

*First language acquisition*

*Language, general*

## **Variation in the L1 Acquisition of Differential Object Marking ?**

*Avram, Larisa, University of Bucharest*

### **Symposium abstract:**

*In many languages, direct objects are differentially marked in accordance with their semantic property (animacy, specificity) or in accordance with the semantic property of the predicate (e.g. telicity). Differential object marking (DOM) has recently received considerable attention in L2 learning or heritage language research (e.g. Montrul & Bowles 2008, Guijarro-Fuentes & Marinis 2009), but the topic has not received equal attention in L1 acquisition studies (with the exception of Rodríguez-Mondoñedo 2008).*

*The goal of this symposium is to fill in this gap by offering a cross-linguistic perspective on the L1 acquisition of DOM on the basis of data from Croatian, Estonian, Hebrew, Romanian, Russian, Spanish and Turkish. The DOM systems of these languages differ with respect to:*

*(A) relevant semantic feature: (i) animacy (Croatian, Russian); (ii) definiteness (Hebrew); (iii) specificity (Turkish); (iv) animacy and specificity (Romanian, Spanish); (v) definiteness and telicity (Estonian);*

*(B) morpho-syntactic means of marking the object: preposition or case inflection (e.g. Spanish vs. Croatian);*

*(C) symmetric vs. asymmetric marking (e.g. Estonian vs. Spanish);*

*(D) whether DOM is constrained by properties of the object or by a combination between object and verb (e.g. Estonian vs. Russian);*

*(E) minor relevant features, e.g. gender (e.g. Croatian vs. Romanian).*

*This offers a rich empirical background which can facilitate the identification of the role of universal semantic features and language-specific properties in the acquisition of DOM.*

*Specifically, the main questions addressed in the talks are:*

*(i) Is the DOM acquisition route the same across languages, irrespective of which semantic feature is the relevant one?*

*(ii) Could semantic features boost the acquisition of DOM irrespective of language-specific morpho-syntactic properties of the DOM system?*

*(iii) Are DOM patterns in the input reflected in the early marking of direct objects?*

*More generally, the results can contribute to our understanding of the acquisition of interface phenomena. (300 words)*

#### *References*

*Guijarro-Fuentes, P. & T. Marinis (2007) 'Acquiring the syntax/semantics interface in L2 Spanish: the personal preposition a.' Eurosla Yearbook 2007 : 67-87.*

*Montrul, S., M. Bowles (2008) 'Negative evidence in instructed heritage language acquisition: A preliminary study of differential object marking'. In M. Bowles et al. (eds.) Selected Proceedings of the 2007 Second Language Research Forum, 252-262. Somerville, MA: Cascadilla Proceedings Project.*

*Rodríguez Mondoñedo, M. (2008) 'The acquisition of differential object marking in Spanish'. Probus 20: 111-145.*

#### **Abstract 1**

### **Animacy and Case in the Acquisition of Differential Object Marking in Croatian and Russian**

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*Kovacevic, Melita, University of Zagreb*

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In Croatian and Russian the predominant semantic factor in differentiating direct objects (DOM, Bossong 1998) is animacy and the marker is case inflection. However, the two systems differ with respect to which animate objects are obligatorily marked. In Croatian, feminine objects are Accusative case marked irrespective of animacy, masculine objects are marked only if they are animate, while neuter objects are never marked. In Russian, singular and plural masculine and plural feminine objects are Genitive case marked if they are animate. For inanimate objects the Accusative form is identical with the Nominative.

In the present study we investigate the acquisition of DOM in Russian and Croatian with a view to answering the following questions: (i) are children guided by the animacy constraint from the onset of acquisition?; (ii) is the 'gender/number constraint' reflected in different acquisition patterns?

Two longitudinal corpora (CHILDES format) of spontaneous monolingual child speech for each language (age range Russian 1;5-4;0, Croatian: 1;5-3;0; total number of recorded hours investigated: Russian:75; Croatian:75) were uniformly analyzed. All marked objects were coded for gender, animacy and case inflection. Child data was compared to child directed speech and adult speech.

The analysis reveals that DOM emerges very early (1;7 in Croatian and 1;8 in Russian) and is almost errorless in both languages. Overextension errors are rare (below 8% in both languages) and they are also attested in child directed speech. In Russian one notices a different error pattern across stages: erroneously Accusative=Nominative marked animate objects between 2;00-2;4, and erroneously Genitive marked inanimate objects between 2;11-3;4. In Croatian, overextension targets inanimate masculine objects across stages.

Our data indicate that children are guided by the animacy feature from the emergence of DOM: they differentially mark objects virtually target-like, irrespective of the gender/number constraint.

## References

Bossong, G. (1998) 'Le marquage de l'expérient dans les langues d'Europe'. In J. Feuillet (ed.) *Actance et valence dans les langues de l'Europe*, 259-294. Berlin: Mouton de Gruyter.

## **Abstract 2**

### **The Acquisition of Differential Object Marking in Spanish and Romanian: Semantic Scales or Semantic Features?**

*Ticio, M. Emma, Syracuse University*

*Avram, Larisa, University of Bucharest*

This study investigates the acquisition of Differential Object Marking (DOM) in Spanish and Romanian. Both languages differentially mark direct objects higher on the animacy and specificity scales (Leonetti 2004). Recent theoretical research on DOM predicts acquisition developing along those two semantic scales; Aissen's (2003) animacy scale predicts the order human>animate>inanimate, while Farkas and von Heusinger's (2003) referentiality-based specificity scale predicts the order: unconditionally referentially stable DPs (proper names, definite pronouns) > conditionally referentially stable DPs (definite DPs) > referentially non-stable DPs (partitives, specific indefinites). This study aims at identifying whether the acquisition route strictly follows these semantic scales or whether it is merely guided by the core semantic feature of the scale.

The data come from three longitudinal corpora of spontaneous speech for each language (age - Spanish: 1;1-3;1; Romanian: 1;9-3;1). All marked objects were coded for referentiality and animacy.

The results reveal very early emergence of DOM (1;10 for Spanish and 2;1 for Romanian) and virtually target-like use in both languages (cf. Rodríguez-Mondoñedo 2008). Three stages can be identified: (i) children mark exclusively animate referentially stable objects, irrespective of the human feature and of whether referential stability is conditional or unconditional; the number of marked proper names, pronouns and definite DPs differs from one child to another; (ii) children occasionally overextend the marker to inanimate DPs (2.5% - 10%) with an upgrading effect. Such overextensions are also attested in child directed speech; (iii) after 2;6 referentially non-stable objects begin to be marked.

There is an overall preference to mark unconditionally stable DPs (over 70%), for which the choice of value is fixed and with which DOM is obligatory in the target language.

We argue that the acquisition process of DOM builds on the core semantic features underlying the relevant scales, which correspond to semantic universals constraining the acquisition process.

#### References

Farkas, D., K. von Heusinger (2003) 'Stability of reference and object marking in Romanian'. Paper presented at Workshop on Direct Reference and Specificity, ESSLLI, Vienna, August 2003.

Leonetti, M. (2004) 'Specificity and differential object marking in Spanish'. *Catalan Journal of Linguistics* 3:75-114.

### **Abstract 3**

## **Acquisition of Differential Object Marking in Child Hebrew**

*Uziel-Karl, Sigal, Ono Academic College*

Introduction. Differential Object Marking (DOM) is a phenomenon whereby direct objects are more likely to be overtly case-marked if they are higher in prominence (Bossong 1980, 1985, 1998). Prominence can be assessed along two dimensions: Animacy (Human > Animate > Inanimate) and definiteness (Personal pronoun > Proper noun > Definite NP > Indefinite specific NP > Non-specific NP) (Aissen 2003). In Hebrew, object case marking is obligatory only with definite objects (Givón 1978). Thus, pronouns, proper names, and definite NPs are overtly case marked, but indefinite NPs are not:

(1) Dan katav mixtav

'Dan wrote (a) letter.'

(2) Dan katav ?et ha mixcav

'Dan wrote ACC the letter'.

The present paper examines the development of DOM in child Hebrew: the types of case marked objects, their distribution and prominence over time and DOM errors.

Method. We analyzed longitudinal naturalistic speech samples of two Hebrew-speaking girls between ages 1;5-2;9, audio-recorded in interaction with their families. The data were transcribed and coded using CHILDES. All verb-containing utterances were isolated, and utterances with overt direct objects were coded (N = 795) for the object's lexical category, obligatoriness of DOM and DOM realization.

Results. Data analysis reveals that: 1) the direct objects most frequently case-marked by both girls were definite NP and ACC-pronouns (around 40%); 2) the variety of case-marked objects and their quantity increased over time; 3) most uses of DOM across development were grammatical with few errors of failing to case-mark direct objects in obligatory contexts.

Conclusions. The Hebrew data contributes to the growing body of cross-linguistic research on DOM acquisition, which, in turn, may shed light on the language specific vs. universal aspects of this phenomenon and its underlying semantic principles.

## References

Aissen, J. (2003) Differential object marking: Iconicity and economy. *Natural Language and Linguistic Theory* 21:435-483.

Bossong, G. (1998) 'Le marquage de l'expérient dans les langues d'Europe'. In J. Feuillet (ed.) *Actance et valence dans les langues de l'Europe*, 259-294. Berlin: Mouton de Gruyter.

## **Abstract 4**

### **On the Acquisition of Differential Object Marking in Estonian**

*Argus, Reili, University of Tallinn*

Estonian is a differential object marking (DOM) language. The choice of case depends on semantic and grammatical factors (Metslang 2013: 61). Among the semantic factors, definiteness and telicity are central: objects are marked with Genitive or Nominative case when they denote a definite quantity and the whole predicate denotes a telic event ('total objects'). Quantitatively indefinite objects which are part of atelic activities are marked with Partitive case ('partial objects'). Among the grammatical factors, negation and mood are the most important ones: in negative clauses, only Partitive objects can be used, Nominative objects occur only with imperative and impersonal mood predicates.

The main goal of this study is to investigate the acquisition of differential object marking in Estonian. More specifically, because in the case of 'partial objects' there is one-to-one-mapping between semantic features and case form, we predict that children will acquire the marking of 'partial objects' early. This prediction is reinforced by the fact that 'partial objects' are also frequent in child directed speech.

Our analysis uses data from the longitudinal corpora of two Estonian-speaking children (aged 1;7-2;4 and 1;3-2;4, 18 hours of recorded spontaneous speech). Every DOM context was coded according to semantic (definiteness, telicity) and grammatical properties (negation, mood, voice).

Both children start to mark 'partial objects', i.e. partitive NPs expressing indefinite quantity of object items (usually mass nouns), before age 2;0. The first 'total objects' are also attested early, approximately two months later. However, 'partial objects' are the most frequent ones in both corpora and they are used virtually target-like. Error analysis reveals overuse of Nominative objects in both corpora, which indicates that the choice between Nominative and Genitive case and between Partitive and Nominative case when DOM is conditioned by grammatical factors is more vulnerable.

## References

Metslang, H. 2013. Grammatical relations in Estonian: subject, object and beyond. *Dissertationes Philologiae Estonicae Universitatis Tartuensis* 33. Tartu: Tartu Ülikooli Kirjastus

## **Abstract 5 (if applicable)**

### **Incomplete Acquisition of Differential Object Marking: Evidence from Indefinite Objects in Turkish**

*Ketrez, Nihan, Istanbul Bilgi University*

The differential object marking in the form of an Accusative case marker attached to specific (both definite and indefinite) objects is one of the earliest acquisitions in Turkish child language (Aksu-Koç & Slobin 1985, among others). Children use the Accusative case to attribute grammatical relations (subject vs. object) at a very early age (Slobin & Bever 1982, among others). When the Accusative case appears on indefinite objects it has specific or partitive interpretation (Enç 1990, among others) and has a wide scope interpretation with respect to the other constituents (see (1) vs. (2)).

(1) Keçi bir çiçeği yemedi.

Bir N-acc > negation

goat a flower-acc eat-neg-past

'The goat did not eat a flower' (=there is a flower such that the goat did not eat it)

(2) Keçi bir çiçek yemedi.

goat a flower eat-neg-past

'The goat did not eat a(ny) flower(s)' (= no flower is eaten)

In this study, 31 children between the ages 3;5 and 6;6 and 25 adults participated in a comprehension experiment. Truth Value Judgment Task (Crain & Thornton 1999) was applied and children's comprehension of the scope of Accusative-marked indefinites with respect to negation was tested. The results suggested that the youngest age group children did not differentiate case-marked and non-case marked objects in terms of their scope (they assigned wide scope interpretation in about 25% of the instances to both object types). They start recognizing the case marker around age 5;0 (50% wide scope assignment to Accusative-objects), but even at age 6;0, children's interpretation of the Accusative-marked indefinites is not adult-like (80% vs. 99% adult wide scope assignment) suggesting an incomplete acquisition of the Accusative case despite its early emergence in production of less complex structures.

#### References

- Aksu-Koç, A., D.I. Slobin (1985) 'The acquisition of Turkish'. In: D.I. Slobin (ed.) (1985) *The Crosslinguistic Study of Language Acquisition. Volume 2: Theoretical Issues*, 839-880. Hillsdale, NJ: Lawrence Erlbaum .
- Enç, M. (1991) 'Semantics of Specificity'. *Linguistic Inquiry* 22(1): 1-25.
- Slobin, D., T.G. Bever (1982) 'Children use canonical sentence schemas : A Crosslinguistic study of word order and inflection'. *Cognition* 12: 229-265.



*Language development in atypical populations*

*Language, general*

## **Word learning and language processing in children with autism: Evidence from eye tracking**

*Bavin, Edith L., La Trobe university*

### **Symposium abstract:**

*Communication deficits are an identifying characteristic of autism (ASD). Compared to non-autistic children, vocabulary development is typically delayed, suggesting that children with ASD may follow a different pathway to language development. Although many verbal children with ASD develop age-appropriate language in terms of structure, it is not clear that they use typical mechanisms to process and produce these structures. For example, there is evidence that reduced information integration affects comprehension and, in terms of language production, utterances may appear contextually inappropriate.*

*In this symposium we present eye tracking data from four research groups investigating language processing in children with autism. Eye tracking, provides a sensitive tool for investigating when and why children have difficulty acquiring, understanding and producing language. The first paper focuses on word learning strategies in 14 and 24 month-olds at familial risk for autism and the association between these data and vocabulary at 24 months. The second paper reports on a lexical access task with 5-7 year-old high functioning children with ASD; those with more severe autism behaviors were less likely to integrate visual and auditory information. The third paper explores lexical ambiguity resolution in highly-verbal 7 year-olds. Results suggest that ASD and typical children use context similarly. The fourth paper, on language production, compares descriptions of visual scenes produced by different language phenotypes within the autism spectrum and non-autistic peers with language impairment. The results show vulnerability to atypical patterns of visual inspection and verbal utterance for the children with ASD.*

*These studies illustrate the promise of on-line methods for characterizing language in this heterogeneous population. In examining the mechanisms for acquiring and processing language, they provide more precise explanations for the communicative difficulties in ASD.*

## **Abstract 1**

### **Infancy predictors of vocabulary size in autism**

*Gliga, Teodora, & the BASIS Team, Birkbeck College, University of London*

Various infancy predictors of later vocabulary development have been described for typical development. Vocabulary size is reduced in many children with autism and we still understand poorly what are the limiting factors, whether they are language specific or more general skills, pertaining to the development of attention or learning and whether one or more causal stories can be told to explain language difficulties in this population. I will present data from a large prospective study of infants that are at-risk for autism because of having an older sibling with this disorder. About 20% of these infants are expected to develop symptoms of ASD by 36 months of age, but another 20% may manifest sub-threshold social and communication difficulties. High-risk infants, as a group, have smaller vocabularies from as early as 12 months of age (Hudry et al, 2012). In this talk I will assess the role of a few developmental factors for vocabulary growth. In a first study, carried out at 14 months of age, eye-tracking was used to measure reflexive gaze following and the ability to use gaze direction to learn new word-objects associations. In a second word learning study, 24 months olds were asked to generalize words to new exemplars of the category. In both studies word knowledge was assessed by measuring looking time during a word-object matching task. Performance in these tasks will be related to measures of vocabulary size and language proficiency, collected at 24 months of age.

#### Reference

Hudry K., Chandler S., Bedford R., Pasco G., Gliga T., Elsabbagh M., Johnson M., Charman T. (in press). Early Language Profiles in Infants at High-Risk for Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders* doi:10.1007/s10803-013-1861-4

## **Abstract 2**

## **Severity of autism related to language processing**

*Bavin, Edith L. , La Trobe University*

*Kidd, Evan, Australian National University*

*Prendergast, Luke, La Trobe University*

*Baker, Emma, La Trobe University*

*Dissanayake, Cheryl, La Trobe University*

*Prior, Margot, The University of Melbourne*

Problems with information processing are commonly reported in autism, even high functioning (HFA), but there is limited research on language processing in this population. The paper reports findings from an eye tracking lexical access task with 5-7 year old children with HFA divided into a Low severity group (n= 20) and a High severity group (n=17) based on their ADOS scores. They were compared to 5-7 year old children with typical development (TD) (n = 48). The task included sentences of the form 'Where's the x'. On screen were 4 pictures: the target (e.g. truck), a competitor with the same phonological onset (e.g. tree), and two distractors. In analysis one, the average proportions of looking time at target were compared using the Kruskal-Wallis ANOVA within 200 ms time intervals, followed by pairwise posthoc Mann-Whitney U tests with p-values corrected for multiple comparisons. A shift towards fixating on targets began in the intervals 400-600 and 600-800 with significant group differences in proportion of looking time at target detected at time intervals 1000-1200 and 1200-1400. The TD group looked more at target than did the ASD-high severity group. Also used was a within time intervals repeated measures analysis using generalized estimating equations adjusted for non-verbal IQ, attention, receptive language and expressive language scores. Significant differences were found between the TD and ASD-High severity groups in the 1000-1200 and 1200-1400 intervals, where the TD group was more likely to be fixated on target. Means for the ASD-Low severity group fell between those for the TD and ASD-High severity groups. The results show that autism severity influences language processing at the level of lexical access, and suggest problems in integrating visual and auditory information.

### **Abstract 3**

## **Rapid lexical ambiguity resolution in highly-verbal children with autism**

*Rabagliati, Hugh, University of Edinburgh*

*Hahn, Noemi, Albert Einstein College of Medicine*

*Snedeker, Jesse, Harvard University*

Some of the major evidence for reduced information integration in ASD comes from their resolution of ambiguous words: They are more likely than typically-developing (TD) controls to mispronounce homographs (e.g., ripped/shed a tear, Happe,1997). But recent work has argued that these deficits reflect low language abilities, and are not specific to ASD, e.g., Norbury (2005) found no differences in the processing of ambiguous words between well-matched ASD and TD-children. As such, the locus of contextual deficits, and the case for reduced information integration in ASD, remains open. One possibility is that prior tasks were overly taxing. We therefore developed an implicit measure of ambiguity-resolution, using eye-tracking. We compared 40 highly-verbal ASD-children and 40 TD-children matched on age (ASD: 7;8, TD:7;6) and language (CELF-IV; ASD: 109, TD:112). Participants heard sentences containing ambiguous targets (e.g., star (celestial/person)) preceded by contexts that were neutral (Karl saw the star...) or strongly-selected the less-frequent meaning (Karl met the star...). The sentence continued neutrally, but eventually selected the less-frequent meaning. Control sentences contained a matched unambiguous target (actor). We tracked eye-movements across four pictures; one of which was associated with the unselected meaning (e.g., sun).

We analyzed whether looks to the associate (“priming”) varied in the 1500ms subsequent to the target word, based on ambiguity, contextual strength and population. A resampling procedure uncovered significant time-windows while controlling for multiple comparisons. For TD-children, we predicted more priming following ambiguous words, but reduced when context was strong. If ASD-children have difficulties using context, this reduction in priming should be smaller. In fact, both groups demonstrated similar use of context. We found early priming for ambiguous words, but only for weak contexts. This reliable interaction between ambiguity and context did not significantly differ between populations, suggesting that highly-verbal ASD-children have little difficulty integrating linguistic information.

## References

Happé, F. G. E. (1997). Central coherence and theory of mind in autism: Reading homographs in context. *British Journal of Developmental Psychology*, 15, 1-12.

Norbury, C. F. (2005). Barking up the wrong tree? Lexical ambiguity resolution in children with language impairments and autistic spectrum disorders. *Journal of Experimental Child Psychology*, 90(2), 142-171.

## **Abstract 4**

### **Influences on sentence production in children with developmental disorders: evidence from eye-movement studies**

*Norbury, Courtenay, Royal Holloway, University of London*

Children with autism spectrum disorder (ASD) are frequently reported to scan social scenes in an atypical fashion (Rice et al. 2012). A separate line of research suggests that children with ASD are also likely to narrate depicted events in a less coherent way, and may be more prone to producing irrelevant or unusual statements (Norbury et al. 2013). The current study brings these two strands of research together in order to investigate language production in different language phenotypes within the autism spectrum, and how language production is qualitatively different in ASD relative to non-autistic peers with language impairment.

