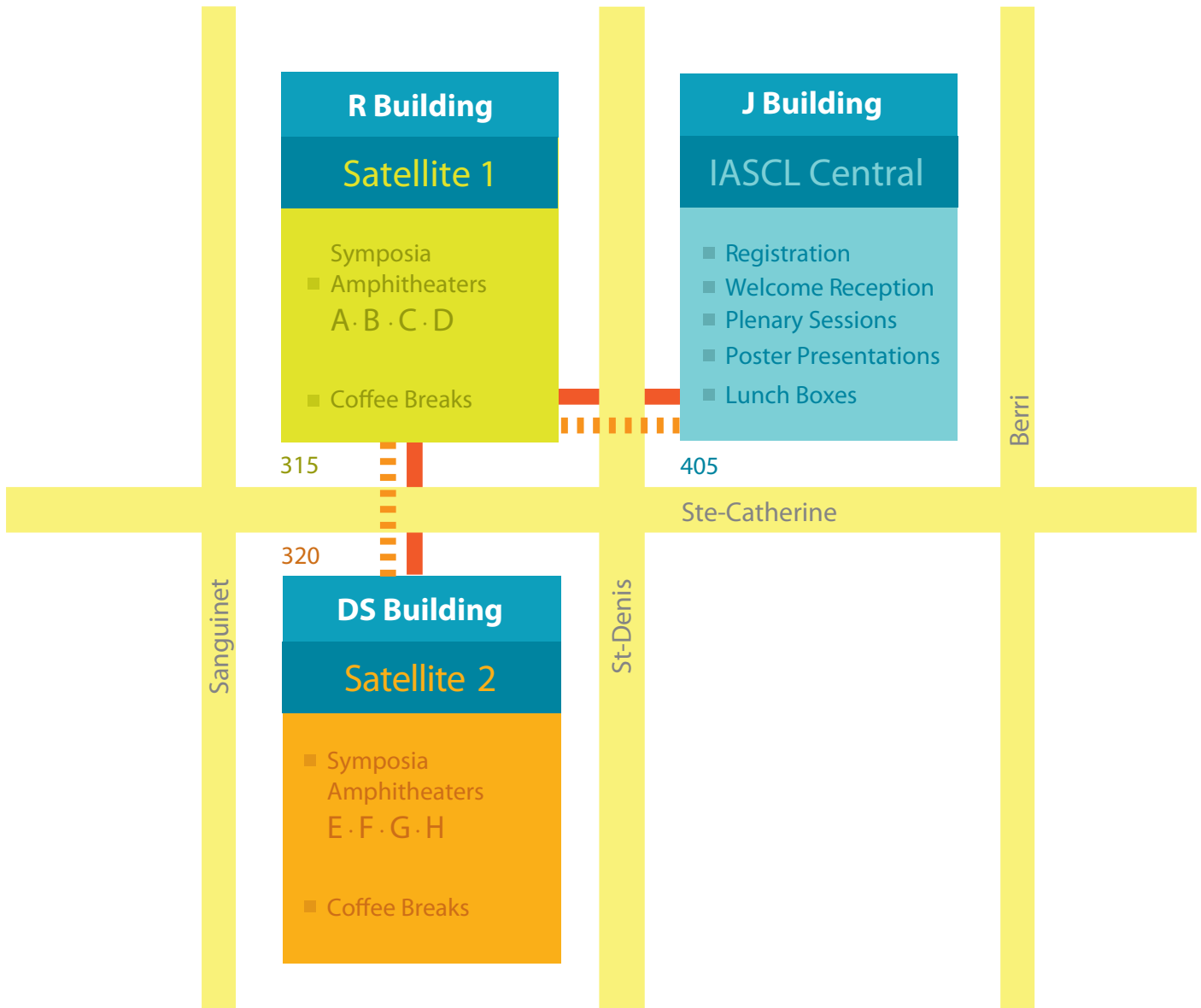
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