The eye-movements of children with/without ASD and with/without language impairment were recorded as they described visual scenes that depicted transitive events between two characters embedded in contextually appropriate background scenes. Analysis of eye-movements prior to speech onset can elucidate influences on message conceptualisation (deciding what to talk about), while the pattern of eye-movements post speech onset can reveal influences on message formulation (deciding how to talk about it).

Results indicated that, in general, children with ASD were more likely to fixate items in the periphery, giving less preference for the central characters. For the most part, this did not adversely affect what they said, though subject onset was delayed relative to typical peers. However, atypical utterances were more likely to occur in speakers with a clinical diagnosis. This often included mention of background items at the expense of more socially relevant information.

The pattern of results supports a multiple-deficit account in which language production is influenced not only by lexical and syntactic constraints, but also variation in attention control, inhibition and social competence. Children with ASD are therefore especially vulnerable to atypical patterns of visual inspection and verbal utterance.

#### References:

Rice K., Moriuchi J. M., Jones W., Klin A. (2012). Parsing heterogeneity in autism spectrum disorders: visual scanning of dynamic social scenes in school-aged children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 51, 238–248. doi: 10.1016/j.jaac.2011.12.017.

Norbury C., Gemmell T., & Paul R. (2013). Pragmatic abilities in narrative production: a cross-disorder comparison. *Journal of Child Language*, in press. doi: <http://dx.doi.org/10.1017/S030500091300007X>

**Abstract 5 (if applicable)**

**Child bilingual language development**

**Semantics and lexicon**

**Semantic development: Insights from the study of bilingualism and language impairment.**

*Bedore, Lisa M., The University of Texas at Austin*

**Symposium abstract:**

*Acquisition of vocabulary and semantic knowledge depends on the learner's ability to extract phonological regularities from the input and to associate phonological forms with concepts. Conceptual knowledge is dependent on world experience. Bilingual children and children with primary language impairment often demonstrate lower than expected semantic skills relative to their monolingual, typically developing peers. Bilingual children's difficulties are ascribed to divided language input reducing experience with each language. Language impaired children's difficulties are associated with weaknesses in the uptake of their language experience. We present a group of four studies that explore input and experience as related to vocabulary learning and semantic organization. Two studies address the cognate advantage in Spanish-English bilinguals. While non-cognates are subject to divided input, cognates potentially reinforce one another across languages. By documenting performance on cognates in Spanish-English bilinguals versus Mandarin-English bilinguals we see how children are able to use converging phonological information. By comparing language impaired children to their typically developing peers we are able to disambiguate the effects of amount of experience versus impaired learning ability. The ability to match form and meaning also supports the development of morphological awareness. Comparing Mandarin English and Spanish English children's ability to learn derivational morphemes helps us understand how cross-linguistic differences impact the development of morphological awareness. The final study we include here focuses on how bilingual learners (with and without language impairment) organize information in categories. The ability produce items in higher-level taxonomic categories rather than slot-filler categories was associated with age and experience. The presence of errors was associated with language impairment suggesting that reduced input associated with bilingualism and reduced ability to*

*use language experience result in different patterns of performance. The results of these four studies*

### **Abstract 1**

## **Do Cognates Facilitate L1 and L2 Lexical Access in Young Spanish-English Bilingual Children?**

*Sheng, Li, The University of Texas at Austin*

*Cruz, Diana F., The University of Texas at Austin*

Cognates are words that are similar in meaning and sound across two languages (e.g., elephant - elefante). Studies of bilingual adults consistently show a speed and accuracy advantage for the processing of cognates relative to non-cognates in various tasks and contexts (Costa, Caramazza, & Sebastian-Galles, 2000). Evidence on bilingual children is relatively sparse and tends to focus on English vocabulary tasks only (Kelley, & Kohnert, 2012; Pérez, Peña, & Bedore, 2010). This study examined whether Spanish-English (SE) bilingual children would show a cognate advantage in L1 and L2 vocabulary tasks. Tapping on the fact that Mandarin and English (ME) do not share cross-linguistic cognates, we tested a group of ME bilingual children on the same tasks and included them as controls. Twenty-four SE and 52 ME children between four and seven years of age participated in picture identification and picture naming tasks in L1 and L2. The cognates and non-cognates were matched on English and Spanish word frequency and word length. The SE group demonstrated a significant cognate advantage in the L1 picture naming task and a trend towards a cognate advantage on the English picture naming and picture identification tasks ( $p=.09$ ). On the L1 picture identification task, the SE children performed similarly on cognates and non-cognates. In contrast, the ME group did not show differences between the two sets of words on any of the four tasks. These findings indicate that young SE bilinguals are sensitive to cross-linguistic cognates. Inclusion of the ME control group helped us conclude that the cognates were not inherently easier than the non-cognates. Data collection with SE bilinguals is ongoing. An increased sample size will help us confirm or refute the trends seen in the data and allow us to examine subgroups of SE children of different ages and English exposure levels.

### **Abstract 2**

## **A Cross-Linguistic Comparison of Cognate Production in Bilingual Children with and without Language Impairment**

*Grasso, Stephanie M, The University of Texas at Austin*



*Peña, Elizabeth D., The University of Texas at Austin*

*Bedore, Lisa M., The University of Texas at Austin*

Cross-linguistic cognates are especially interesting for testing models of bilingual lexical learning, as they share overlapping representations in both form and concept (e.g. *telescope-telescopio*). The cognate facilitation effect suggests that bilingual adults recognize and produce cognates faster than non-cognates (Costa, Caramazza, & Sebastian-Galles, 2000). Furthermore, children as young as kindergarten are sensitive to cross-linguistic cognates in receptive vocabulary tasks. Additionally, older bilingual children show a cognate advantage in receptive and expressive vocabulary tasks (Kelley & Kohnert, 2012). However, studies have not examined whether a cognate advantage is present in bilingual children with specific language impairment (SLI). On one hand, we would expect children with language impairment to exhibit a cognate advantage as repetition supports word learning in children with language impairment (Rice, Oetting, Marquis, Bode & Pae, 1994). On the other hand, it is possible children may not exhibit a cognate advantage given that in early language development children reject lexical units that have increased competition (Swingley & Aslin, 2006). We examined approximately 115 Spanish-English bilingual children (5;0 to 9;11) with and without language impairment. Item responses on the English and Spanish versions of the Expressive One-Word Picture Vocabulary Test (EOWPVT; Brownell, 2000; 2001) were examined and performance of cognate and non-cognates were compared. Preliminary results thus far (n=79) showed a cognate advantage for the TD bilingual children, while the bilingual children with language impairment demonstrated a cognate disadvantage. We discuss these results relative to the interaction of lexical competition and child ability in bilingual acquisition.

### **Abstract 3**

## **The Use of Compounding And Derivational Word Formation Rules in Young Mandarin-English and Spanish-English Bilingual Children**

*Lam, Boji P.W., The University of Texas at Austin*

*Sheng, Li, The University of Texas at Austin*

The development of morphological awareness in L2 is found to be influenced by the productivity of specific word formation rules in L1 (Ramirez, Chen, Geva, & Luo, 2011; Pasquarella, Chen, Lam, & Luo, 2011). However, most studies documenting this influence have focused on older school-aged bilingual children who have a relatively well-established L1 system. It is not known to what extent findings from these studies generalize to bilinguals at an earlier developmental stage when both

language systems are still emerging. To this end we studied how age interacted with linguistic features in the context of language transfer. Twenty-four Mandarin-English (ME) and 22 Spanish-English (SE) bilinguals were divided into younger (four- to five-year-old) and older (six- to seven-year-old) groups. Children produced real words and novel words in English using compounding and derivational rules. As predicted, the ME group outperformed the SE group in English compounding tasks at both age groups. Contrary to predictions, ME also outperformed SE in the derivation task but differences were found only in younger children and different derivational endings displayed variable patterns. In the ME group performance in compounding and derivation was primarily associated with amount of English usage; but in the SE group, performance was primarily associated with age. These results, when viewed against the backdrop of previous studies, suggest that the extent of L1 influence on the development of morphological awareness in L2 is co-determined by the age of the children as well as the specific kinds of morphological rule under investigation. Specifically, the L1 facilitation effect may take longer to emerge for derived forms, which are on an extended developmental schedule. Our findings highlight the need to study cross-language transfer in a wider age range as well as the need for fine-grained analyses of different morphological paradigms.

#### **Abstract 4**

### **Development of Category Knowledge: Differential Impacts of Language Ability and Language Experience**

*Peña, Elizabeth D., The University of Texas at Austin*

*Bedore, Lisa M., The University of Texas at Austin*

*Sheng, Li, The University of Texas at Austin*

*McKinney, Kellin, The University of Texas at Austin*

*Kennedy, Angela, The University of Texas at Austin*

The development of category knowledge is in part a function of one's experiences with the world. Category generation tasks have been used to investigate vocabulary composition and organization in typically developing (TD) monolingual (Lucariello, Kyratzis, & Nelson, 1992; Nelson & Nelson, 1990) and bilingual children (Peña, Bedore, & Zlatic-Guinta, 2002). The types of errors produced during category generation tasks may reveal the boundaries of these experiences and the ways in which they are organized into lexical networks. Here we report on a series of analyses focusing on performance on a category generation task conducted in Spanish and English. Bilingual 7 and 9 year olds with and without language impairment (N=72) and bilingual adults (N=26) completed the task. We also collected information about

the participant's language use and language ability. Across groups we observed main effects for proportion of slot filler (e.g., circus animals) versus taxonomic (e.g., animals) items consistent with predictions in the literature. Typically developing children and adults produced more items under the taxonomic condition, but children with LI were more productive under the slot filler condition as has been observed for younger children. An analysis of the errors produced on this task (i.e., semantic errors vs. other errors) showed that the error rate of typically developing bilingual children was low and comparable to that of bilingual adults. Children with language impairment produced significantly more errors. These findings suggest that performance patterns related to language impairment can be differentiated from the performance patterns associated with bilingualism and that bilingual children with language impairment are challenged in organizing lexical networks.

**Abstract 5 (if applicable)**

**Cognition and language development**

**Pragmatics**

## **Implicit causality and the causal structure of events**

*Bittner, Dagmar & Dery, Jeruen, Centre for General Linguistics (ZAS Berlin)*

### **Symposium abstract:**

*When it comes to explaining why A did/experienced something to/by B, some verbs highlight the participant given by the sentential subject as a probable source of the event's cause (1), while other verbs highlight the participant in the sentential object (2). Finally, some verbs do not exhibit any preference (3).*

- (1) Peterj frightens Tomk, because hej is clever.*
- (2) Peterj loves Tomk, because hek is clever.*
- (3) Peterj looks for Tomk, because hej/k is clever.*

*Currently, implicit causality (IC) biases are explained along three alternative lines in adult language. The most traditional account assumes that a verb's IC-bias is rooted in its argument specifications (agent-patient, stimulus-experiencer; c.f. Crinean & Garnham, 2006). Recently, Bott & Solstad (submitted) argue that subject-biasing verbs typically denote subject-internal reasons while object-biasing verbs denote subject-external reasons. Others (e.g., Pickering & Majid, 2007) propose that IC-biases are probabilistic notions arising from world knowledge and contextual preferences pertaining to verb use. Some (of these) approaches relate IC to the causal structure of events and their expression in the verbal semantics.*

*In sum, IC seems to involve complicated, sophisticated, and rapid reasoning. This raises the question how these inferences are processed and how children learn to make them. If they derive mostly from linguistic structure, knowing linguistic structure should give the inferences. If they depend on world knowledge, inferences should more depend on experiences in the world.*

*Despite the intensive debate on IC in adult language, and the broader range of research on the acquisition of causal and causative constructions in child language (c.f. Muentener & Lakusta, 2011), development of IC-biases has only rarely been investigated so far and, if so, merely as a factor of pronoun resolution. The symposium will bridge together these two lines of research and aims at discussing the role of causality in language development and how it relates to causal reasoning and cognition.*

#### *References*

*Bott, O. & Solstad, T. (submitted). From verbs to discourse: A novel account of implicit causality. To appear in: Hemforth, Bet al. (eds.): Psycholinguistic approaches to meaning and understanding across language. (Studies in theoretical psycholinguistics). Springer.*

*Crinean, M. & Garnham, A. 2006. Implicit causality, implicit consequentiality and semantic roles. Language and Cognitive Processes, 21, 636-648.*

*Muentener, P. & Lakusta, L. 2011. The intention-to-CAUSE bias: Evidence from children's causal language. Cognition 119, 341-355.*

#### **Abstract 1**

### **Children's understanding of causality; Evidence from corpora and processing studies**

*Ted Sanders, Utrecht University*

*Evers-Vermeul, Jacqueline, Utrecht University*

*van Veen, Rosie, Utrecht University*

*Mak, Pim, Utrecht University*

A cumulative complexity approach accounts for children's connective acquisition (Evers-Vermeul & Sanders, 2009): Causal connectives are only acquired after children master additive and temporal ones. But what about various types of causality? And do we know when children actually comprehend these types of causality? In this paper we discuss experiments containing narrative, instructive and argumentative tasks, which reveal that three-year-olds already produce causals in the content, epistemic and speech-act domains (Sweetser, 1990), see (1)-(3).

(1) Content (cause-consequent or consequent-cause)

Patricia sometimes goes to Spain, because her father lives there. (Laura 5;5)

(2) Epistemic (argument-conclusion or conclusion-argument)

Yes, it (= the train, lit. he) goes wrong then, doesn't it?

Because actually it should drive this way. (Matthijs 3;6)

(3) Speech act (speech act: argument for a speech act)

Not so loud, because otherwise I cannot work. (Laura 4;9)

A corpus-based study shows that children aged 2;8 produce content and speech-act causals, but acquire epistemics later (Evers-Vermeul & Sanders, 2011).

Given these results, we needed to study younger children in order to track their earliest use. Because the production of connectives in different domains presupposes the comprehension of relations in these domains, we conducted a Comprehension Study in order to find out when children first comprehend verbally expressed content and epistemic relations (Van Veen, 2011).

Results from an eye-tracking experiment with a preferential looking design show that content relations develop earlier than epistemic relations, indicating that different types of causality develop along a continuum. Overall, the order in which children acquire different types of causality indeed suggests that epistemic relations are the most complex ones, although children as young as two grasp some sense of their meaning. We conclude by interpreting these results in the context of what we know about adult's processing of (implicit) causality (Canestrelli, Mak & Sanders, 2013).

## References

Canestrelli, A.R., Mak, W.M. & Sanders, T.J.M. (2013). Causal connectives in discourse processing: How differences in subjectivity are reflected in eye movements. *Language and Cognitive Processes*, to appear.

Evers-Vermeul, J. & T. Sanders (2009). The emergence of Dutch connectives; how cumulative cognitive complexity explains the order of acquisition. *Journal of Child Language* 36(4): 829-854.

Van Veen, R. (2011). *The acquisition of causal connectives: The role of parental input and cognitive complexity*. Utrecht: LOT.

## **Abstract 2**

### **Implicit causality and verb class**

*Hartshorne, Joshua K., MIT*

What must a child know in order to show adult-like pronoun interpretation biases in “implicit causality” sentences such as (1-2)?

- (1) Abigail frightened Beatrice because she... [she=Abigail]
- (2) Abigail liked Beatrice because she... [she=Beatrice]

Many researchers have focused on verb class (Rudolph & Forsterling, 1997). Based on the verb class, the listener can determine who the likely cause was. For instance, the cause of experiencer-object verbs like frighten is the subject, whereas the cause of experiencer-subject verbs like like is the object. The pronoun bias follows from the fact that explanations usually invoke causes.

The data supporting this claim are correlational: certain verb classes and pronoun biases typically co-occur. To test for a causal role for verb class in implicit causality, I presented adults with definitions for novel verbs (e.g., “gorp”) that described emotions for which there is no existing verb in English (e.g., “a warlike or aggressively hostile nature, condition, or attitude”). For each verb, I first asked the participant to use the verb in a sentence to describe a scenario in which one person (e.g., Abigail) felt that emotion about another (e.g., Beatrice). Their response indicated whether they interpreted the verb as an experiencer-subject (Abigail gorped Beatrice) or experiencer-object (Beatrice gorped Abigail) verb.

Next, the participant was presented with an implicit causality sentence containing the novel verb

- (3) Carl gorped Abigail because...

and was asked to determine whether the next word should be he or she. Adults were more likely (Wald's  $z=5.2$ ,  $p=.05$ ) to respond “he,” indicating a subject-bias, for verbs they had treated as experiencer-object (61%) than for verbs they had treated as experiencer-subject (46%).

This indicates that in acquiring adult-like implicit causality pronoun biases, children need not track the statistics of individual verbs but merely learn the effects of verb class.

#### References

Rudolph, U., & Forsterling, F. (1997). The psychological causality implicit in verbs: A review. *Psychological Bulletin*, 121, 192-218.

### **Abstract 3**

# **Development of Implicit causality of verbs in children: A cross-cultural comparison in Western and non-Western languages**

*Fabia Franco, Middlesex University, London*

*Agota Major, CEU, Budapest*

*Maryam Danaye Tous, University of Guilan*

*Jonathan Sigger, Middlesex University, London*

Implicit causality (IC) biases are robust and have been replicated in many studies in different languages; however there is no direct cross-cultural comparison in the developmental area. In order to facilitate the exploration of cognitive vs. language-specific factors in young children's understanding of verbs we investigated IC-effects in Western and non-Western languages. Two factors important from a developmental perspective were analyzed: age and Theory of mind reasoning. Native speakers of British English, Finnish, Hungarian, Polish, Serbian, Turkish and Farsi aged 3-7 years were presented with S-V-O sentences (Ann loves Susan), and were asked "Why does S verb O?". The responses were categorized as based on 'something about S' or 'something about O'. Interpersonal verbs from three semantic domains were used (cognition, emotion and vision).

The results show that still at the age of 5 children do not fully understand some items, and they do not make adult-like causal attributions for interpersonal events (S-attributions for state-action verbs and O-attribution for state verbs). Theory of mind seems to have some influence on making adult-like attributions of causality. In general, the pattern of prevalent O-attribution for state verbs vs. S-attribution for state-action verbs is found in most of the languages. However, there appears to be some variations linked to the difference in languages. The semantic domain emerges as an important factor in ascribing IC when comparing biases across different languages. We will discuss whether the observed differences derive from particular linguistic constructions typical of these languages, or are rather guided by enculturation within different belief systems.

## **Abstract 4**

### **Emergence of implicit causality in German-learning children**

*Bittner, Dagmar, Centre for General Linguistics, ZAS Berlin*



Initial investigations in English-learning children's processing of implicit causality of verbs suggest that 4-year-olds have established adult-like IC-biases (e.g. Corrigan 2008), i.e. associate subject choice in because-clauses to some verbal properties in the main clause. Sometimes, children showed a stronger preference to select the object referent of the main clause.

In current reaction-time- and visual-world-paradigm studies, we explore whether these findings can be replicated for German 4- and 5-year-olds, and if so, what causes the stronger preference towards object-choice in children. Based on our study of 4-8-year-old's because-clauses in narratives two alternative hypotheses are tested. 1) Children start with a general preference for object-continuation in subordinated clauses. This is motivated by our finding that NP2 also dominates in 4-5-year-olds but not 6-8-year-olds other types of subordinated clauses. 2) Children show stronger NP2-preferences as long as they have not established a preference for topic continuation. This is motivated by our finding that 6-8-year-olds produce less NP2-choices in because-clauses than 4-5-year-olds and name more volitional than non-volitional causes; i.e. they tell the story more consistently from the point of view of a main character.

The overall pattern of subject-choice in because-clauses produced in the narratives was: NP1 is associated with volition (because he wants to...), but NP2 is non-volitional (because he is angry). Further, we found an impact of tense and negation. This compliments findings from our adult studies: IC-biases weaken/disappear in the presence of certain structural properties, among them tense and negation. The results lead to the general hypothesis that children first establish structural patterns of causality requiring either NP1- or NP2-choice before establishing verb specific or verb-class-related IC-biases.

In discussing our results, we will focus on whether data from child language support the idea of a verb-internal or a usage-related origin of IC-biases.

Corrigan, R. 2008. Beyond the obvious. Constructing meaning from subtle patterns in language environment. *Communication Disorders Quarterly* 29, 109-124.

**Abstract 5 (if applicable)**

**Cognition and language development**

**Language, general**

## **Cognitive Advantages in Bilingual Children**

*Blom, Elma, Utrecht University*

### **Symposium abstract:**

*It is well established that bilingualism can convey advantages in executive functions (Barac & Bialystok, 2011; Hilchey & Klein, 2011), but what constellation of factors is necessary for this cognitive advantage is not clear. Does it matter if a child is an emerging bilingual, trilingual, or in which environment a child grows up? Can language-minority children from socially disadvantaged backgrounds benefit from multilingualism? Questions such as these will be addressed in this symposium. Previous research in this area focused almost exclusively on North America. This symposium presents data from Luxembourg, the Netherlands, Great Britain, and Germany in different populations to determine whether the bilingual cognitive advantages previously reported require a specific social and linguistic context.*

*- Socio-economic status. Significant growth of immigrant populations in many countries has led to increasing numbers of bilingual children. Although many immigrants are highly skilled, many others are socio-economically disadvantaged. A first question addressed is whether children from low SES families can benefit from being bilingual.*

*- Bilingual proficiency. Previous research has targeted highly proficient bilingual children; little is known about less proficient bilingual children. A second question addressed is whether the cognitive development in bilingual children is influenced by language proficiency, and if cognitive advantages emerge in less proficient bilinguals.*

*- Home environment. The bilingual advantage is thought to stem from suppressing a language. Conceivably, language suppression is easier when the two languages are associated with different contexts. A third question addressed is whether the presence of one versus two languages within the same context (home) affects bilingual children's cognitive development.*

- *Beyond inhibition? The ability to suppress interfering information (“cool inhibition”) has been singled out as a strength in bilingual children. This idea is challenged by at least two symposium presentations where bilingual children outperform monolinguals on working memory and delay of gratification (“hot inhibition”) tasks.*

### *References*

*Barac, R. & Bialystok, E. (2011). Research timeline: Cognitive development of bilingual children. Language Teaching, 44, 36-54.*

*Hilchey, M. & Klein, R. (2011). Are there bilingual advantages on nonlinguistic interference tasks? Implications for the plasticity of executive control processes. Psychonomic Bulletin and Review, 18, 625-658.*

### **Abstract 1**

## **Bilingualism Enriches the Poor: Enhanced Cognitive Control in Low-Income Minority Children**

*Engel de Abreu, Pascale, University of Luxembourg/ Luxembourg*

*Cruz-Santos, Anabela, University of Minho/Portugal*

*Tourinho, Carlos, University of Luxembourg, Luxembourg*

*Martin, Romain, University of Luxembourg, Luxembourg*

*Bialystok, Ellen, York University, Canada*

Research question: Living in poverty is often accompanied by conditions that can negatively influence cognitive development (Noble, Norman, & Farah, 2005). Is it possible that being bilingual might counteract these effects? This study explores whether the cognitive advantage associated with bilingualism in executive functioning (Bialystok, Craik, Green, & Gollan, 2009) extends to young immigrant children challenged by poverty and, if it does, which specific processes are most affected.

Methods: 80 second graders from low-income families participated in the study. Half of the children were first or second generation immigrants to Luxembourg, originally from Northern Portugal, who spoke both Luxembourgish and Portuguese on a daily basis. The other matched half of children lived in Northern Portugal and spoke only Portuguese. Children completed measures of vocabulary and visuo-spatial tests of working memory, abstract reasoning, selective attention, and interference suppression.

Results: Two broad cognitive factors of executive functioning—representation (abstract reasoning and working memory) and control (selective attention and interference

suppression)—emerged from principal component analysis. Although the bilingual children knew fewer words than their monolingual peers, and did not show an advantage in representation, the bilinguals performed significantly better than did the monolinguals in cognitive control.

Conclusions: These results demonstrate, first, that the bilingual advantage is neither confounded with nor limited by socioeconomic and cultural factors and, second, that separable aspects of executive functioning are differentially affected by bilingualism. The bilingual advantage lies in control but not in visuo-spatial representational processes. So, although they may face linguistic challenges, minority bilingual children from low-income families demonstrate important strengths in other cognitive domains. The study therefore informs efforts to reduce the achievement gap between children of different socio-economic backgrounds.

#### References

- Bialystok, E., Craik, F. I. M., Green, D. W., & Gollan, T. H. (2009). Bilingual minds. *Psychological Science in the Public Interest*, 10(3), 89-129.
- Noble, K. G., Norman, M. F., & Farah, M. J. (2005). Neurocognitive correlates of socioeconomic status in kindergarten children. *Developmental Science*, 8(1), 74–87.

#### **Abstract 2**

#### **Cognitive Advantages in Bilingual Children without Conflict Resolution: Language Proficiency and Socio-economic Status**

*Blom, Elma, Utrecht University*

*Aylin, Küntay, Utrecht University/*

*Messer, Mariëlle, Utrecht University*

*Verhagen, Josje, Utrecht University*

*Leseman, Paul, Utrecht University*

Research question: Recent research indicates that bilinguals are not only better at inhibitory control compared to monolinguals but are also more efficient in allocating memory resources (Morales et al., 2013). Other research suggests that in the domain of inhibition, bilingualism can make up for social disadvantages (Carlson & Meltzoff, 2008). In this study, bilingual children from lower SES immigrant families and monolinguals were compared on verbal and visuo-spatial short-term (STM) and working memory (WM). We asked whether (1) there is a bilingual advantage for memory, (2) memory performance is related to bilingual proficiency, and (3) bilingual advantages can compensate for SES disadvantages in the domain of memory.

**Methods:** 110 children were tested in two waves, at age 5 and 6. Two subsamples were created that allowed isolating effects of bilingualism and investigating compensatory effects of bilingualism. The first subsample consisted of 32 Turkish-Dutch bilinguals and 32 Dutch monolinguals matched on age, nonverbal IQ, and SES. The second subsample contained 35 low-SES Turkish-Dutch bilinguals and 35 high-SES Dutch monolinguals matched on age and nonverbal IQ. The mean of Dutch and Turkish receptive vocabulary scores was a proxy for bilingual proficiency. Verbal STM, verbal WM, visuo-spatial STM, and visuo-spatial WM tasks were administered.

**Results:** The first subsample showed that bilinguals outperformed monolinguals on verbal and visuo-spatial WM. Bilingual proficiency was positively correlated with bilingual children's performance on the WM tasks for each wave separately. WM outcomes correlated positively with SES. The second subsample revealed that despite their lower SES, the bilinguals performed similarly to the monolinguals on WM.

**Conclusions:** First, bilingual children outperform monolinguals on working memory. Second, working memory performance in the bilingual group is related to level of bilingual proficiency. Third, bilingualism can counteract SES disadvantages in the domain of memory.

#### References

Carlson, S. & Meltzoff, A. (2008). Bilingual experience and executive functioning in young children. *Developmental Science*, 11, 282-298.

Morales, J., Calvo, A. & Bialystok, E. (2013). Working memory development in monolingual and bilingual children. *Journal of Experimental Child Psychology*, 114, 187-202.

### **Abstract 3**

## **Do all Young Bilinguals Benefit from a Cognitive Advantage?**

*De Cat, Cecile, University of Leeds*

*Serratrice, Ludovica, University of Manchester*

*Berends, Sanne, University of Leeds*

**Research question:** Bilingualism affects how children deal with executive function tasks that require cognitive flexibility and inhibition (Morton & Harper 2009). Recent research suggests that bilingual experience rather than language proficiency predicts these bilingual advantages (Bialstok & Barac, 2012). What remains unclear is how bilingual children have to be benefit from these cognitive advantages, and the extent to which lower SES affects cognitive advantages. The research question that guides this study asks whether children's performance on executive control tasks is

predicted by bilingual experience, language proficiency, SES, and what the critical threshold of bilingual experience is for cognitive advantages in bilingual children.

**Method:** This UK-based study involves 90 bilinguals between the ages 5-7 from low to high SES, plus 90 monolingual controls matched for age and SES. We target a heterogeneous sample of bilinguals in terms of language combinations (English + other) and language exposure (with at least 2 years exposure to English). Three executive function components are assessed: working memory, inhibition, cognitive flexibility. Language experience is estimated from parental reports on weekly patterns. English proficiency tests include vocabulary, sentence repetition, sentence structure, determiner choice. SES is measured by a combination of parental employment, education, and home ownership.

**Results:** (Data collection: Feb.2013–Jan.2014) A fine-grained analysis of the simultaneous effect of language, socio-economic and cognitive factors will be performed using mixed-effect modeling to capture random variation due to participants and test items, with +/-bilingual as a dichotomous variable and degree of bilingualism, English proficiency, SES, and executive function components as continuous variables.

**Conclusions:** We predict that (1) cognitive advantages of bilingualism on executive control tasks are positively correlated with bilingual experience (+ we identify the critical threshold), while language proficiency is not, and (2) bilingualism has a compensatory effect on the detrimental impact of low SES on cognitive development.

#### References

Bialystok, E. & Barac, R. (2012). Emerging bilingualism: Dissociating advantages for metalinguistic awareness and executive control. *Cognition*, 122(1), 67–73.

Morton, J. B. & Harper, S. N. (2009). Bilinguals show an advantage in cognitive control: The question is why. *Developmental Science*, 12(4), 502-503.

#### **Abstract 4**

### **Language Immersion and Enhanced Cognitive Control in Children: Evidence from Second Language Learners, Bilinguals, and Trilinguals**

*Poarch, Gregory, University of Tübingen*

**Research question:** There is converging evidence of enhanced cognitive functions in conflict resolution tasks (e.g., Simon Task, Flanker Task) for child bilinguals compared to

monolinguals (Kroll & Bialystok, 2013). However, recent debate has hinted at confounds in the possibly different socio-economic backgrounds of the bilingual and monolingual groups tested (Hilchey & Klein, 2011). This study aimed at exploring whether the bilingual advantage in executive functioning extends to second language learners and trilingual children and, in doing so, puts particular stress on establishing a common socio-economic background for all participating children.

**Methods:** 72 children from high-income families participated in the study. These comprised four groups of 6- to 8-year old children who were English-German dual-immersion students (mean length of immersion = 2.4 years), German-English bilinguals (mean length of immersion = 3.9 years), German-Language X-English trilinguals (mean length of immersion = 2.2 years), or monolinguals, who completed measures of vocabulary in German and English and were given two measures of executive control, the Simon Task and the flanker task, which are assumed to tap into task monitoring, selective attention, and conflict resolution.

**Results:** All of the children in the three multilingual groups outperformed monolingual children on the Simon Task, although the difference only became statistically significant for the bilinguals and trilinguals, and the bilinguals and trilinguals outperformed the second-language learners in the flanker task. It is assumed that enhanced cognitive control in the bilingual and trilingual children stems from their more or less permanent need to monitor, control, and shift between two languages.

**Conclusions:** These results indicate that for some aspects of executive control, there may be a threshold of bilingual experience before any cognitive advantages become apparent. Moreover, the results also demonstrate that sustained processing of more than two languages has no extended cognitive benefit over processing only two languages.

#### References

Hilchey, M. & Klein, R. (2011). Are there bilingual advantages on nonlinguistic interference tasks? Implications for the plasticity of executive control processes. *Psychonomic Bulletin and Review*, 18, 625-658.

Kroll, J. F., & Bialystok, E. (2013). Understanding the consequences of bilingualism for language processing and cognition. *Journal of Cognitive Psychology*.  
<http://dx.doi.org/10.1080/20445911.2013.799170>.

#### **Abstract 5 (if applicable)**

### **Effects of Bilingualism and Bilingual Home Language Environment on Inhibitory Control in Three-year Olds**

*Verhagen, Josje, Utrecht University*

*Mulder, Hanna, Utrecht University*

Research question: Bilingual toddlers outperform monolinguals on tasks measuring the suppression of conflicting information ('conflict tasks'), but not on tasks measuring the delay of a response to a reward ('delay tasks') (Carlson & Meltzoff, 2008; Poulin-Dubois et al., 2011). We asked, first, if this finding is replicated in a large sample and, second, if performance on inhibition tasks is related to home language use. We hypothesized that bilingual children whose parents speak different languages can inhibit better than bilingual children whose parents speak the same language. In the latter case suppression of a language may be facilitated by contextual separation of the languages, entailing less cognitive training.

Method: Participants were 226 monolingual and 226 bilingual three-year olds (mean=41 months, SD=3) case-matched on age, gender, SES, and Dutch receptive vocabulary. The monolingual children spoke Dutch; the bilingual children spoke Dutch and another language. The bilingual children grew up in families where either both parents spoke the same language (same-language-group), or they spoke different languages (different-language-group) to them at home. Children were administered a conflict task and two gift delay tasks.

Results: The bilinguals tended to perform better on the conflict task than the monolinguals; no differences were found on the delay tasks. A comparison between the different-language-group and the same-language-group showed better performance for the former group on both conflict and delay tasks. In fact, the different-language-group – but not the same-language-group - obtained significantly higher scores than the monolingual children on both measures.

Conclusions: These results confirm bilingual advantages in conflict tasks in young children based on a large sample. They also show that language mixing in the home language environment affects children's development of inhibition. Finally, advantages found for conflict tasks extend to delay tasks if bilingual children are considered whose parents speak a different language at home.

#### References

Carlson, S. & Meltzoff, A. (2008). Bilingual experience and executive functioning in young children. *Developmental Science*, 11, 282-298.

Poulin-Dubois, D., Blaye, A., Coutya, J., & Bialystok, E. (2011). The effects of bilingualism on toddlers' executive functioning. *Journal of Experimental Child Psychology*, 108(3), 567-79.



*Cognition and language development*

*Language, general*

## **Comprehension and production of causal and temporal connectives: factors that influence development**

*Cain, Kate, Lancaster University*

### **Symposium abstract:**

*This symposium brings together recent studies that examine the development of comprehension and production of connectives. Connectives are cohesive devices that signal the coherence relations between clauses. Good knowledge of connectives is critical for readers and listeners to construct coherent representations of discourse meaning and for speakers to combine clauses effectively when communicating. The papers in this symposium examine the environmental (parent input, language spoken) and cognitive (memory, cognitive control) factors that may influence the extensive development that takes place in both the understanding and use of connectives that express causal and temporal relations between 2 to 12 years. This collection of studies is valuable by demonstrating how different methodologies can be used to examine the development of connective competence and also how this knowledge develops across a range of languages: English, Dutch, French, and German.*

*In the first paper, Evers-Vermeul, van Veen and Sanders use a corpus-based approach to identify the features of parental input that influence 2- to 4-year-olds' acquisition of causal connectives in Dutch, English, and French. The next three papers examine the comprehension of events linked by temporal connectives between 3 to 12 years. They show that younger (Paper 2: Blything and Cain) and older (Paper 3: Karlsson, van den Broek, and Van Leijenhorst) children's comprehension of temporal connectives has an extended period of development and that, similar to adults (Paper 4: Van Leijenhorst, Karlsson, Helder and van den Broek), performance is influenced by the memory and additional cognitive control requirements of particular temporal constructions. The fifth and final paper by Sanders and Zufferey returns to causal relations. Converging with the work on*

*temporal connectives, this research demonstrates that the distinction between different types of causal relations is not fully mastered by 12, and that cognitive development, rather than language spoken, sets the pace for development.*

## **Abstract 1**

### **Emerging coherence: causal connective acquisition by 2- to 4-year-olds**

*Evers-Vermeul, Jacqueline, Utrecht University*

*van Veen, Rosie, Utrecht University*

*Sanders, Ted, Utrecht University*

#### Research question

In order to build a coherent discourse, children must learn to combine clauses and set up coherence relations between clauses in a discourse. In this paper we study children's development of causal connectives (because, so) over time. Our research question is: how does parental input affect young children's causal connective acquisition? More specifically, we investigate whether parental input remains constant over time, or whether parents adapt the amount and type of input to their child's increasing abilities.

#### Method

We will give an overview of four corpus-based studies on causal connective acquisition in the Germanic languages Dutch, English and German, using growth-curve analyses of longitudinal data from the Childe Database. In Study 1 we discuss a case study of one boy's connective development and its relation to his parents' short-term and long-term connective input. In Study 2 we check whether parents' amount and type of connective input remains stable or changes over time. In Study 3 we explore the facilitating role of why-questions by analyzing parent-child question-answer routines. In Study 4 we zoom in on children's acquisition of different types of causality (e.g. consequence-cause, claim-argument).

#### Results and conclusions

In Study 1, we found correlations between parental connective input and children's connective use, with periods of little and periods of substantial parental influence. Our analyses of parental why-questions showed that causal connectives are not a vital component of appropriate causal responses, but that parents do create a zone of proximal development (Vygotsky, 1978), adapting their language use to their child's increasing abilities when deciding whether and how to ask a why-question. Children's use of connectives in consequence-cause relations were found to develop at a faster rate than that in claim-

argument relations. On the basis of these results we present an overall picture of young children's causal connective development.

## **Abstract 2**

### **Children's understanding of temporal connectives: how age and memory influence performance**

*Blything, Liam, Lancaster University*

*Cain, Kate, Lancaster University*

We conducted a developmental investigation of 3- to 7-year-olds' comprehension of temporal connectives to identify the age at which children accurately use connectives to encode the relation between two clauses and reasons for failure to understand these processing signals.

Children listened to two-clause sentences linked by a temporal connective, before or after, while viewing animations of the actions in each clause. After each sentence, they were asked to select the event that happened first to assess their understanding of the temporal order. We manipulated whether the presentation order matched the chronological order of events: 'He finished his homework, before he played in the garden' (chronological order) vs 'Before he played in the garden, he finished his homework' (reverse order), and whether the temporal relation between the two events was arbitrary (as above) or predictable from background knowledge: 'He brushed his teeth, before he went to sleep'. Accuracy and response times were recorded.

There were main effects of age and order, which were qualified by a significant three-way interaction between age, order, and connective. Younger children were influenced by order: their performance was more accurate when the presentation order of the two clauses matched the chronological order of events, and this effect was more pronounced for sequences linked by before. The older children were more accurate and quicker in general, and were not influenced by order. There were no effects of background knowledge: regardless of age, children performed comparably when the two clauses shared an arbitrary relation or one that was predictable. An independent measure of memory predicted performance on the task.

We conclude that by 7 years of age, children can reliably use the temporal connectives before and after to encode two-clause sequences but that, below this age, performance is limited by memory demands of the task.

### **Abstract 3**

## **The role of working memory in updating a mental model during sentence comprehension in children**

*Karlsson, Josefine, Leiden University*

*van den Broek, Paul, Leiden University*

*Van Leijenhorst, Linda, Leiden University*

In real life, events occur sequentially. In language, events can be presented in non chronological order. Sentences with multiple events require a reader to order these events correctly in their mental representation. Linguistic cues, such as temporal connectives (before, after, while) aid in this process. However, children seem to experience difficulties in acquiring the ability to correctly use temporal connectives (Cain & Nash, 2011). We examined individual and age-related differences in children during comprehension of sentences in which multiple events are ordered by temporal connectives using a computer adaptation of a paradigm described by Pyykkönen & Järvikivi (2012). Children (ages 9-12) read sentences from a computer screen, each sentence was followed by the presentation of three pictures (representing event 1, event 2, and both events). Children had to indicate which picture showed the event that happened first. Results showed that children were able to comprehend complex sentences describing the order in which events occurred. However, children experienced the most difficulties understanding sentences with the connective “after”, and sentences in which the correct answer to the question “what happened first” was presented in the beginning of the sentence. We relate these findings to individual differences in Working Memory Span (WM), and suggest that immature WM span in late childhood limits children’s ability to comprehend complex sentences that describe the order in which two events occurred.

Cain, K., & Nash, H. M. (2011). The influence of connectives on young readers' processing and comprehension of text. *Journal of Educational Psychology*, 103, 429-441.

Pyykkönen, P., & Järvikivi, J. (2012). Children and situation models of multiple events. *Developmental Psychology*, 48, 521-529.

### **Abstract 4**

# **Neural correlates of revising a situation model for sentences with multiple events in children and young adults.**

*Van Leijenhost, Linda, Leiden University*

*Karlsson, Josefine, Leiden University*

*Helder, Anne, Leiden University*

*van den Broek, Paul, Leiden University*

In order to build a coherent mental representation of a text, readers have to include information about the temporal order in which events described in the text occurred. Temporal connectives, such as 'before' and 'after' signal temporal order and function as event structure cues (ES-cues). Children aged 8-12 have been shown to have particular difficulty building a correct mental model when two events are presented in reverse chronological order, and when the ES-cue is presented in the middle of a sentence (Pyykkönen & Järvikivi, 2012). The present study examines the neural correlates of revising a mental model in response to sentence-medial ES-cues. Previous studies in adults have found that processing of sentences in which events are presented in reversed chronological order is associated with additional cognitive control requirements, and activation of the left prefrontal cortex (Münte, Schiltz & Kutas, 1998). Prefrontal region associated with cognitive control continue to mature until early adulthood (Shaw et al., 2008), we hypothesize that immature frontal lobe functioning contributes to children's difficulties using ES-cues. We adapted the paradigm used by Pyykkönen & Järvikivi (2012) for fMRI. Young adults (N =16) read sentences with sentence medial and sentence initial temporal connectives. Preliminary analyses show bilateral dorsolateral prefrontal cortex associated with cognitive control during reading of sentences with medial ES-cues, and activation of posterior temporal lobes associated with semantic processing during reading of sentences with initial ES-cues. Additional data for a group of children (9-12 years old) are currently being collected.

Münte, T. F., Schiltz, K., & Kutas, M. (1998). When temporal terms belie conceptual order. *Nature*, 395, 71-73.

Pyykkönen, P., & Järvikivi, J. (2012). Children and situation models of multiple events. *Developmental Psychology*, 48, 521-529.

Shaw, P., Kabani, N. J., Lerch, J. P., Eckstrand, K., Lenroot, R., Gogtay, N., et al. (2008). Neurodevelopmental trajectories of the human cerebral cortex. *Journal of Neuroscience*, 28, 3586-3594.

**Abstract 5 (if applicable)**

# **The acquisition of objective and subjective causality**

*Zufferey, Sandrine, University of Geneva and Utrecht University*

*Sanders, Ted, Utrecht University*

Sentences forming a text are often linked together by a causal relation. In some cases, such causal relations link objective states or events (1) while in others they relate subjective arguments and conclusions (2).