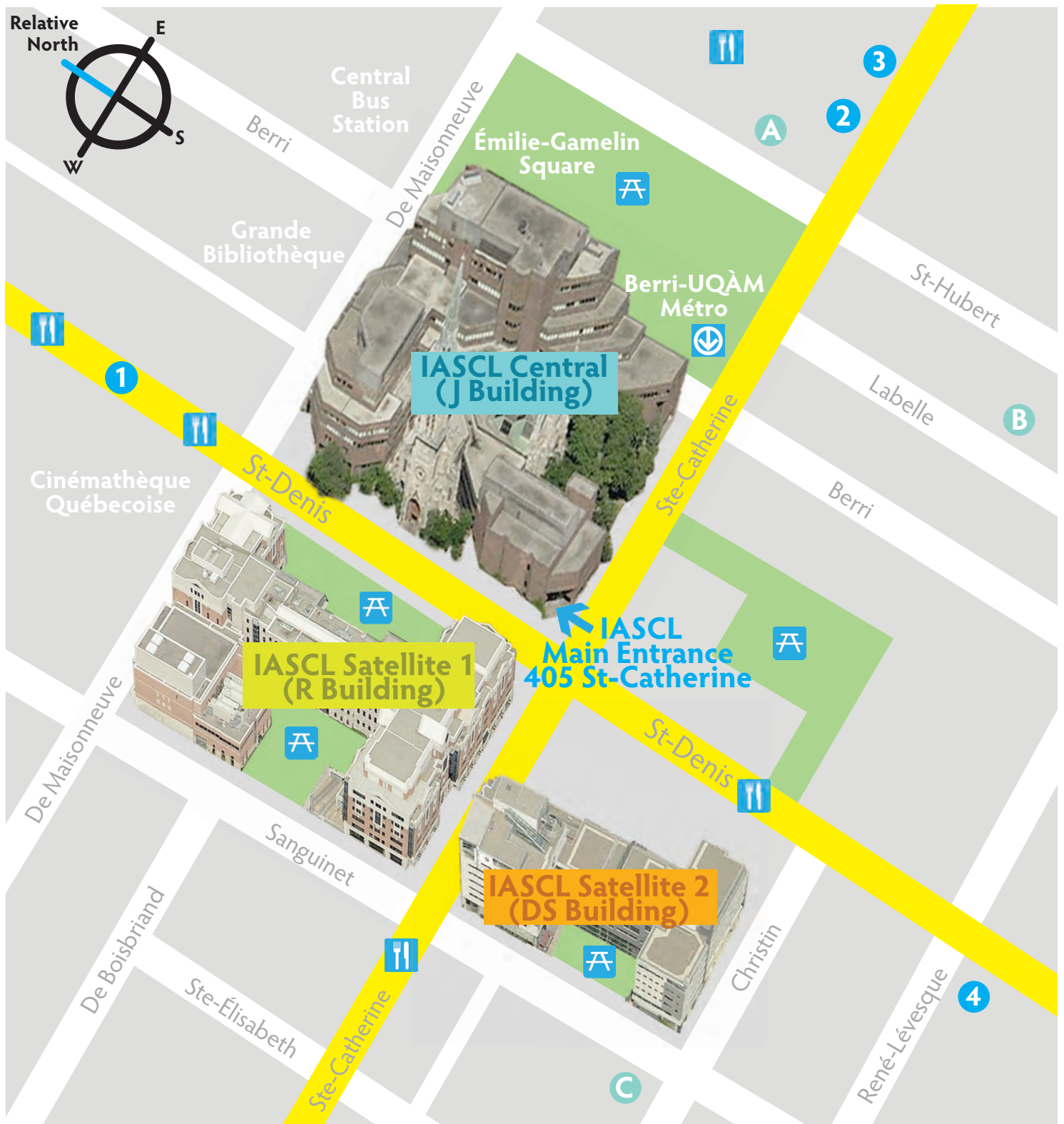
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