(1) The door slammed because there is a strong wind outside.

(2) Lisa is a popular writer, because her books are sold everywhere in the world.

In some languages like Dutch and German, but not in others like English and spoken French, these two types of causal relations are prototypically expressed by specific connectives. The distinction between objective and subjective causality and the difference of linguistic encoding between the languages raise two questions for their acquisition. (1) When do children acquire the distinction between objective and subjective causality? (2) Does the fact of acquiring a language in which objective and subjective causality are encoded in different connectives give children a developmental advantage?

These questions are addressed in three offline and online experiments. First, the acquisition of objective and subjective relations is assessed in a cross-linguistic offline comprehension task comparing Dutch-speaking and French-speaking children from age 5 to 8. This experiment does not reveal any developmental advantage for Dutch-speaking children and confirms that subjective relations remain difficult to understand even for 8-year-old children.

A second offline experiment assesses Dutch-speaking children aged 8 to 12 on their ability to choose the correct connective to express objective and subjective causality. This experiment reveals that by the age of 8, children do have some sensitivity to the difference between connectives expressing objective and subjective causality, while not reaching adult-like performances even at 12. This experiment is complemented by an online self-paced reading experiment assessing further children's growing sensitivity to subjective causality.

We conclude from this set of experiments that children's cognitive development sets the pace for the acquisition of causal relations and connectives and that some fine-grained semantic distinctions such as the one separating objective and subjective causality are not fully mastered until late childhood.

***Cultural and social factors in child language development***

***Language, general***

## **Language acquisition in interaction**

*Arnon, Inbal, Hebrew University*

*Casillas, Marisa, MPI*

*Kurumada, Chigusa, University of Rochester*

*Estigaberría, Bruno, UNC*

### **Symposium abstract:**

*We propose a symposium dedicated to the role of interaction in children's language learning. Understanding how communicative goals impact and drive the learning process has been a long-standing issue in the field of language acquisition. Building on models of language learning where interaction is crucial, recent years have seen increasing numbers of studies examining social and pragmatic aspects of language learning: in different languages, across diverse linguistic domains (word learning, word order, statistical learning), and using a wide range of methodological tools (corpus studies, experimental studies, computational models). Research on interaction in language spans numerous developmental subfields, and consequently, doesn't fall neatly into existing research paradigms. We will bring together researchers working on interaction in different domains to present a cohesive overview of ongoing interactional research. We hope this will facilitate discussion across connected domains and serve as a springboard for future investigations. Prof. Eve Clark, a pioneer in establishing interaction and communication as crucial aspects of language learning, will be the discussant.*

*The symposium will have a round table format. Each invited speaker will give a 20-minute presentation. Presentations will be followed by a 20-minute discussion by Prof. Clark, which will lead into an open discussion.*

*The symposium is dedicated to Professor Eve V. Clark, president of IASCL and the Richard W. Lyman Professor of Humanities and Professor of Linguistics at Stanford University. Professor Clark, a trailblazer in all matters of language acquisition, has written extensively on numerous aspects of language development—lexical, pragmatic, and syntactic—and has been a major force in establishing interaction and communication as crucial aspects of language learning. This symposium will not only pay tribute to Professor Clark’s long-standing and significant contributions to the field of language acquisition, but is a timely response to renewed interest in social and pragmatic aspects of language learning.*

### **Abstract 1**

## **Internalized discourse: From speech with others to speech for self**

*Dan Slobin, University of California, Berkeley*

This is a case study of a particular kind of speech-for-self produced by a preschool-aged girl, characterized as “externalized dramas.” Unlike most such records of vocalized thought, this speech is not involved with guiding ongoing behavior, but rather with acting out problems of interpersonal relations with peers. Using two or more voices in dialog, the speech is full of insults and denials, claims and counter-claims, promises, excuses—all of the continuing struggles to define social roles and one’s own position. Externalized dramas practice and refine pragmatic devices of prosody, lexicon, and speech acts, while dealing with underlying problems of emotional states, violence, fantasy and reality, and other minds. It is suggested that audible inner speech goes inward to become silent speech that continues to be concerned with social dynamics and individual status and roles.

### **Abstract 2**

## **Cross-cultural differences in communication and language acquisition**

*Penelope Brown, Max Planck Institute for Psycholinguistics, Nijmegen*



This paper addresses the theories of Eve Clark about how children learn word meanings in western middle-class interactional contexts by examining child language data from a Tzeltal Maya society in southern Mexico where interaction patterns are radically different. Through examples of caregiver interactions with children 12-30 months old, I ask what lessons we can learn from how the details of these interactions unfold in this non-child-centered cultural context, and specifically, what aspects of the Tzeltal linguistic and interactional context might help to focus children's attention on the meanings and the conventional forms of words being used around them.

### **Abstract 3**

## **Word order acquisition and interactional process in early language learning**

*Aylin C. Küntay, Koç University, Istanbul*

*Duygu Özge, Koç University, Istanbul*

We present a critical review of the literature on how children exposed to flexible-word-order languages, especially Turkish, acquire word-order variation. We highlight two traditions of psycholinguistic research assuming different theoretical and methodological approaches, namely language-as-product and language-as-action views. While the former studies the underlying mechanisms of using word order as a structural cue in interpreting thematic roles, the latter focuses on how it is used to convey information structure embedded in communication and action. The review reveals that these seemingly independent views complement each other to better account for (i) how children come to interpret argument roles when the word order is not fixed and (ii) how they comprehend/use word-order variation as a pragmatic tool in communication.

### **Abstract 4**

## **Temporal synchrony in early multi-modal communication**

*Barbara Kelly, University of Melbourne, Australia*

Children's early gesture and speech combinations are typically asynchronous. As children develop the ability to employ speech and gesture together more regularly, the two modalities become synchronized and the word indicates one element, while the target of the gesture

indicates another element. This chapter presents a longitudinal qualitative analysis of the path by which children develop the skill of temporal coordination in their gesture and spoken word communications. It investigates how this temporally coordinated information is taken up by the caregiver and examines synchrony of gesture and speech indexing the same element, in order to determine how this fits within the child's transition to reaching the stage of multi-element communications.

**Abstract 5 (if applicable)**

*New methods in child language research*

*Phonetics and phonology*

## **Methods for studying speech production to inform language development**

*Core, Cynthia, The George Washington University*

### **Symposium abstract:**

*Traditional methods to study speech production have focused on linguistic and clinical analyses to determine, for example, the presence or absence of a sound or sound contrast and to assess the accuracy of children's productions. These methods answered questions about linguistic theory and child speech development. More recently, researchers are turning to relationships between speech production and language development. For example, to produce a word, a speaker must retrieve stored representations from memory. Children build these representations as they learn language. Empirical studies of language development can provide insights into how children represent, organize, and access these levels and how new representations are integrated with existing ones. These research questions require new methods for analyzing speech production.*

*The five papers in this symposium describe methods for assessing production using a variety of behavioral methodologies across different age groups, ranging from young children who are just beginning to produce speech to older and more proficient speakers. Each paper will explain how each method can contribute to our understanding of the role of speech production to language development in general. Methods include measures of production latencies in a naming task, corpus analysis to examine apparent regression in production abilities, elicited self-repairs for speech errors, use of LENA data paired with experimental data, and acoustic and ultrasound measures in elicited tasks. The goal of this session is to inform members of ways that each measure contributes to an understanding of the relationship of speech production to underlying phonological representations, lexical knowledge, and language-specific aspects of acquisition of phonological*

*forms, including syllabic and prosodic word structure. Together, these talks offer an opportunity to discuss major issues in speech production methodology and how emerging research will lead to a better understanding of the relationship between speech and language development.*

### **Abstract 1**

## **Picture naming task and the development of spoken word production**

*Zamuner, Tania, University of Ottawa*

*McIntyre, Rebecca, University of Ottawa*

*Moore, Charlotte, University of Ottawa*

*Sullivan, Emily, University of Ottawa*

To produce a word, a speaker must retrieve stored representations from memory. This differs for adults and children, in part because children are building these representations as they learn language. There is a long history of psycholinguistic studies of spoken word production with adults. For example, research has found that adults produce high frequency words faster and more accurately than low frequency words (Oldfield & Wingfield, 1964; Stemberger & MacWhinney, 1986). These findings are argued to reflect how adults store and access words from the mental lexicon (Dell, 1986; Goldrick, 2011; Goldrick et al. 2011; Levelt, 1989; Pierrehumbert, 2001).

Although psycholinguistic studies of spoken word production have been based primarily on data from adults, empirical studies of language development can also provide insights into how children organize representations, how representations are accessed, and how new representations are integrated with existing ones. For example, as children become more efficient at producing speech, this may have a direct impact on the representation, organization, and access of lexical, phonological and speech output information. These types of experimental questions are not easily answered with the traditional methodological tools that researchers have used to study language development with young children.

This talk will discuss the picture naming task to examine the development of spoken word production across different age groups. In this task, pictures are visually presented and the dependent measures are production accuracy and mean naming latencies (Farrell, Abrams & White, 2012). Additional manipulations can involve auditory primes which vary in their sound similarity to the target. Technologies will be discussed for experiment presentation and data collection. Lastly, we will discuss how this methodology can lead to a better

understanding of the process of spoken word production, by investigating how children represent, organize, and access language.

## **Abstract 2**

### **Regression in Early Production**

*Ota, Mitsuhiro, University of Edinburgh*

It has long been noted that speech development exhibits apparent 'regression' or 'recidivism' during which the child's linguistic production moves away from adult-like forms after a period of convergence. While such a pattern of development has been attributed to erroneous lexical representations (Macken, 1980) or emergent organization of the child's phonological system (Vihman, 1996), much remains to be understood as to exactly why it occurs. In this talk I present a systematic longitudinal analysis of children's production of word-initial consonant clusters to unravel some of the underlying factors of this phenomenon.

The data consist of transcriptions and recordings of 1- to 4-year-old English-speaking children in the Providence Corpus (Demuth, Culbertson, & Alter, 2006). The results of the analysis show that one reason we may see apparent regression is the lexical variability in the development. A child may be producing a cluster such as /pl/ fairly well in words that are familiar at that point, but falters later when he or she attempts to produce a less familiar word that contains /pl/. In other cases, we find changes that are generalizable across lexical items. Of these, some involve qualitative changes in the output forms (e.g., consonant deletion to substitution, then to vowel epenthesis), suggesting the impact of development in phonological representation and mapping as well as articulation. Others display more gradient changes in the phonetic forms (e.g., in the amount of epenthetic vocalization), suggesting increasing control over articulatory execution. Taken together, these results indicate that what we see as regression in early word production is a multifaceted phenomenon that requires a range of explanations.

Demuth, K., Culbertson, J., & Alter, J. (2006). Word minimality, epenthesis, and coda licensing in the acquisition of English. *Language and Speech*, 49, 137-174.

Macken, M. (1980). The child's lexical representation: The "puzzle-puddle-pickle" evidence. *Journal of Linguistics*, 16, 1-17.

Vihman, M. M. (1996). *Phonological development: The origins of language in the child*. Oxford: Blackwell.

### **Abstract 3**

## **Acoustic and articulatory evidence for assessing the development of segmental, syllabic and prosodic word representations**

*Demuth, Katherine, Macquarie University*

Research on phonological development has typically focused on how and when target segments were produced. The present research reports on 3 recent studies using acoustic and articulatory (ultrasound) evidence for determining how and when children begin to use adult-like phonological structures in English. The first study compared 6 children's spontaneous realization of word-final coda consonants with productions the same words by their mothers. Using acoustic analysis it showed that, as early as 1;6 years, many of the acoustic cues to place, voicing and manner contrasts are very adult-like, although the release bursts on stop codas are 'noisier' than those of adults, suggesting that control of subglottal pressure is still developing. A second study using an elicited imitation task with 14 2-year-olds predicted that coda consonants would be more likely to appear following short vowels than long vowels, as required for English syllable structure/word minimality constraints. Acoustic analysis revealed that this was the case, suggesting that 2-year-olds are already tuning into language-specific aspects of syllabic/prosodic word structure. The final study reports on recent results from a study using ultrasound imaging to examine the articulatory gestures used in the acquisition of onset versus coda 'l'. Previous literature suggests that onset /l/ (lip) is acquired around the age of 4, before coda /l/ (pill) at 6. We hypothesized that the late acquisition of these segments is due to the challenges of coordinating the two different articulatory gestures required. In an elicited imitation study using ultrasound imaging with 30 4-7-year-olds and 10 adults, coda /l/ was produced with both gestures around the age of 6, as hypothesized. Interestingly, however, onset /l/ was only produced with one of the gestures, despite the fact that the percept was a good /l/, raising many questions about what would motivate learners to eventually incorporate the second articulatory gesture.

### **Abstract 4**

## **What prompted self-repairs in two-year olds tell us about the developing word production mechanism**

*Levelt, Claartje, Leiden University*

Word productions of two-year-olds are often phonologically deviant compared to the adult target forms. By means of a production experiment, this study addresses the question whether or not young children's word productions reflect all the knowledge stored in their lexical representations. A deviant production can be the result of an incomplete segmental representation, but also from failing executive control during word-production.

In a production experiment with 16 Dutch two-year-olds, self-repairs were invoked by inserting unspecific questions for clarification, like [hmm?], in an interactive picture-naming game. The test-stimuli were words with initial consonant clusters, which are known to be difficult to produce for young children. The purpose of the experiment was to collect pairs of utterances consisting of an initial, incorrect word-production ("IWP") and a second word-production ("SWP") induced by the experimenter's prompt. If self-monitoring takes place, and the lexical representation is phonetically detailed, the repair is expected to contain additional segmental information. Indeed, in about 30% of the SWPs, additional knowledge about segmental specifications was revealed. For example, for the target word *stoel* (chair) /stul/, we found IWP [tu] and SWP [su] for one child, revealing that both /s/ and /t/ were present in the lexical representation of the word. We also found that words that showed changes/improvements in the SWP were not random: they often involved target words with a specific consonant cluster, which was reduced to a single consonant in the IWP. This seems to show that for some children specific clusters are fully represented segmentally in the mental lexicon, while the phonetic encoding, or the execution of the motor plan for such clusters needs improvement. Target words that contain a reduced cluster in the IWP and do not show any change in the SWP, might still lack a complete segmental representation of the cluster.

### **Abstract 5 (if applicable)**

## **What do Infants Produce Place-wise, and When?**

*Dijkstra, Nienke, Radboud University and International Max Planck Research School for Language Sciences*

*Fikkert, Paula, Radboud University*

*Benders, Titia, Radboud University*

Since Roman Jakobson's seminal work on language acquisition it has been common knowledge that children produce labial-initial words very early, as in *papa* and *mama*.

Whether this bias is grounded in universal properties of phonology (Jakobson 1941/1968), due to biomechanical constraints on the articulatory apparatus (MacNeilage & Davis 1991), or due to perceptual constraints (Nazzi et al. 2009) is still a matter of dispute.

This debate on infants' acquisition of Place of Articulation (PoA; labial, coronal, dorsal) usually addresses either production or perception, but there is good reason to assume a relation between the two. Our study with longitudinal production and perception data from 56 Dutch infants contributes to this debate by testing the relation between infants' production of PoA in their babbles and first words, and their perception of PoA in targeted speech perception experiments.

The spontaneous production data have been collected in the infants' homes at the ages of eight, twelve and sixteen months. From these 168 one-day home recordings, we extracted the fragments during which infants were most talkative. The child's utterances were transcribed focusing on the PoA of consonants (following Pater & Werle 2003). Based on those transcriptions we determine for each child at each age which PoA contrasts and patterns are produced. Experimental perception data were collected in the same infants at the same ages to assess their discrimination between the PoA contrasts and their preferences for certain PoA patterns.

We predict within each age group a correlation between children's ability to produce and discriminate PoA contrasts and a preference for those PoA patterns that the children are able to produce. Longitudinal analyses on the emergence of PoA in production and perception may reveal which process has primacy in the emergence of early biases



***New methods in child language research***

***Phonetics and phonology***

## **New technologies for the study of child language**

***Cristia, Alejandrina, LSCP, CNRS***

### **Symposium abstract:**

*Many long-standing questions in the study of child language remain elusive because of the low signal-to-noise ratios and/or limited ecological validity of traditional empirical methods. Recent technological developments have augmented our toolkit with several approaches that promise to enhance our empirical grasp. We showcase a selection of novel methods that make complementary contributions to the study of child language, from describing the input to examining neural correlates.*

*The first method, LENA, allows for analysis of daylong recordings using largely unsupervised algorithms to provide a view on children's spoken input and output. The second, gaze-contingent eye-tracking paradigms, improves on traditional lab-based looking-while-listening methods by combining unique precision and low motor demands with an interactive design allowing more complex conceptual responses. Third, we explore the use of electronic devices with a touch-screen, which are more engaging because children can provide explicit responses. Finally, fNIRS is an inexpensive neuroimaging technique, reputed to combine accurate localization of activations and a considerable resistance to movement artifacts, and which is increasingly used to study the development of brain networks for language perception and production.*

*Our main goal is to inform the audience of the specific promises of the selected methodologies, so that they may make informed decisions when thinking of adopting them as well as when reviewing and reading articles using these methods. Therefore, experts in each of the methodologies have been asked to summarise some key conceptual and methodological findings that have been gained with it, paying special attention to both strengths and weaknesses. Attendees will learn about*

*which populations, topics, and designs are well-suited for the selected methods, and which problems cannot be addressed with them.*

### **Abstract 1**

## **Understanding LENA: Automated largescale analysis of language input**

*Soderstrom, Melanie, University of Manitoba*

The LENA system consists of two components. The first component is a durable hardware system designed to be worn by a child for up to 16 hours of continuous recording. The second component is a software suite and set of algorithms that provide a number of automated functions allowing for easy analysis of largescale recordings. The output from LENA comes at a variety of levels. At the highest level is a set of quantitative estimates of language – number of adult words, number of child vocalizations, conversational turns, as well as percentage estimates of meaningful speech input, silent periods, media input, etc. A secondary data analysis suite (ADEX) allows more targeted analyses of specific speaker types and conversation types, a much larger selection of output categories, and a variety of output levels of analysis. At the lowest level, LENA allows easy interface with existing transcription and acoustic-phonetic analysis systems, such as Praat.

LENA is a powerful suite of algorithms and opens the door to broad spectrum of analyses that would not otherwise be easy or even possible, and does them quickly. However, it is important to understand that LENA was originally designed and marketed as a system for assessment of child language delay and of the quality/quantity of the language environment from the perspective of the parent or practitioner, rather than as a tool for language research per se. Proper use of the system beyond the basic design requires careful thought and a high level understanding of the algorithms underlying the system. In addition, the accuracy of the segmentation and categorization algorithms is far from perfect, especially under noisy conditions. During this talk, I will describe some of the key aspects of the system that every researcher should understand, dispel some misunderstandings, and discuss ways to maximize its potential as a research tool and minimize its limitations.

### **Abstract 2**

## **Gaze-contingent methodologies for infant eye tracking**

*Bonn, Cory D., University of Rochester*

*Aslin, Richard N., University of Rochester*

Gaze-contingent methods hold promise for implementing experimental designs that have previously been unavailable in infant populations due to the limitations of motor development and sustained attention. In this presentation, we discuss the benefits and challenges associated with developing these underexplored methods.

One family of methods we have focused on uses forced-choice designs to study the structure of auditory and visual categories. Most studies of infant category knowledge exploit either fixation duration (e.g., preferential looking or habituation) or conditioned head-turns as measures of discrimination between two classes of stimuli. However, within-subject, labeling data have remained elusive. Studies that reinforce head turns to one of two alternatives have been limited to psychophysical procedures that elicit natural, untrained orienting responses (e.g., in studies of stimulus detection thresholds in vision and audition). In contrast, our paradigm allows us to reinforce choices made with eye movements to target locations in response to arbitrary stimuli (eg., left = “ba” and right = “pa”), making it particularly useful for studying categorization. Conceptually similar, two-alternative forced-choice paradigms have been in use with non-human primates, though human infants present special challenges and limitations in the training phase.

While infants rapidly acquire familiarity with the required choice behavior—dragging and depositing objects into bins based on their gaze position—it is considerably more difficult to condition infants to behave as though these bins suffice as “labels” for particular auditory or visual objects. Consequently, we have concentrated most of our efforts on finding the optimal training procedure.

In addition to forced-choice paradigms, we are developing gaze-contingent paradigms for a host of other applications, including the automation of more traditional infant testing paradigms as well as exploring the nature of adaptive, information-seeking behavior.

### **Abstract 3**

## **Touchscreen methodologies for testing young children**

*Kidd, Celeste, University of Rochester*

Children as young as 2 are increasingly familiar with touchscreens due to the recent popularity of touch-based consumer devices like tablets, phones, and computers. As a result, they provide a possible means of gathering data both in the lab and at home, across multiple types of platforms and experimental setups. Because many children find touchscreens compelling, they can be used with a variety of ages and potentially provide a unified method that works throughout the developmental timeline.

Touchscreens potentially allow responses and interfaces with minimal verbal instruction, allowing researchers to gather behavioral data without making strong assumptions about the task in which children are engaged. I will review several learning and reasoning studies with children using touchscreens to gather explicit responses. These responses potentially provide a powerful source of convergent evidence when combined with other more traditional measures like eye-tracking. Using touchscreens requires designing compelling interfaces and experimental setups. I will discuss many of the methodological possibilities, limitations, and considerations involved.

#### **Abstract 4**

### **The use of fNIRS for researching first, second, and delayed language acquisition**

*Cristia, Alejandrina, CNRS, LSCP*

Until recently, imaging the developing brain was extremely challenging, as most techniques require participants to hold still and/or lack precise spatial resolution. Functional Near InfraRed Spectroscopy (fNIRS) is a promising, relatively novel technique that may fill in this gap.

Similarly to functional Magnetic Resonance Imaging, fNIRS assesses local changes in hemoglobin concentration, providing indirect measurements of regional activation in the cerebral cortex. It does so by evaluating changes in near infrared light intensity as it travels from source fibres to detector fibres, held over the scalp with a custom-made cap similar to that used in electroencephalography.

In addition to being relatively inexpensive, it is portable, non-invasive, and somewhat resistant to movement artifacts, which makes it ideal for use with mobile populations (e.g., awake infants, children with attention disorders, people in interaction). It is also the only technique that can potentially be used to image auditory activations in cochlear-implanted children. Most recently, connectivity analyses have been used to highlight the emergence of functional brain networks over the course of early development. Given that sensors are worn on a cap, it is possible to combine fNIRS and EEG, a practice that is being applied even with infants in pioneer labs.

Unsurprisingly given these many advantages, the number of publications using fNIRS is increasing exponentially. Nonetheless, a systematic review of extant literature reveals a great deal of diversity in analysis methods and sometimes low signal to noise ratios. It is argued that fNIRS is best used in time-insensitive paradigms with a high degree of participant engagement.

**Abstract 5 (if applicable)**

*Literacy and language*

*Morphology*

## **Why is morphological processing important for delayed-readers? From descriptive to intervention studies**

*Daigle, Daniel & Berthiaume, Rachel*

### **Symposium abstract:**

*In alphabetic languages, early reading instruction focuses mainly on graphophonemic correspondences. For those children who encounter greater difficulty in reading, whether they are dyslexic or not, phonology is the main witness. One alternative route to word reading relates to morphological processing. Indeed, most words, at least in language like French and Italian, are morphologically complex. Research conducted over the last decades has shown that children process oral words at the morphological level. This is also the case in writing, but a certain number of questions remain unanswered. Those questions concern 1) the potential benefits of morphological processing in delayed-readers in comparison to normal readers, 2) the role of morphemes' characteristics, namely frequency and length, on morphological processing, 3) the role of task requirements on morphological processing and 4) the effects of morphological training on reading and spelling performances. The main goal of this symposium is to address these questions and to define whether morphological processing contributes significantly to reading, especially for delayed-readers.*

*Five studies will be presented. Three studies focus on participants' performances (Burani et al; Casalis; Berthiaume & Daigle) and two studies examine the question of the potential effect of morphological training on participants' reading and spelling outcomes (St-Pierre et al; Gonnerman et al.). In all studies, delayed-readers were compared either to normal readers or to untrained readers (in the*

*case of the intervention studies). Through a variety of tasks (i.e., words and pseudo-words reading tasks, plausibility judgment tasks, decomposition tasks, derivation tasks, spelling tasks) and research protocols, authors show that morphological processing is not only part of word processing in normal and delayed-readers, but has a compensatory potential for readers who encounter greater difficulties in learning to read and write.*

### **Abstract 1**

## **The effect of root length on reading derived words: the case of Italian children with and without dyslexia**

*Burani, Cristina, Institute of Cognitive Sciences and Technologies (ISTC), CNR, Rome*

*Marcolini, Stefania, Institute of Cognitive Sciences and Technologies (ISTC), CNR, Rome*

*Traficante, Daniela, Catholic University, Milan*

*Zoccolotti, Pierluigi, Catholic University, Milan & Neuropsychology Unit, IRCCS Fondazione Santa Lucia, Rome*

1) Research questions: Italian children with dyslexia are extremely slow at reading long words. However, they are faster at reading stimuli composed of root and a derivational suffix, than stimuli not decomposable in morphemes. The present study assessed whether root length modulates this type of morphological processing. We hypothesized that for skilled readers, reliance on word roots depends on the roots' perceptual salience within the word, being greater for longer than shorter roots, whereas for readers with dyslexia who have difficulties processing the word as a whole, reliance will be independent of salience characteristics.

2) Method:

Participants: Twenty children with dyslexia and 40 skilled readers in 6th grade, matched for gender, age and non-verbal intelligence.

Materials: Sixty low-frequency derived words, with familiar roots and productive suffixes (PIED-INO, 'little foot'). Word length was 6-12 letters, and root length 3-6 letters.

Procedure: Participants read aloud each word presented on a computer screen. Naming times (RTs) were recorded. Pronunciation errors were coded manually.

3) Results: For both children with dyslexia and skilled readers, mixed-effects regression analyses on RTs showed no effect of word frequency, inhibitory effects of word length, and

facilitatory effects of root frequency. Root length predicted naming times of skilled readers only, with faster RTs for longer roots, over and above the inhibitory effect of word length. Analyses of accuracy showed a group effect: Children with dyslexia were less accurate than skilled readers.

4) Conclusion: The absence of a word frequency effect along with the facilitatory effect of root frequency indicates morphemic processing by all readers. Difficulties processing whole-words were confirmed by the inhibitory effect of word length for both groups. Root length affected only skilled readers, with longer roots leading to shorter latencies as a consequence of root activation. In contrast, readers with dyslexia benefitted from morphological processing irrespective of root length.

## **Abstract 2**

### **How morphological awareness is connected to complex word reading in children with dyslexia**

*Casalis, Severine, lab URECA, Universite Lille 3 Charles de Gaulle*

1) Research questions: Children with dyslexia develop the ability to process morphemes (morphological awareness) to a greater extent than the ability to manipulate phonemes (phonological awareness). Consequently, two questions arise. Is there a connection between morphological awareness and reading skills in dyslexic children? Is this awareness observable in tasks involving complex word reading as well as simple/general word reading?

2) Method: The performance of 53 sixth- and seventh-grade dyslexic children (DR) and 49 third-grade control readers (CR) was assessed on various morphological awareness tests, one phonological awareness test, and several reading tests, including decoding and comprehension tasks.

3) Results: As a whole, dyslexics and reading-age-matched children performed similarly on measures of morphological awareness. However, the correlation patterns differed across groups. While morphological awareness was consistently correlated with comprehension, the correlation with decoding was less consistent across groups. In reading age-matched children, morphological awareness was correlated with all word-decoding scores, with the exception of pseudoword decoding. In the dyslexic group, morphological awareness was correlated with decoding of pseudowords made up of morphemes but not with word decoding. Finally, the impact of morphological structure – some words were morphologically simple, other were prefixed and suffixed- was found to be greater in the dyslexic group.

4) Conclusion: In all, children with dyslexia make use of morphological information when they read words and pseudowords and they have developed morphological knowledge in line with their reading level. However, morphological awareness plays a different role in the



dyslexic and control groups: children with dyslexia make use of their morphological knowledge to decode pseudowords only, which is the most difficult for children with dyslexia. The absence of correlation with word reading inversely suggests that children with dyslexia process words as a whole.

### **Abstract 3**

## **Dyslexic students' sensitivity to the morphological structure of written words in French**

*Berthiaume, Rachel, Université de Montréal*

*Daigle, Daniel, Université de Montréal*

1) Research question: Many dyslexic students encounter great difficulty in learning to read (Lambon Ralph & Patterson, 2005). Typically, research has cited a deficient use of word recognition procedures mainly caused by a phonological deficit as the source of their reading difficulties (Snowling, 2000). However, recent studies have shown that morphological processing also plays an important part in reading. The main goal of this study is to evaluate if young dyslexic readers of French are sensitive to the morphological structure of words when they read.

2) Method: Dyslexic participants (DYS, n=54) aged 9 to 12 were matched to 46 participants of the same age (CA) and 88 younger participants of the same reading age (RA). Three tasks were administered: a plausibility judgment task where participants had to determine which of two pseudo-words most resembled a real word in French, a decomposition task requiring them to extract the base forms of morphologically complex words, and a derivation task where they had to derive complex forms from base words.

3) Results: Overall, the derivation task was the most successful at demonstrating morphological knowledge, followed by the plausibility judgment task. The decomposition task was the least successful. Performance on morphological tasks was significantly correlated to reading comprehension, word reading and pseudo-word reading for the DHS and RA groups only. DHS were able to demonstrate morphological sensitivity and obtained comparable scores to RA but were outperformed by CA.

4) Conclusion: Our results are in agreement with the majority of morphological awareness studies, which have shown that dyslexic children have approximately the same morphological knowledge as younger students. More research needs to be done

in order to better comprehend the role of morphological knowledge in the acquisition of reading by dyslexic children and to create material adapted to the teaching of morphology to these students.

#### **Abstract 4**

### **Can second grade delayed-readers benefit from a morphological awareness intervention program?**

*St-Pierre, Marie-Catherine, Université Laval*

*Dubé, Julie-Frédérique, Université Laval*

*Arock, Pauline, Université de Paris-Ouest Nanterre*

1) Research questions: Delayed readers (DR) often have a low level of morphological awareness (MA) (Casalis et al., 2004). Recent intervention research targeting instruction in MA among DR has shown a significant improvement in reading and spelling skills following training (see Carlisle, 2010 and Goodwin & Ahn, 2013 for a review). However, limited data exist concerning the effectiveness of an inflectional morphology intervention on spelling skills in early schooling. Consequently, this research seeks to investigate the potential contribution, and the nature of the contribution, of MA training, specifically addressing verb agreement and gender/number agreement, on spelling development in second grade children with reading/spelling difficulties.

2) Method: French-speaking delayed readers in the second grade (N=67) participated in this project. Thirty-nine received training in MA related to inflection while 28 did not (control group). Pre- (T1) and post-(T2) test measures were administered just prior to and immediately following the training. Delayed-post test data was collected six months (T3) and one year (T4) later.

3) Results: Analyses revealed significant improvement in spelling and reading for the experimental group that lasted six months and one year after the end of training. This was not the case for the control group who did not make significant progress during that period. Magnitude of improvement varied according to lexical category, nature of the grammatical markers and their morphophonemic structure.

4) Conclusion: A specific and intensive intervention on oral and written inflectional morphology has a positive and lasting impact on morphological processing involved in the development of spelling skills in children who are experiencing reading/spelling difficulties in early schooling. This impact differs across linguistic characteristics of words.

**Abstract 5 (if applicable)**

**Teaching spelling to poor readers: A morphological intervention study in French**

*Gonnerman, Laura, M., McGill University*

*Kolne, Kendall, L., D., McGill University*

*Hill, Katherine, McGill University*

1) Research question: A critical aspect of gaining command of the written language is the ability to spell words correctly. Studies of spelling ability have shown that children who recognize the morphological relationships between words, such as *candidat* and *candidature*, are better able to spell them correctly (Sénéchal, 2000). Additionally, morphological instruction can improve reading and writing skills (Bowers, Kirby, & Deacon, 2010). A remaining question is whether an intervention focused solely on morphology could improve the literacy skills of poor readers. The current project investigates this question by comparing spelling outcomes from two intervention techniques, one emphasizing only morphological structure, the other word meaning. The intervention targeted both good and poor readers learning to spell in French.

2) Method: Eighty-four 8-10-year-old French-speaking children (50 girls, 34 boys) from Montreal participated in an intervention given over 10 one-hour weekly sessions. The children were divided into two groups, one receiving instruction explicitly focused on morphological structure (Morphology group), the other receiving instruction focused on word meanings (Vocabulary group).

3) Results: To evaluate the intervention, children were given a 40-word spelling test before and after the training. The test included words taught in the intervention, and morphologically complex words not taught, to determine children's ability to generalize after training. Overall, results showed that while all children improved post-intervention, poor readers benefited more than good readers,  $F(1,64)=10.83$ ,  $p=.002$ .

Crucially, morphological training improved spelling significantly more than vocabulary training did, for both good and poor readers. This benefit was particularly pronounced for the untaught words, where children were asked to generalize spelling to new words, poor readers,  $F(1,31)=4.77$ ,  $p=.037$ , good readers,  $F(1,31)=4.97$ ,  $p=.03$ .

4) Conclusion: Results suggest that explicitly teaching children about the morphological structure of words is more effective in improving spelling than teaching word meanings, especially for poor readers.

**Other (please, specify) Executive functioning, working memory and language impairment**

*Language, general*

## **Executive functioning and working memory in children with SLI: variability, development and multilingualism**

*Kristine Jensen de López, Aalborg University*

### **Symposium abstract:**

*It is unclear whether SLI derives from a domain-general or a domain-specific deficit, and what role development or multilingualism might play in its expression.*

*Several areas of memory and executive functioning, such as procedural memory, working memory and attention engagement have been investigated in order to disentangle the principal cause of language impairment. It remains a major challenge to ascertain: 1) which cognitive domains are most affected; 2) whether one single cognitive deficit can explain all variations of language impairment; and 3) whether deficits are stable throughout development and study populations.*

*The purpose of the current symposium is twofold. Firstly, to investigate which cognitive deficits are characteristic of SLI across a range of countries and continents (Brazil, Canada, Denmark, England, Luxembourg, Portugal). Secondly, to explore which specific areas of executive functioning are most challenging for different populations of children from different linguistic backgrounds and at different developmental stages.*

*The studies all address these issues from different perspectives, using data from children at different ages with SLI, acquiring a range of different languages (Danish, English, Portuguese, Luxembourgish). Two studies show that executive functioning and working memory can explain the variance in different verbal abilities of children with SLI. Another study shows that working memory deficits are not constant across development for children with SLI. The final study shows that executive functioning deficits present themselves differently in monolingual as*

*compared to bilingual children with SLI, and raises the possibility that multilingualism serves as a protective factor for children with SLI.*

*Together the four studies provide converging cross-cultural and cross-linguistic evidence that SLI is not language-specific, and that a single deficit hypothesis is too restrictive in explaining the variation in cognitive and language abilities of children with language impairments.*

## **Abstract 1**

### **Verbal fluency in children with and without specific language impairment: The role of verbal ability and executive functioning**

*Prof. Henry, Lucy, A., Language and Communication Science, City University, London, England*

*Prof. Messer, David, J., Childhood Development and Learning, The Open University, Milton Keynes, England*

*Dr. Nash, Gilly, Language and Communication Science, City University, London, England*

**Research question.** This study examined the precise nature of verbal fluency problems in children with varying language difficulties. It also assessed whether verbal ability and executive functioning (executive-loaded working memory, inhibition, switching) could account for variation in verbal fluency performance among children with and without language difficulties.

**Methods.** Semantic and phonemic fluency tasks were carried out by 41 children with specific language impairment (SLI), 31 children with milder language difficulties, and 88 typically developing children. Various measures of response output, errors, clustering and switching were obtained. Assessments of verbal ability, executive-loaded working memory, inhibition, and switching were also included.

**Results.** Children with SLI showed considerable difficulties with semantic and phonemic fluency; virtually every aspect of performance involved some limitations relative to typical children (e.g., measures of output, error rates, switching, and size of clusters). Children with milder language difficulties showed less severe performance difficulties. Variation in verbal fluency performance was predicted by both verbal ability and executive functioning: (1) verbal ability related to virtually all measures of semantic and phonemic fluency; (2) executive-loaded working memory explained significant portions of the variance in measures

of output and number of switches; and (3) inhibition explained significant proportions of the variance in error rates.

**Conclusion.** Children with language difficulties showed significant problems on both semantic and phonemic fluency tasks. Performance decrements were shown on a large variety of measures, including response output, switching, clustering, and error rates. Verbal ability and executive functioning were both predictors of fluency performance, suggesting that verbal fluency tasks tap both language skills and executive processes.

## **Abstract 2**

### **The Separable Influences of Linguistic Knowledge and Working Memory on Children's Sentence Processing**

*Dr. Archibald, Lise, M. D. School of Communication Sciences, The University of Western Ontario, Canada*

*Dr. Noonan, Nicolette, B., School of Communication Sciences, The University of Western Ontario, Canada*

**Research question.** Domain-general and domain-specific processes have been suggested as possible causal mechanisms in specific language impairment (SLI). Nevertheless, there is growing recognition that a single deficit hypothesis cannot fully explain the heterogeneous presentation of SLI. In two studies, we examined the separable influences of linguistic knowledge and working memory on sentence processing in children with SLI with or without a concomitant working memory impairment.

**Methods.** 370 school age children completed standardized tests of language, working memory, and intelligence. In study 1 participants included 60 children with SLI and a matched control group, and 18 children with co-occurring language and working memory impairment and a control group. All participants completed a grammaticality judgment task in which key markers occurred either early or late in the sentence. In study 2, word level scoring of a sentence repetition task was completed to compare performance on function vs. content words and first vs. second half of sentences.

**Results.** In study 1, grammaticality judgment scores were lower for the SLI than the control group regardless of marker position. In contrast, children with both language and working memory impairments performed more poorly than the control group on sentences with late but not early-occurring markers. In study 2, standardized language measures accounted for significant variability in all measures of sentence repetition performance. Working memory

measures, on the other hand, explained significant variability in second but not first half of sentences.

**Conclusion.** Across two studies, separable influences of linguistic knowledge and working memory were demonstrated for children's grammaticality judgment and sentence repetition. The results suggest that some children with SLI may have a specific deficit in grammatical learning, while those with a more domain-general deficit may learn grammatical rules and structures but make errors when the processing load imposed by the context exceeds their working memory capacity.

### **Abstract 3**

## **Verbal and non-verbal working memory in children with and without language impairment: developmental trajectories**

*Prof. Jensen de López, Kristine, Clinic for Communication Disorders, Aalborg University, Denmark*

*Knudsen, Hanne S., Clinic for Communication Disorders, Aalborg University, Denmark*

**Research question.** It is unclear whether children with specific language impairment (SLI) show deficits in both verbal and non-verbal working memory, and since few studies have investigated older children with language impairment it is even less clear whether these deficits are persistent throughout the children's development. One recent study showed that poor non-verbal WM is predictive of SLI for teenagers (Lucy et al., 2012), while Windsor et al (2008) showed young children with SLI do not have problems regarding accuracy.

**Methods.** A cross-sectional design allowed us to examine verbal working memory (V-WM) and nonverbal working memory (NV-WM) of 84 Danish-speaking children with and without SLI from age 6 years to 14 years. All participants completed forward digit span, listening span, sentence repetition and semantic fluency (VWM) as well as Odd-One-Out and backward digit span (NVWM).

**Results.** Although clear developmental tendencies were observed for the working memory abilities of children with SLI, they performed more poorly than the typically developing children on verbal as well as non-verbal WM. However, these deficits were not consistent across age groups. The 10 year-old children with SLI were outperformed by the control group on listening span, semantic fluency and Odd-

One-Out, but not on digit span, while the 14 year-old children with SLI were outperformed on all the V-WM tasks, but no longer showed delay in visual WM.

Conclusion. The study provides evidence that deficits in WM are not equally present in all domains for children with SLI. Non-verbal working memory (visuospatial) may be a challenge for young children with SLI, whilst older children may be able to catch up with their peers. Verbal working memory, on the other hand is clearly delayed in children with SLI across development. As with language impairment, working memory is not uniform in children with SLI.

#### **Abstract 4**

### **Executive functions and Specific Language Impairment (SLI)**

### **A cross-cultural study with bi- and monolingual children from low income families in Luxembourg, Portugal, and Brazil**

*Dr. Engel de Abreu, Pascal, University of Luxembourg*

*Dr. Puglisi, Marina, University of São Paulo, Brazil*

*Dr. Befi-Lopes, Debora, University of Minho, Portugal*

Research questions. Our aim was to (a) seek cross-cultural evidence for executive functioning deficits in children with specific language impairment (SLI); (b) explore whether a similar pattern of deficits emerges in monolingual and bilingual children with SLI from low income families.

Methods. We present data on bilingual and monolingual children from Luxembourg, Portugal, and Brazil who all speak Portuguese as their first language and were tested on the same battery of language and executive function measures. The data from 124 eight-year-olds from five different groups was analyzed: (1) 15 Portuguese-Luxembourgish bilingual children from Luxembourg with SLI (Bi-SLI); (2) 33 typically developing Portuguese-Luxembourgish bilingual children from Luxembourg (Bi-TD); (3) 33 typically developing monolinguals from Portugal (Mo-TD/Pt); (4) 18 monolinguals from Brazil with SLI (Mo-SLI); (5) 25 typically developing monolinguals from Brazil (Mo-TD/Br). Groups were matched on chronological age, socioeconomic status, and nonverbal intelligence. Children completed a range of measures tapping vocabulary, grammar, verbal and visuospatial working memory, and cognitive control.



**Results.** Despite significant differences in their language and verbal working memory performance (SLI<TD), groups exhibited comparable performance on visuospatial working memory tasks. On cognitive control the following pattern emerged: Mo-TD/Pt < Bi-TD; Bi-SLI = Mo-TD/Pt; Mo-SLI < Mo-TD/Br.

**Conclusion.** The study provides no evidence of domain-general deficits in working memory in SLI. Visuospatial working memory difficulties might not be specific to SLI but represent one of many risk factors that can compromise language learning. Our data is consistent with the position that a bilingual experience stimulates the development of cognitive control that is involved in dealing with conflicting information. Notably, our results indicate that mechanisms of cognitive control might be deficient in monolingual but not in bilingual children with SLI raising the possibility that bilingualism might represent a protective factor against some of the cognitive limitations in SLI.

**Abstract 5 (if applicable)**

*Cognition and language development*

*Pragmatics*

## **Turn-taking and speech act attribution: from preverbal interaction to linguistic practice**

*Dr. Connie de Vos, Max Planck Institute for Psycholinguistics*

### **Symposium abstract:**

*Spontaneous conversation exhibits smooth coordination that is characterized by minimal overlaps and gaps between turns (Sacks et al 1974; Stivers et al 2009). According to the Interaction Engine hypothesis, this shared infrastructure is based on our sensitivity to the timing of turns and our ability to anticipate and attribute speech acts to turns at talk (Levinson 2009). The studies presented in this symposium contribute to the view that these core features of the Interaction Engine emerge early in development---before and independently of language. What follows is a complex developmental interplay in which children integrate their expanding linguistic knowledge with the interactional machinery on which conversation is based.*

*The timing of infant vocalisations and eye gaze patterns in a delayed video conversation set-up and naturalistic observation indicates that, from 4 months onwards, infants gradually become more sensitive to the timing of turn-taking (1). Children make anticipatory eye movements to predict upcoming turns in dyadic interactions by age 1---even in a foreign language---and begin to show greater anticipation for questions over statements by age 3, thus differentiating between these speech acts (2). The analysis of interactions between signing mothers and their infants acquiring sign and/or speech at 9-, 12-, and 18-months suggests that explicit attentional strategies are important for the identification of early-onset speech acts in sign language development (3). The onset of proto-declarative pointing at 12 months is positively correlated with show-give behaviours at 10 months suggesting that both proto-speech acts capitalise on associated social-cognitive skills (4). From age 4 onwards, the number of interruptions by deaf children acquiring Sign Language of the Netherlands decreases, and on a par with*

*adult signers, they start to deploy overlaps constructively to indicate feedback, confirmation and a need for clarification (5).*

*Sacks, H., Schegloff, E. A., & Jefferson, G. (1974). "A simplest systematics for the organization of turn-taking for conversation." *Language*, 50, 696-735.*

*Stivers, T., Enfield, N.J., Brown, P. Englert, C., Hayashi, M., Heinemann, T., Hoymann, G., et al. (2009). "Universals and Cultural Variation in Turn-taking in Conversation." *Proceedings of the National Academy of Sciences* 106:26, 10587–10592.*

*Levinson, S. C. (2006). On the human "interaction engine". In N. J. Enfield, & S. C. Levinson (Eds.), *Roots of human sociality: Culture, cognition and interaction* (pp. 39-69). Oxford: Berg.*

## **Abstract 1**

### **Conversational turn-taking during infancy: Longitudinal observations and experimental assessment**

*Elma E. Hilbrink, Max Planck Institute for Psycholinguistics*

*Merideth Gattis, School of Psychology, Cardiff University*

*Stephen Levinson, Max Planck Institute for Psycholinguistics*

To develop into competent communicators infants need to learn to take turns in communicative exchanges in a timely fashion. Previous research suggests that early exchanges between mothers and their infants are a joint performance and could be best described as using a conversational structure (Snow, 1977). However, few studies have measured the timing of turn-taking and findings have been mixed due to differences in research methods and ages studied (Ginsburg & Kilbourne, 1988; Rutter & Durkin, 1987). Therefore debate continues about its developmental pattern and underlying processes.

The aim of the present talk is to assess the development of infants' ability to take turns, using both longitudinal observations of mother-infant interactions and experimental data. The longitudinal data consisted of 10-minute free-play interactions between 12 mother-infant dyads at 3-, 4-, 5-, 12- and 18- months. In addition, to address infants' sensitivity to timing and the processes that play a role in this sensitivity we conducted an experiment with 6-month-olds where we manipulated the timing of maternal responses. Mother and infant were sat in separate rooms and interacted via TV screens. During the 4-minute interaction there were two seamless segments: one live and one where the signal was delayed by 1-second.

Findings indicate that infants gradually become more competent turn-takers starting around 4 months as evidenced by a decrease in turns produced in overlap and a decrease in onset times during natural mother-infant interactions. Furthermore, initial analyses on gaze of 13 out of 30 infants in the experiment show that infants are sensitive to detecting changes in timing in an ongoing interaction. Specifically, those infants who were highly attending to their mothers showed a decrease in attention to their mothers during delay compared to the live segment. Findings will be discussed in relation to the Interaction Engine hypothesis and the relative contributions from the infant and mother to this developmental pattern.

Ginsburg, G. P. & Kilbourne, B. K. (1988). Emergence of vocal alternation in mother-infant exchanges. *Journal of Child Language*, 15, 221-235

Rutter, D. R. & Durkin, K. (1987). Turn-taking in mother-infant interaction: An examination of vocalizations and gaze. *Developmental Psychology*, 23, 54-61.

Snow, C. E. (1977) . The development of conversation between mothers and babies. *Journal of Child Language*, 4, 1-22.

## **Abstract 2**

### **Turn prediction and linguistic processing in young children's online discourse understanding**

*Marisa Casillas, Max Planck Institute for Psycholinguistics*

*Michael C. Frank, Stanford University*

Turn-taking is a fundamental skill of human interaction, and provides the basic matrix within which children receive linguistic input and practice language production. Alternating turn structures appear in infant-caregiver interaction long before first words. However, in these preverbal interactions, children's success in taking turns at the "right" time is heavily supported by the caregivers, who work to coordinate their contributions with those of the infant. Our aim in the current study is to identify when children develop their own expectations about upcoming turn structure, and to further investigate how those expectations change as children become more linguistically knowledgeable. In Study 1, we tracked 74 English-speaking children's eye movements (ages 3–5) as they watched videos of dyadic conversation in English and non-English languages. In Study 2, 130 English-speaking children (ages 1–7) watched videos of dyadic conversation of puppets, all in English, but phonetically manipulated to control for the availability of lexicosyntactic and prosodic cues. In both studies we found that children at all ages actively tracked conversation and made spontaneous, anticipatory gaze shifts to responders before their responses began. Overall,

performance was best when the full set of linguistic cues were available, but anticipatory gaze remained robust even with limited linguistic information—either from the presence of a foreign language or from the absence of partial linguistic information (e.g., prosody only or lexicosyntax only audio signals). We also found that older children, who had more sophisticated linguistic knowledge and skill, displayed differential behavior for basic speech types—questions and statements—showing greater anticipation for questions from age three onward when a full linguistic signal was available. We take our results as supporting the idea that turn-taking skills emerge early and independently from language, and discuss the implications for how children weave linguistic processing into turn-structure as they develop linguistically.

### **Abstract 3**

## **The identification of early-onset speech acts in signed interaction**

*Connie de Vos, Max Planck Institute for Psycholinguistics*

*Merel van Zuilen, Max Planck Institute for Psycholinguistics*

*Elma E. Hilbrink, Max Planck Institute for Psycholinguistics*

Long before infants have mastered the dedicated linguistic structures to perform speech acts, they appear to have a basic understanding of social actions (e.g. Matthews et al. 2012). Bruner et al. (1982) hypothesise that an early understanding of the communicative function and sincerity conditions of requests may provide the infant with a conversational format to request for objects, joint action, or a supportive action with gestures and vocalisations. Furthermore, they note that this social-cognitive development precedes the correct sequential organisation of these speech acts early in development. The present study focuses on speech act development in deaf and hearing infants acquiring a sign language natively. Our data stem from the IPROSLA corpus. This corpus constitutes of monthly video recordings of parents using Sign Language of the Netherlands with their deaf and hearing infants in the ages between 9 months and 9 years. Initial video transcriptions are based on 10 minute segments of communication-dense interaction of six children (3 deaf, 3 hearing) and their signing parents at 9, 12, and 18-months of age. On-going analyses are focused on modality-specific aspects of analysing sign language data. In order to initiate and continue interaction in sign, both communication partners need to gain and maintain visual attention (Lieberman et al. 2013). We suggest that, in addition to frustration in response to failed pursuits of particular speech acts, the emergence of explicit (visual and tactile) summoning strategies on behalf of the infant are key to the identification of early-onset speech acts in signed interactions.

These summonings might also be taken to indicate the transition from prelinguistic gestural forms to sign language use.

Bruner, J., Roy, C. & Ratner, N. (1982). The beginnings of request. In K. Nelson (ed.), *Children's language* Vol. 3 (pp. 91–138). Hillsdale, NJ: Erlbaum.

Lieberman, A.M., Hatrak, M., & Mayberry, R.I. (2013). Learning to look for language: Development of joint attention in young deaf children. *Language Learning and Development*.

Matthews D, Behne T, Lieven E & Tomasello M (2012) Origins of the human pointing gesture: A training study. *Developmental Science*, 15(6), 817-829.

#### **Abstract 4**

### **Is there a relationship between pre-linguistic show-give behaviours and proto-declarative pointing?**

*Thea Cameron-Faulkner, School of Languages, Linguistics and Cultures, The University of Manchester*

*Anna Theakston, School of Psychological Sciences, The University of Manchester*

*Elena Lieven, School of Psychological Sciences, The University of Manchester/*

Researchers have suggested that certain speech acts have their origins in the pre-linguistic development. Proto-declaratives have been of particular interest with studies focusing the production of index finger points (e.g. Bates, et al., 1976; Liszkowski 2006). However, less attention has been directed to the emergence and interactional patterns associated with hold out (i.e. the holding out of an object towards a co-participant) and giving behaviours, both of which can be viewed as attempts to engage in declarative behaviour. In the current study we investigate the pre-linguistic interaction patterns associated with hold out and giving behaviours. The aims of the study were to (1) track the emergence and development of hold outs and gives, (2) to identify the types of maternal responses triggered by the behaviours, and (3) to investigate the relationship between hold out and give frequency and maternal responses on the emergence of proto-declarative pointing and early vocabulary development. Twenty four 10 month-old infants and their primary caregivers took part in monthly play sessions over a period of three months. The sessions were video-recorded and lasted for approximately thirty minutes. The caregivers also completed a CDI self-report vocabulary checklist at three time points; after the first and last play sessions and then three months after the completion of the recording period. Our findings to date show that hold-out and giving behaviours were produced by all but two of the infants by the end of the sample, and

that the frequency of the behaviours was related to subsequent proto-declarative pointing. Preliminary analyses also suggest that the response of the caregiver to the target behaviours was also related to proto-declarative pointing. We conclude that the production of, and interaction surrounding pre-linguistic hold out and give behaviours is the first step in the development of the declarative speech act.

Bates, E., Camaioni, L., & Volterra, V. (1975). The acquisition of performatives prior to speech. *Merrill-Palmer Quarterly*, 21(3), 205-226.

Liszkowski, U. (2006). Infant pointing at twelve months: Communicative goals, motives, and social-cognitive abilities. In N. J. Enfield, & S. C. Levinson (Eds.), *Roots of human sociality: culture, cognition and interaction* (pp. 153-178). New York: Berg.

### **Abstract 5 (if applicable)**

## **Attention strategies and overlap in signed interaction**

*Beppie van den Bogaerde, Utrecht University of Applied Sciences*

*Anne E. Baker, University of Amsterdam*

A few studies on adult turn-taking systems in sign languages, for example for American Sign Language (Baker 1977), British Sign Language (Coates & Sutton-Spence 2001) and Brazilian Sign Language (McLeary & Leite 2012) have described the modality-specific attention-getting strategies and the role of overlap occurring in conversations. Deaf adults use both explicit strategies to obtain attention such as waving the hand but also implicit strategies such as waiting for eye contact. Overlap occurs primarily for establishing collaborative floor (Coates & Sutton-Spence 2001), that is for giving simultaneous feedback about the topic.

We studied the recordings of 3 mother-child dyads in spontaneous interaction in Sign Language of the Netherlands between the ages of 2- and 6- years. The interaction was analyzed at the level of the turn and the utterance. The percentage of utterances seen by the children at the beginning of the utterance increased clearly from on average 78% (2;0) to more than 95% (6;0). Adults are thus ensuring visual attention from the child and the child is learning to give visual attention. The adult strategies changed from being mainly implicit to increasingly explicit strategies. The mothers gave a considerable amount of visual attention to the child at age two years but the children started to use both implicit and explicit strategies as they got older. At 2;0 overlaps mainly consist of interruptions, unrelated to the topic of conversation. While such interruptions decrease, the overlaps to indicate feedback, clarification and confirmation through repetition increase clearly in the children after age four, reflecting a shift in the adults too. There is some individual variation in visual attention and overlap between the three children but this is not strongly linked to either

MLU or active participation in the conversation. After age four the children are apparently learning the collaborative floor present in adult-adult conversation.

Baker, C. (1977), Regulators and Turn-taking in American Sign Language Discourse. In: Friedman, Lynn A. (ed.), *On the Other Hand*. New York: Academic Press, 218–236.

Coates, J. & R. Sutton-Spence (2001) Turn-taking patterns in Deaf conversation. *Journal of Sociolinguistics* 5/4: 507-529.

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*First language acquisition*

*Language, general*

## **Speech-gesture production in language development**

*Dimitrova, Nevena, Georgia State University*

### **Symposium abstract:**

*From early in development, children's gesture use often shows tight links with their language development, often expressing either similar or complementary information with words (Valloton, 2010). Gesture sometimes does not merely reflect language development: for example children use many gesture + word constructions shortly before they pass into the two-word stage (Iverson & Goldin-Meadow, 2005). This symposium brings together four papers that explore how language and gesture develop together, from infancy to middle childhood. These papers rely on different methods and draw on data from four different languages. The first two papers show evidence for a tight link between gesture and language development. The second two papers show that most gestures show a tight link with language development but some gestures show some developmental changes.*

*The first paper is based on naturalistic observations of English-speaking children with autism spectrum disorder interacting with their mothers. The results show that children with autism use gestures for the same functions as typically developing children, although less often. Furthermore, children's use of gestures predicts their vocabulary development.*

*The second paper explores how gesture use changes with age (3-11 years) in French children's oral narratives. This study shows that as children get older and start to express more information with greater complexity in speech, they also gesture more.*

*The next two studies include 5-10 year old children who speak either French or English (Study 3) and either French or Czech (Study 4) in recounting what they had seen in a cartoon. Both studies found that that most of children's gestures conveyed*

*similar information as the speech. However, the younger children sometimes used gestures that conveyed less information than their speech.*

*The discussion revolves around how children's gestures are related to their language and cognitive development, in both typically developing and clinical populations.*

### **Abstract 1**

## **What early gesture can tell us about subsequent language development in children with autism**

*Dimitrova, Nevena, Georgia State University*

*Özçalışkan, Şeyda, Georgia State University*

*Adamson, Lauren, Georgia State University*

Early gesture use is a good predictor of expressive vocabulary in both typically developing (TD) children and children with autism spectrum disorder (ASD). Previous work on the early gesture-later vocabulary link focused primarily on parental reports, leaving unexplored how the production of child's own gestures relates to later vocabulary, particularly for children with ASD. We observed 23 18-month-old TD and 23 30-month-old children with ASD, matched for expressive language, as they interacted with their mothers in a semi-structured laboratory setting. We coded both the types of gestures children produced and the relation these gestures held to the accompanying speech. We assessed children's vocabulary one year later, using both parental checklists and children's spontaneous word production. Not surprisingly, we found that children with ASD and TD children differed in their overall rates of gesture production: children with ASD produced half as many gestures as TD children (MASD=23 [SD=12.7] vs. MTD=58 [SD=22.8];  $t(22)=3.5$ ,  $p<.01$ ). However, the two groups showed similarities in the types of gestures they produced and the function these gestures served in relation to the accompanying speech. Deictic gestures occurred most often, followed by requesting (placing extended palm near object) and offering (extending an object towards mother) gestures. Children in both groups also used gesture predominantly to either reinforce (~58%; 'cookie'+point at cookie) or supplement the accompanying speech (~32%; 'cookie'+give gesture), and rarely clarified a pronominal reference with gesture (~10%; 'this'+point at cookie). Moreover, gesture use was a reliable predictor of vocabulary size one year later for children with ASD ( $r_s=.57-.91$ ,  $p_s>.001$ ). These results suggest a tight link between early gesture and subsequent vocabulary development, particularly for children with ASD. We will discuss the implications of these findings for understanding the process of language acquisition and the role of gesture in this process for both early diagnosis and intervention.

## **Abstract 2**

### **Gesture-speech rate and bimodal production in the child aged 3 to 11 years**

*Colletta, Jean-Marc, Université de Grenoble Alpes*

*Pellenq, Catherine, Université de Grenoble Alpes*

The research devoted to language acquisition from a multimodal perspective recently brought to light several new and important findings on the way language abilities are tightly linked to gesture production and comprehension at early stages (Fasolo & D'Odorico, 2012; Guidetti, 2005; Valloton, 2010) as well as at later stages (Graziano, 2009; Kunene, 2010). However, all studies mostly focused on the semiotic content of speech, gesture and gesture-speech combinations, and on the interrelation between both modalities. The way the child processes speech and gesture information in language production remains largely unstudied.

Our study examines age-related changes in oral narrative discourse of 140 French school-children aged 3-11 years who elaborate a story from a short animated film. All children's language abilities were assessed. Language and gesture data were transcribed and coded using ELAN as an annotation tool. Basing our methods on the literature devoted to the study of speech rate and the planning of speech (Ryan, 2000; Pavao Martins et al., 2007), we measured all relevant variables (syllables, words, gesture strokes) in order to calculate speech rate, gesture rate and the informational content of prosodic units (speech segments marked by pauses and an intonation contour) and syntactic units (clauses). Our results show an increase of speech rate and a related and significant increase of gesture rate. They also show that aging increases the density of informational content both of syntactic and prosodic units. These results are interpreted in terms of the age-related changes in underlying cognitive abilities they reveal (representation, syntactic parsing, short term memory and speech planning). They are discussed in line with the available models of language production in adults (de Ruiter, 2000; Kita & Özyürek, 2003; McNeill, 2005) and the above-mentioned developmental studies.

## **Abstract 3**

### **French and English monolingual children's gestures about motion**

*Miller, Nadia, University of Alberta*

*Nicoladis, Elena, University of Alberta*

Previous studies have shown that monolingual children show greater developmental changes in their gestures about motion than their speech. For example, one study showed that when English and Turkish children described motion events (like a tomato man rolling down a hill), five-year olds and seven-year olds differed little on the spoken descriptions of the events (particularly in terms of manner and path conflation). The younger children were more likely to gesture only one component of manner + path confluations while older children gestured both (Ozyurek et al., 2008). The authors argued that this result reflects developmental changes in working memory capacity.

The purpose of the present study was to test if this same developmental pattern would emerge in the context of telling a story. Twenty-two English monolingual children and twenty-two French monolingual children watched a Pink Panther cartoon and told the story back. Within each language group, ten children were between 5 and 6 years of age (the younger children) and twelve were between 8 and 10 years (the older children). We identified utterances in which the children mentioned motion of a figure and coded any accompanying gestures for path, manner or manner + path confluations.

The initial results show that there are no differences between the two language groups in frequency of talking about motion, or in frequency of mentioning path alone, manner alone, or manner + path confluations. In terms of the spoken language, there are no differences between the younger and older children's use of words referring to any aspect of motion. There are, however, differences between the two age groups, with respect to gesturing: the older children were more likely to produce manner + path confluations than the younger children. These results are consistent with the argument that children's gestures are constrained by working memory capacity.

#### **Abstract 4**

### **How Many Words, Clauses and Gestures Do Czech and French Children and Adults Need in Order to Express Both of Motion Path and Manner?**

*Fibigerova, Katerina, Université Toulouse 2*

*Guidetti, Michèle, Université Toulouse 2*

*Šulová, Lenka, Charles University*

This paper contributes to the general discussion about development of multimodal expression of “motion” in different languages. After having analyzed Czech and French developmental tendencies related to the content of motion description (i.e. What kind of information is given: only path, only manner or both of them?), we’ll focus now on development related to the structure of motion description, i.e. how many units are necessary to express both path and manner: one verb/clause/gesture or more?

The methodology is based on animated cartoons containing voluntary motion events shown to and then narrated by 144 participants (French and Czech 5 and 10 years old children and adults).

Three main results were obtained:

- 1) In order to express both path and manner, French natives need more clauses while Czech natives produce only one. No age effect was observed.
- 2) When both path and manner are expressed in one clause, French speakers separate them into more units (only-path verb + another only-manner expression) while Czech speakers include them into one unit (one prefixed verb where the prefix carries the path and the root conveys the manner). Although children are similar to adults, the number of clauses where the verb includes both path and manner decreases in French, but increases in Czech.
- 3) Although verbal patterns are different in Czech and French, there is no effect of language on gestural patterns. But we found an interesting age effect: in both linguistic groups, older children tend to produce more gestures when expressing both path and manner while younger ones produce only one gesture.

We discuss the implications of our findings for language acquisition and gesture studies.

**Abstract 5 (if applicable)**

*Language development in atypical populations*

*Language, general*

## **The persistence of language problems in adolescents and adults with Specific Language Impairment (SLI)**

*Duinmeijer, Iris, University of Amsterdam*

### **Symposium abstract:**

*Children with a Specific Language Impairment (SLI) have profound problems in learning and using the linguistic rules of their language while there is no clear etiology for these problems. Although there is much literature on children with language impairments in primary school, little is known on the language symptoms of SLI at an older age. Do adolescents and adults with (S)LI still struggle with the same language problems, do they overcome their disorder or do they find ways to conceal their language problems? These questions are relevant both from a theoretical and a clinical perspective.*

*In this symposium, different presentations will shed light upon the question to what extent language problems in SLI persist into adolescence and adulthood. From different language backgrounds, the studies show that adolescents and adults with SLI still have poorer performance on several linguistic tasks. Failure on general language tests and tasks tapping specific grammatical structures are reported.*

*The outcomes in adolescent and adult SLI will be presented in the light of a range of research questions. How can adolescents and adults with SLI best be characterized and discriminated from typically developing peers? What is the link between linguistic and cognitive abilities like working memory, and how is language related to emotional health? And to what extent are the persistent problems in SLI due to a lack of knowledge or to problems in performance? All presentations indicate wide-ranged persistent problems, which shows that the population of adolescents and adults with SLI deserves scientific and clinical attention.*

## **Abstract 1**

# **Sentence repetition for identifying spoken language difficulties in adolescents with SLI**

*Vang Christensen, Rikke, University of Copenhagen*

A substantial part of the children identified with Specific Language Impairment (SLI) early in life will have persisting difficulties (e.g. Elbro, Dalby & Maarbjerg, 2011). Nevertheless, the difficulties with spoken language in older (Danish) children with SLI do not receive much attention, neither in clinical nor in research contexts.

Within the framework of a research project on the relationship between language and cognition in impairment, language and cognitive characteristics are being studied in (1) a group of 20 clinically identified children with SLI (5;10 to 9;11 years of age); (2) a group of 12 clinically identified adolescents with SLI (aged 11;1 to 14;2), and (3) more than 100 typically developing controls covering the whole age span from 5 to 14 years.

Since sentence repetition (SR) seems to discriminate children with and without SLI in other languages (e.g. Conti-Ramsden, Botting & Farragher 2001; Stokes et al., 2006) an SR task has been developed in the project. The task systematically includes grammatical features known/hypothesised to be difficult for Danish children with language impairments (e.g. past tense inflection, object questions and relative clauses), while keeping sentence length relatively constant.

In this presentation the following questions are addressed:

- What characterises the Danish adolescents with SLI relative to typically developing controls and younger children with SLI?
- Does the SR task seem to be a useful tool for identifying language impairments – also among adolescents?

The results show that the adolescents form a heterogeneous group with some still having clear structural language difficulties, although these are not as evident in spontaneous language as they are in younger children with SLI. Furthermore, preliminary results indicate that the SR task may be a useful tool for indicating language impairment in Danish children as well as adolescents.

Conti-Ramsden, G., Botting, N. and Faragher, B. (2001), Psycholinguistic Markers for Specific Language Impairment (SLI). *Journal of Child Psychology and Psychiatry*, 42: 741–748.

Elbro, C., Dalby, M. and Maarbjerg, S. (2011), Language-learning impairments: a 30-year follow-up of language-impaired children with and without psychiatric, neurological and cognitive difficulties. *International Journal of Language & Communication Disorders*, 46: 437–448.

Stokes, S. F., Wong, A. M., Fletcher, P., & Leonard, L. B. (2006). Nonword repetition and sentence repetition as clinical markers of specific language impairment: The case of Cantonese. *Journal of Speech, Language and Hearing Research*, 49(2), 219-236.

## **Abstract 2**

### **Growing up with SLI: Language and emotional health outcomes in early adulthood**

*Botting, Nicola, City University London*

*Durkin, Kevin, University of Strathclyde*

*Mok, Pearl, University of Manchester*

*Pickles, Andrew, Institute of Psychiatry, London*

*Conti-Ramsden, Gina, University of Manchester*

The long-term language and emotional outcomes of young people with Specific Language Impairment (SLI) are of interest not only to academics but also to families, educators and employers. In this presentation, we discuss data from the latest follow up stage of a large UK longitudinal study that began following a cohort of over 200 children with SLI at 7 years of age. At 16 this group were found to be at significant risk of emotional health difficulties but at 17 (after leaving compulsory schooling), the young people with SLI were showing similar levels of anxiety and depression to peers.



Data from 80 young adults with SLI from this cohort who have been followed up at the age of 23 years of age will be presented, alongside information from 80 typically developing comparison individuals who were recruited to the study aged 17 years. Both groups completed the Moods and Feelings Questionnaire (MFQ) regarding depression symptoms and the Child Manifest Anxiety Scale –R (CMAS-R) for anxiety symptoms as well as the Becks Depression Inventory and a series of questions about social support. Parents completed an abridged version of the same interview about their young person. Each participant was also tested on a comprehensive battery of language and cognition.

Preliminary analyses suggest that marked language and communication difficulties are still evident. For some young people this has an effect on functional everyday living, but for others the deficits are only visible through the test situation. In addition some young people with SLI seem to be more at risk of emotional health issues and this relationship is associated more with the level of support available than language skill per se. Implications for the wider outcomes of young adults with SLI and possible strategies for addressing these will be discussed.

### **Abstract 3**

#### **Interactions of sentence structure and working memory: results from a sentence repetition task**

*Poll, Gerard H., Elmhurst College,*

*Miller, Carol A., Pennsylvania State University,*

*van Hell, Janet G., Pennsylvania State University*

Sentence repetition (SR) discriminates adults with specific language impairment (SLI) from typical peers, but factors explaining performance are unclear. Working memory capacity and syntactic structure correlate with SR accuracy. Interactions of the sentence structure and participant characteristics have been less explored.

The Procedural Deficit Hypothesis (Ullman & Pierpont, 2005) suggests individuals with SLI have more difficulty with syntactic than lexical processing. We hypothesized that working memory capacity might interact with adjunct (syntactic-reliant) or argument (lexical-reliant) sentence structures in an SR task.

Forty six adults (18-27 years) participated, half diagnosed with SLI. All were screened for intellectual disability, autism, and hearing impairment. Participants were classified as SLI using a discriminant function (Fidler, Plante & Vance, 2011). We measured working memory by a composite of the Competing Language

Processing Task (CLPT) (Gaulin & Campbell, 1994) and Running Span (Cowan et al, 2005). Participants imitated 48 sentences of varied lengths (16 or 25 syllables) and structures (adjunct or argument laden). We controlled word frequency, word familiarity, and plausibility of the materials.

In a mixed effects regression model, group ( $\chi^2(1) = 20.1, p < .001$ ) adjunct condition ( $\chi^2(1) = 7.6, p < .01$ ), length ( $\chi^2(1) = 117.1, p < .001$ ) and working memory ( $\chi^2(1) = 7.34, p = .01$ ) predicted SR accuracy. The hypothesized working memory by adjunct condition interaction ( $\chi^2(1) = 9.2, p = .002$ ) was significant as were length by working memory ( $\chi^2(1) = 16.7, p < .001$ ) and length by adjunct condition ( $\chi^2(1) = 47.31, p < .001$ ) interactions.

Participants with more limited working memory had more difficulty recalling short adjunct-laden sentences than short argument-laden sentences. Longer sentences were less affected by adjunct condition. Difficulty with syntactic processing was apparent only in short conditions. For adults with SLI, SI accuracy depends on sentence length and structure as well as participant profile.

Alloway, T.P., & Gathercole, S.E. (2005). Working memory and short-term sentence recall in young children. *European Journal of Cognitive Psychology*, 17, 207-220.

Cowan, N., Elliott, E.M., Saults, J.S., Morey, C.C., Mattox, S., Hismjatullina, A., & Conway, A.R.A. (2005). On the capacity of attention: Its estimation and its role in working memory and cognitive aptitudes. *Cognitive Psychology*, 51, 42-100.

Fidler, L.J., Plante, E., & Vance, R. (2011). Identification of adults with developmental language impairments. *American Journal of Speech-Language Pathology*, 20, 2-13.

Gaulin, C.A., & Campbell, T.F. (1994). Procedure for assessing verbal working memory in school-age children: Some preliminary data. *Perceptual and Motor Skills*, 79, 55-64.

Riches, N.G., Loucase, T., Baird, G., Charman, T., & Simonoff, E. (2010). Sentence repetition in adolescents with specific language impairments and autism: An investigation of complex syntax. *International Journal of Language and Communication Disorders*, 45, 47-60.

Ullman, M.T., & Pierpont, E.I. (2005). Specific language impairment is not specific to language: The procedural deficit hypothesis. *Cortex*, 41, 399-433.

#### **Abstract 4**

# **Knowledge and performance of grammatical rules in adolescent SLI**

*Duinmeijer, Iris, University of Amsterdam*

*Weerman, Fred, University of Amsterdam*

While grammatical abilities have been studied extensively in younger children with Specific Language Impairment (SLI), fewer studies have considered what happens to their grammatical problems as they grow older. The limited literature indicates persistent problems, but also shows variability in individual performance depending on the task and context (Bishop, 1994). It has been hypothesized that SLI is caused by a processing deficit that affects rule learning but at the same time affects rule implementation once the rules have been learned. To what extent can persistent problems in adolescent SLI be attributed to problems in rule knowledge or in rule implementation and what factors influence rule implementation?

To answer these questions, a group of Dutch speaking children with SLI (aged 6-10 years) and a group of adolescents with SLI (aged 12-16 years) were compared to two age-matched typically developing groups (N=30 per group). They were tested on three grammatical variables known to be vulnerable in Dutch SLI (verbal inflection, gender assignment and wh-movement). Knowledge and performance of the grammatical rules involved in these structures was tested using comprehension, judgment and production tasks. The production tasks were constructed to include variance in word frequency, phonological complexity, syntactic complexity and the gap between dependent elements to test the effect of different linguistic contexts.

The results indicate persistent problems in the adolescent SLI population in inflection, agreement and complex syntax. A comparison between different tasks and linguistic contexts indicates that some contexts are associated with a larger number of errors. Problems in the implementation of rules appear to be present. Theoretical explanations and clinical implications will be discussed.

Bishop, D. (1994). Grammatical errors in specific language impairment: Competence or performance limitations? *Applied Psycholinguistics*, 15, 507-550

**Abstract 5 (if applicable)**

*First language acquisition*

*Semantics and lexicon*

## **The Emerging Lexical-Semantic System: Findings from a Cross-Language, Direct Assessment of Word Comprehension**

*Friend, Margaret, San Diego State University*

### **Symposium abstract:**

*The organizing theme of this symposium is the role of direct assessment of early language comprehension in explicating the nature of the emerging language system. In 1993, Bates observed that language acquisition research had virtually neglected early word comprehension, limiting our understanding of emergent language. Although the MacArthur-Bates CDI (Fenson et al., 1993) and its adaptations have since provided extensive data on this period, many findings remain to be confirmed and extended by direct assessment.*

*In the past 20 years valuable new data have come to light from paradigms based in infant recognition of word-referent relations. The present research follows this tradition and reports on the first wave of data collection in a cross-language, longitudinal project following children from four language groups: English-dominant, Spanish-dominant, French-dominant, and French-English bilingual.*

*The primary goal of this symposium is to use evidence from direct assessment of vocabulary comprehension at 16 months of age to extend and clarify current methodology and empirical findings on emerging language. Toward that end, we present an analysis of the temporal dynamics of touch and looking measures of word comprehension and their implications for assessment as well as for the nature of early semantic representations. We also report on the influence of SES and minimal L2 exposure on early vocabulary acquisition in English- and Spanish-dominant children. We extend our research to bilingualism, assessing monolingual and bilingual children's fast-mapping in conjunction with vocabulary comprehension to explore the relation between the process of word learning and lexicon size. Finally, we present data on lexical access to highlight similarities and*

*differences in L1 and L2 acquisition. Using direct assessment, these papers extend extant research on the nature of the receptive lexicon, susceptibility to environmental perturbations, lexicon size and facility in word learning, and the relation between L1 and L2 early in acquisition.*

### **Abstract 1**

## **The temporal dynamics of early behavioral measures of language**

*Hendrickson, Kristi, San Diego State University*

*Poulin-Dubois, Diane, Concordia University*

*Zesiger, Pascal, Université de Genève*

*Friend, Margaret, San Diego State University*

Infant performance is task dependent, such that behavioral dissociations occur across response modalities (Diamond, 1985). Although both visual attention and haptic responses are used as direct measures of early word knowledge, it remains unclear whether they should be treated as analogous (Charles & Rivera, 2009). The goal of the current study is to assess the temporal dynamics of vision and action to evaluate the implications of our findings for the underlying word representations that guide infants' responses.

We conducted a moment-by-moment analysis of looking and reaching behaviors as they occurred in tandem. Fifty-nine monolingual English infants (M = 16.6 months) saw pairs of images on a touchscreen and were prompted to touch the target. We used visual reaction time (RT) to assess the speed with which the prompted word was processed as a function of the type of haptic response: Target, Distractor, or No Touch.

A one-way ANOVA on RT revealed a main effect of Touch Type  $F(2,49) = 13.8$ ,  $p < .001$ . All bonferonni pairwise comparisons were significant. As expected, infants were fastest at processing the target word during Target Touches. Interestingly RTs to the target image were significantly faster for Distractor relative to No Touch trials.

Faster RTs and higher haptic accuracy appear to index children's most robust knowledge whereas slower RTs with no haptic response index their least robust knowledge. In contrast, fast RTs and incorrect haptic responses (behavioral dissociations) appear to index fragile, emerging concepts. Results are discussed in terms of the graded-ness of early knowledge (Munakata, Snyder, & Chatham, 2012). This research provides a methodological clarification on behavioral dissociations in vision and action and new evidence for a continuum of word knowledge in the second year of life.

## **Abstract 2**

### **The Influence of Environmental Variables on Early Vocabulary: Evidence From English and Spanish**

*DeAnda, Stephanie, San Diego State University*

*Friend, Margaret, San Diego State University*

*Arias-Trejo, Natalia, Universidad Nacional Autónoma de México*

*Poulin-Dubois, Diane, Concordia University*

*Zesiger, Pascal, Université de Genève*

Our understanding of the effects of socioeconomic status (SES) on the receptive vocabulary of children before age 2 is currently limited. Similarly, it is unknown whether minimal exposure to a second language influences vocabulary size in young preschoolers. Consequently, although the extant literature provides robust evidence on the influence of SES and language exposure on language production, it is unknown how sensitive the receptive vocabulary system is to these environmental factors at the earliest stages of lexical development. Further, in large part, our current understanding of the influence of these factors relies on indirect measures such as parent report, and on assessments of expressive vocabulary.

The present research had two primary goals: to directly assess receptive vocabulary, and to investigate effects of SES and minimal L2 exposure in 16-month-old children. We asked whether SES and minimal L2 exposure influenced L1 receptive vocabulary size in English- and Spanish-dominant children. Language exposure was measured using the Language Exposure Questionnaire (LEQ) and maternal education was used to index SES. The Computerized Comprehension Task (CCT) provided a direct assessment of receptive vocabulary, while the MacArthur-Bates Communicative Development Inventory (MCDI) provided an indirect parent report.

Study 1 revealed that SES and minimal L2 exposure exert significant and independent effects on a direct measure of receptive vocabulary in English-dominant children ( $F(1, 70) = 7.69, p = .007$ ;  $F(1, 70) = 5.84, p = .02$ ;  $t(70) = 2.5, p = .02$ ). In Study 2, we replicated the effect of minimal L2 exposure in Spanish-dominant children, however no effect of SES on vocabulary was obtained ( $F(1, 81) = 6.02, p = .02$ ). Our results emphasize the sensitivity of the early language system to minimal environmental changes. In addition, the findings illustrate the utility of haptic behavioral measures in examining sources of variability in early vocabulary development.

### **Abstract 3**

## **Lexical comprehension and novel word learning in monolingual and bilingual infants**

*Tamara Patrucco-Nanchen, Université de Genève*

*Zesiger, Pascal, Université de Genève*

*Poulin-Dubois, Diane, Concordia University*

*Friend, Margaret, San Diego State University*

A large part of the scientific literature on early receptive vocabulary has focused on parental reports. However, the accuracy of this measure compared to direct measures of infants' receptive skills is still debated. Furthermore, the relation between static measures of receptive vocabulary size, and dynamic measures such as word learning performance, has received only limited attention so far. In order to further investigate these issues, we report the first wave of an ongoing longitudinal study on language development from the second year through preschool in monolingual and in bilingual children. In this wave, we explore the relations between a well-established parental report measure (the MCDI:WG; Fenson et al., 1993), a direct measure of receptive vocabulary (the Computerized Comprehension Task, CCT; Friend & Keplinger, 2003), and a word learning task (WLT) based on Woodward et al. (1994) in 15-to-19-month-olds. The monolingual sample consists in 139 infants (74 English-speaking and 65 French-speaking). The bilingual group is comprised of 68 infants (35 English dominant, 33 French dominant). Language status was confirmed using the Language Exposure Questionnaire. The results indicate that both among monolinguals and bilinguals, there are significant correlations between the three different tools assessing lexical comprehension, with a stronger relation between the CDI and the CCT, and a somewhat weaker correlation between the CCT and the outcome of the WLT. No significant correlation was observed between the CDI and the WLT. These findings confirm and extend previous reports comparing the CCT and the MCDI in various languages with smaller sample sizes, and suggest that static measures of lexical development and assessments of early word learning partly tap into different processes. Interestingly, preliminary results computed on a subsample indicate that all three measures contribute to the prediction of lexical growth over the next six months, the WLT explaining the larger part of variance.

#### **Abstract 4**

### **Using the CCT to Assess Lexical Access in Young Bilinguals**

*Legacy, Jackie, University of Concordia*

*Poulin-Dubois, Diane, Concordia University*

*Zesiger, Pascal, Université de Genève*

*Friend, Margaret, San Diego State University*

To date, most research has relied on parental report and looking time measures to assess early word comprehension and lexical access in very young children. The goal of the present study was to compare early vocabulary development and lexical access in 16-18-month-old monolingual and bilingual infants using a laboratory-based measure of accuracy and reaction time. Receptive vocabulary was assessed in 59 French monolingual and 50 French-English bilingual children using both parental report (MacArthur-Bates Communicative Development Inventory; MCDI) and the Computerized Comprehension Task (CCT). Both word comprehension and speed of processing (latency to touch the target image) were assessed with the CCT. When assessing receptive vocabulary development using parental report, the bilinguals knew more words in their L1 than in their L2. While no difference was observed between the two groups when comparing the monolinguals against the bilinguals in each of their respective languages, the bilinguals appeared to outperform the monolinguals when both vocabularies were combined. When assessing early comprehension using the CCT, the bilinguals once again were more accurate in L1 than in L2, however they exhibited no difference in reaction time between languages. Interestingly, the monolinguals outperformed the bilinguals with respect to accuracy but not reaction time in each of their respective languages. As expected, a strong negative relationship exists between infants' vocabulary size and speed of processing (Fernald, Pefors & Marchman, 2006; Hurtado, Fernald & Marchman, 2007; Marchman, Fernald & Hurtado, 2010) in both monolinguals and bilinguals. Taken together, these results highlight the importance of using multiple measures to assess early vocabulary development, and points to the CCT as an alternative way of assessing lexical access in very young children.

#### **Abstract 5 (if applicable)**



*New methods in child language research*

*Language, general*

## **Macro- and microstructure in bilingual and monolingual children's narratives across languages**

*Gagarina, Natalia, Center for General Linguistics*

*Bohnacker, Ute, Uppsala University*

### **Symposium abstract:**

*This symposium brings together research on narrative skills development in 5-9-year-old children in different language settings, all assessed with the same tool, piloted in 15 languages, the Multilingual Assessment Instrument for Narratives (Gagarina et al. 2012).*

*Rationale. Narratives provide rich data about a child's multiple linguistic abilities, including story structure, structural complexity, internal state language, cohesion, morphosyntax, lexical diversity and productivity, in a short language sample. Clinicians and researchers consider narrative analysis an ecologically valid way to investigate communicative competence.*

*The goals are to compare the results of the narrative assessment for different elicitation modes (telling, retelling) and for narrative production and comprehension in different bilingual populations as well as in monolinguals. We aim at establishing 'typical' levels of narrative skills for children age 5-9 across languages, and discuss whether this should be done via a composite score or rather some particular aspect of macro-/microstructure.*

*The assessment tool contains four parallel stories, each with a carefully designed six-picture sequence controlled for cognitive and linguistic complexity, parallelism in macrostructure and microstructure, and cultural appropriateness and robustness.*

*Earlier research suggests that macrostructure (story structure, episodic complexity) is largely a language-general capacity which individuals transfer between languages, whereas microstructural measures (e.g. general productivity, lexical diversity) are language-specific and thus more strongly affected by low exposure (e.g. Pearson 2002; Paradis et al. 2010). This symposium puts these ideas to the test and aims to answer the following questions: Do bilingual children score similarly for macrostructure in both their languages? How much do age and amount of exposure affect macrostructural scores? Do age-matched monolingual and bilingual TD and SLI groups show similar scores on macro- and microstructural levels? If not, where and why?*

*The contributions to this symposium put these research questions to the test and the results provide a well-defined evaluation of macro- and microstructure in bilingual and monolingual narratives across languages.*

### **Abstract 1**

## **Story content in the narratives of mono- and bilingual Finnish-speaking children**

*Kunnari, Sari, University of Oulu*

*Välismaa, Taina, University of Oulu*

The development of narrative abilities is an important achievement shown to be associated with later literacy development (e.g. Roth et al., 1996; Miller et al., 2006). Research on bilingual children's narrative development is still limited. Furthermore, there are no systematic studies on the narrative abilities of Finnish-Swedish bilingual children. The following questions were addressed: what is the score of story content in Finnish-speaking monolingual and bilingual children with an age range of 5 to 6 years and are there differences between these two groups.

Thirty-two children participated in the study: 16 Finnish-Swedish bilinguals from birth (8 boys and 8 girls, mean age=68.4 mos., SD=6.2) and 16 Finnish-speaking monolinguals matched by gender and age (8 boys and 8 girls, mean age=68.7 mos., SD=6.1). According to the parental questionnaire, for 14 of the bilinguals the input of Finnish and Swedish was quite equal. The children's narrative abilities in Finnish were assessed with LITMUS-MAIN (telling and retelling; randomized order) and the narratives were scored for story content (i.e. macrostructure). The difference in the scores of monolingual and bilingual children was analyzed with t-test for independent samples.

The bilingual children scored lower (mean=11.1, SD=3.3) in story content compared with their monolingual controls (mean=14.5, SD=3.3). The difference in the scores was statistically significant ( $t(30)=2.98$ ,  $p=0.006$ ). The separate analyses for telling and retelling

revealed that the difference between bilinguals and monolinguals was statistically significant only in the telling condition ( $t(30)=3.84$ ,  $p=0.001$ ).

Our results indicate that at the age of 5 to 6 years the development of the bilingual children's narrative skills may be somewhat slower than the monolingual children's skills. However, our findings suggest that the group difference is mainly explained by the telling condition.

## **Abstract 2**

### **Multilingual assessment of macrostructure in narratives by Swedish-English preschoolers**

*Bohnacker, Ute, Uppsala University*

There are no systematic studies of the narrative development of bilingual children in Sweden, and the only norm-referenced assessment tool available (a Swedish version of the Renfrew Bus Story, Svensson/Tuominen-Eriksson 2002) misidentifies typically-developing bilingual children as language-impaired (Dillström/Kesti 2009). We present results from bilingual and monolingual children age 6-7 as elicited by the new Multilingual Assessment Tool for Narratives, MAIN.

Research questions. Do bilingual preschoolers score similarly for macrostructure in both their languages? How do age-matched typically-developing Swedish-English bilinguals and Swedish monolinguals perform on MAIN? Do these two groups differ in macrostructure and/or microstructure?

Method. 36 Swedish-English bilinguals age 5;9-7;6 (with similar amounts of exposure) and 14 Swedish-speaking monolinguals matched for age and socio-economic background participated. MAIN (telling condition) was used to elicit two macrostructurally parallel narratives from each child (Baby Birds, Baby Goats). Bilinguals told one story in Swedish and one in English, monolinguals told two stories in Swedish (in randomized order); in addition, all children answered comprehension questions. Narratives were transcribed and scored for macrostructure (story structure composite score, structural complexity, internal state terms). Microstructural measures included general productivity, lexical diversity, subordination, tense, and referential devices. The bilingual children's Swedish and English scores were compared with each other and with the monolinguals' Swedish scores. Carry-over and with age effects were also explored.

Results and conclusion. There was a clear carry-over (training) effect from story 1 to story 2; age effects were negligible. Narrative length and lexical diversity were substantially lower in bilinguals than monolinguals. Yet these differences in microstructure did not have any impact at the macrostructural level, where monolinguals and bilinguals scored fairly similar on story structure and structural complexity. This result supports the idea that macrostructure is largely language-independent and may be a more appropriate measure of narrative ability in bilingual children than language-dependent microstructural measures.

### **Abstract 3**

## **Narrative Abilities in Early Successive Slovak-English Bilingual children: A cross-language comparison**

*Kapalkova, Svetlana, Comenius University in Bratislava*

*Kamila Polisenska, Comenius University in Bratislava*

*Distlerova, Lenka, Comenius University in Bratislava*

**Research question:** Previous research suggested that macrostructure scores are less dependent on a specific language, while microstructure performance is language-specific. We investigated if macrostructure and microstructure skills are transferred between two languages of bilingual children and if either/both of these scores reflect language dominance. An additional aim was to establish if the ability to repeat novel sequences of phonological material is related to narrative skills within and/or across languages.

**Methods:** Forty typically developing Slovak-English bilingual children (age range 5–7 years, mean age 5;10) participated in the study. Minimum length of exposure to L2 was 12 months and average exposure was 38 months. Two types of narrative tasks were administered: a story generation task and a story retell task. Children were assessed on their narrative skills in both Slovak and English and their performance was evaluated for macrostructure and microstructure. In addition, the children were given a nonword repetition task in their L1.

**Results:** Children's macrostructure scores were higher in L1 than L2. Similarly, children showed larger lexical diversity (as measured by type/token ratio) in L1 than L2. The method of data elicitation significantly influenced the macrostructure scores with children achieving higher scores in story retelling compared to story generation. No interaction between method and language was found. Performance on a nonword repetition task in L1 was significantly related to microstructure scores in L2, but no other relations to either L1 or L2 macrostructure or L1 microstructure were found.

**Conclusion:** Hearing the story in either L1 or L2 did not improve narrative performance, suggesting limited priming effects. Language dominance influenced both macrostructure and microstructure skills, thus failing to support the hypothesis that macrostructure skills transfer across languages better than microstructure skills. Children with better ability to process novel phonological material in L1 showed higher lexical diversity in L2.

#### **Abstract 4**

### **Links between lexicon and grammar in narrative production: Lithuanian as L1 and L2 in bilingual children**

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*Dabašinskienė, Ineta, Vytautas Magnus University, Kaunas*

*Kalninytė, Agnė, Vytautas Magnus University, Kaunas*

Problem under investigation. The growing number of migrants' children in Europe poses an immense challenge for educators due to the fact that these children are early sequential bilinguals who use one language at home and another language at school. Research on home languages especially so-called "small languages" is very scanty, particularly with respect to their interference with the child's school language.

Studies of language acquisition in monolingual children have demonstrated the significance of narrative development for the acquisition of literacy skills and communicative competence. However, little is known about the narrative skills of Lithuanian as L1 and L2 for typically developing children who are in the process of becoming bilingual or monolingual with SLI.

Methods. This study examines the narrative performance in Lithuanian (according the MAIN – Multilingual Assessment Instrument for Narratives tools) of 87 five- and six-year-old preschool children. The children were divided into 4 groups: 1) 25 TD bilingual children with Lithuanian (L1) and English (L2); 2) 25 TD bilingual children with Russian (L1) and Lithuanian (L2); 3) TD monolingual Lithuanian children (25), and 4) SLI monolingual Lithuanian children (12).

The narratives were recorded, transcribed and coded using CHILDES tools for micro- and macrostructural indications (including general productivity, lexical diversity, syntactic complexity, cohesion and coherence). The analysis is mainly focused on microstructure, i.e. lexicon and grammar.

Results. The results of the analysis show that general productivity and story complexity were similar in all groups. However, TD bilingual children scored below TD monolinguals, and children with SLI demonstrated the lowest results. TD monolinguals had the highest lexical skills in comparison to the bilingual peers or SLI; syntactic complexity was low for all groups.

Conclusion. The bilinguals with Lithuanian as L1 and TD monolinguals demonstrated similar scores, whereas the bilinguals with Lithuanian as L2 were closer to the SLI group.

#### **Abstract 5 (if applicable)**

# **Telling a story to a computer or a person: the effect of elicitation modalities on the narrative complexity of 9-year-old children**

*Klop, Daleen, Stellenbosch University, South Africa*

*Knijf, Nora, Stellenbosch University, South Africa*

*Diederichs, Nico, Stellenbosch University, South Africa*

*Du Plessis, C., Stellenbosch University, South Africa*

**Purpose:** This study investigated whether children's narratives elicited with a computerized presentation method would differ, in terms of micro- and macrostructure from narratives that were elicited by an examiner.

**Method:** Participants were 30 typically developing bilingual 9-year-old children in South Africa who were comparable in terms of receptive vocabulary (PPVT-III), expressive language (Renfrew Action Picture Test) and non-verbal intelligence skills (TONI-4). They were randomly assigned to two groups and assessed in their home language with the Language Impairment Testing in Multilingual Settings-Multilingual Assessment Instrument for Narratives© (LITMUS-MAIN) (Gagarina et al., 2012). One group (n=15) was assessed in the conventional way according to the LITMUS-MAIN procedures for telling; the picture elicitation stimuli were presented by an examiner and the participants told the story back to the examiner. The other group (n=15) was assessed with a computerized version of LITMUS-MAIN. They received the instructions through headphones, viewed the pictures on a computer screen and told the story back to the computer. Narrative performance was measured in terms of micro- and macrostructure variables. Microstructure measures included productivity (total number of words) and lexical diversity (total number of different words). Macrostructure was assessed by the LITMUS-MAIN protocol in terms of story structure, structural complexity, internal state terms and comprehension.

**Results:** The narratives that were elicited in the conventional way were significantly longer and more complex than the narratives elicited by the computerized version.

**Conclusions:** Children are more likely to tell complex narratives to a person than to a computer.

*Language development in atypical populations*

*Syntax*

## **Morphosyntactic profiles in Spanish-speaking children and adolescents with Primary Language Disorder, Down Syndrome, Williams Syndrome and Deaf Children with and without Cochlear Implants**

*Galeote, Miguel, University of Málaga*

**Symposium abstract:**

*The main goal of this symposium is to compare morphosyntactic abilities across populations of Spanish-speaking children with different language disorders: Primary Language Impairment (PLI/SLI), Down Syndrome (DS), Williams Syndrome (WS) and deaf children with hearing aids and/or cochlear implants.*

*Morphosyntactic contrasts have been shown, mostly between DS and WS. Recently work has been published comparing PLI/SLI to DS that has suggested morphosyntactic similarities (Laws & Bishop, 2004, for English and Caselli, Monaco, Trasciani & Vicari, 2007, for Italian). Still language specific characteristics need to be explored.*

*Further, little, if any, research has been exposed comparing deaf children to these populations. One study by Ramírez, Odell, Archbold & Nikolopoulos (2009) suggests that morphosyntactic similarities may be found between deaf children and other populations with language disorders. Contrary to these findings, it has been suggested that children with WS have morphosyntactic abilities that are superior to their intellectual level and distinct to other disorders.*

*Most research has been carried out with English-speaking children and it has been well established that generalizations to other languages are limited because of language specific differences (Caselli et al., 2008). For instance, both Spanish and Italian are morphologically rich languages compared to English.*

*The data presented in this symposium are a first step, to our knowledge, to compare Spanish-speaking children with PLI/SLI, DS, WS and deafness. Findings illustrate similar patterns in their morphosyntactic development, with the exception of children with WS. We will discuss similarities and differences among groups in the presentations.*

#### *References*

*Caselli, M.C.; Monaco, L., Tasciani, M. & Vicari, S. (2008). Language in Italian children with down syndrome and with specific language impairment. Neuropsychology, 22 (1), 27-35.*

*Laws, G. & Bishop, D. (2004). Verbal deficits in Down's syndrome and specific language impairments: a comparison. International Journal of Language and Communicative Disorders, 39, 423-451.*

*Ramírez, I., Odell, A., Archbold, S. & Nikolopoulos, T. (2009). Spoken language development in oral preschool children with permanent childhood deafness. Journal of Deaf Studies and Deaf Education, 14 (2), 205-217.*

#### **Abstract 1**

### **Morphosyntactic profiles of Spanish-speaking children with Down Syndrome in a sentence repetition task**

*Galeote, Miguel, University of Málaga*

*Sebastián, Eugenia, Universidad Autónoma de Madrid*

*Checa, Elena, University of Málaga*

*Agüera, Laura, University of Málaga*

*Conesa, Macarena, University of Málaga*

Down Syndrome (DS) is a genetic disorder that is characterized by language delay that is not directly related to the child's non-verbal cognitive development. Morphology and syntax are the areas that are most affected. The goal of this presentation is to illustrate the morphosyntactic development of Spanish-speaking children with DS by means of a sentence repetition test.

Participants were 50 children adolescents with DS compared to 50 typically developing (TD) mental age controls. Mental age (MA) of both groups was between 3 and 5;7 years determined by the Merrill-Palmer scales. Chronological age of the DS group ranged from 3;7 to 18;10 years and for the TD group between 3;3 and 6;7. Groups were matched by sex and MA.



Observations were based on a Spanish version of the Devescovi & Caselli (2007) sentence repetition test. It consists of 27 simple phrases (between 3 and 7 words) with different structures and levels of complexity. The test was scored for number of complete sentences produced, MLU and number of omissions and errors (substitutions, additions, etc.)

Similar to previous studies in other languages, the children with DS had inferior scores on all measures compared to TD peers. Still, accuracy does increase with age and this suggests that morphosyntactic abilities develop over time in children with DS. Moreover, results highlight that sentence repetition test is an useful measure of linguistic abilities in DS. These results are also discussed compared to the other groups of children presented in the symposium.

#### References

Devescovi, A. & Caselli, M.C. (2007). Sentence repetition as a measure of early grammatical development in Italian. *International Journal of Language and Communicative Disorders*, 42, 187-208

#### **Abstract 2**

#### **Morphosyntactic characteristics of Spanish-speaking Children with Primary Language Disorder in a Narrative and a Sentence Repetition Task**

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

*Maldonado, Ricardo, Universidad Nacional Autónoma de México*

*Alarcón-Neve, Luisa Josefina, Universidad Autónoma de Querétaro*

*Aguillón, Alejandra, Universidad Autónoma de Querétaro*

Multiple studies have shown that children with Primary Language Disorder (PLI/SLI) produce more ungrammatical and less complex utterances than their typically developing peers. Findings for Spanish have illustrated language specific components that are vulnerable in this population (Bedore & Leonard, 2001, Jacobson & Schwartz, 2002, Simon-Cerejido & Gutiérrez-Clellen, 2007). Data from most of the studies is based on narratives, language samples and, occasionally specific elicitation tasks. The goals of this presentation are to analyze grammaticality in a narrative sample and contrast complexity in two tasks: the narrative and a sentence repetition task.

We studied a group of monolingual Spanish-speaking Mexican children with PLI. Participants were 14 children with PLI and 14 typically developing children (TD) between 5 and 8 years of age who participated in a larger study. Children narrated a textless story and the Sentence Repetition (SR) subscale of the CELF-4 was used for complexity.

Differences between tasks were found in sentence complexity. In the narrative, there were no significant differences for total number of complex sentences. Differences were based on the functional characteristics of the sentences. Relative sentences were infrequent and temporal subordination was more outstanding in children with PLI. In contrast, in the SR task, children with PLI produced significantly less complex sentences. Whereas TD children usually repeated at a more than a 50% accuracy rate, children with PLI seldom reached above a 15% accuracy rate. There were clear differences in all sentence types between groups. Finally, significant differences were found for grammaticality in the narrative sample between groups both in number and types.

This study shows that there is an effect of observational technique and, thus, analysis of sentence complexity should be based on data from different methods. Strangely, sentence repetition showed stronger discrimination than narrative production. The strongest discriminant measure was the grammaticality index.

#### References

Bedore, L., & Leonard, L. (2001). Grammatical morphology deficits in Spanish-speaking children with specific language impairment. *Journal of Speech, Language, and Hearing Research, 44*, 905–924

Jacobson, P. F., & Schwartz, R. G. (2002). Morphology in incipient bilingual Spanish-speaking preschool children with specific language impairment. *Applied Psycholinguistics, 23* (1), 23–41.

Simon-Cerejido, G., Gutierrez-Clellen, V.F. (2007). Spontaneous language markers of Spanish language impairment. *Applied Psycholinguistics, 28*, 317–339.

#### **Abstract 3**

### **Profiles of morphosyntactic development in Spanish speaking deaf children with and without cochlear implants**

*González-Cuenca, Antonia, University of Málaga*

*Barajas, Carmen, University of Málaga*

*Gálvez-Rubí, Arturo, University of Málaga*

*Lavigne, Rocío, University of Málaga*

The main goal of this presentation is to present data based on the morphosyntactic development of Spanish-speaking deaf children who were fitted with hearing-aids or cochlear implants in early childhood. The data will be compared to the results of other groups of children presented in the symposium.

Participants were 30 children and adolescents with a severe or profound bilateral, pre-speech hearing-loss, with no additional handicaps. All participants had been fitted or implanted before they were 4 years old. Participants were between 6 and 13 years of age.

Data was obtained by means of the “Formulación de oraciones” (Sentence Formulation) subscale of the Spanish edition of the CELF-4 (Semel, Wiig & Secord, 2006). The participants were asked to formulate a sentence, based on an image and a target word. The scores took into account: a) semantic and syntactic accuracy precision based on a 3 point scale, b) which target words or structures were inaccurate, c) the number of correct sentences and MLU and, d) types of errors (replacements, additions, syntactic agreement or verbal flexion, etc.) or omissions in a non-grammatical sentence.

Results show that the age equivalent scores were lower than the chronological age for most of participants. Morphological errors were more frequent with specific target words that elicited subordinate clauses. MLU scores were also below chronological age. The most frequent errors were of verbal flexion and syntactic agreement, as well as omissions and word order in complex sentences. This study shows that deaf children with and without cochlear implants produce morphosyntactic errors that are similar to data from other children with language disorders.

#### References

Semel, E., Wiig, E. H. & Secord, W. A. (2006). Clinical Evaluation of Language Fundamentals. San Antonio (Texas): Psychological Corporation (Spanish Edition).

#### **Abstract 4**

### **Morphosyntactic profiles of Spanish speaking subjects with Williams Syndrome**

*Díez-Itza, Eliseo, University of Oviedo*

*Antón, Aránzazu, University of Oviedo*

*Miranda, Manuela, University of Oviedo*

*Ojea, Ana Isabel, University of Oviedo*

*Martínez, Verónica, University of Oviedo*

Williams syndrome (WS) is a genetic disorder characterized by displaying language skills higher than expected in the context of a mild to moderate level of intellectual disability. Despite a certain degree of heterogeneity, WS is always associated with initial developmental language delay, but on reaching school age, the linguistic abilities of children with WS develop rapidly and they generally manage to achieve a good level of productive grammar. Thus, it seems that the delayed linguistic development in WS does not follow the typical developmental trajectory, but it doesn't reach an age equivalent level absolutely normal level since subjects demonstrate persistent problems with grammar. It has been also argued that WS subjects present a selective pattern of morphosyntactic impairment compared to Down syndrome and SLI. However, few studies have been conducted based on conversational corpora.

The aim of this presentation is to investigate the morphosyntactic profile of 12 Spanish-speaking subjects Williams syndrome between 5 and 35 years of age within the framework of the "Syndroling Project": a comparative linguistic analysis of typical development profiles and neurodevelopmental genetic syndromes (Down, Williams and Fragile X syndromes).

Subjects were recorded engaging in spontaneous conversation with a researcher. Each conversation was transcribed in CHAT format, and analyzed using the CLAN programs provided by the CHILDES Project. The CHILDES system provides full support for analyses based on automatic morphosyntactic coding. The core programs used in this work were MOR, and the POST disambiguator, complemented with hand annotations. The morphosyntactic profile was built on ten grammatical categories, considering their frequency and proportion of errors. Cluster analyses were conducted in order to identify the modal homogeneous characteristic profile of the group, and extreme dissimilar cases. Morphosyntactic profiles of the WS subjects were compared with those of a group of typically developing, and Down syndrome children and adolescents.

### **Abstract 5 (if applicable)**

*Child bilingual language development*

*Phonetics and phonology*

## **Some considerations on the role of quantity and quality of auditory input in language acquisition: Evidence from monolingual and bilingual populations**

*Adrian, Garcia-Sierra, University of Washington*

### **Symposium abstract:**

*The language environment of bilingual children is more inconsistent than the language environment of monolingual children given exposure to the sound structure of more than one language. The inconsistent bilingual environment frames development and has been shown to influence timing of acquisition, language dominance, and later language abilities. This symposium presents evidence that aims to describe how the quantity and the quality of language exposure contribute to early and late language abilities in monolingual and bilingual learners. Three approaches are reported: (1) acoustic analyses that document the early acoustic-phonetic input of infants' auditory environments (2), speech perception experiments that use electrophysiological measures to identify infants' discrimination abilities of native and non-native speech sounds, and (3) behavioral measures of phonetic category boundaries and internal category structure. Using these approaches, four complementary sets of experiments will be presented. The first examines perceptual accommodation of phonetic variation in monolingual children and adults, focusing on functional plasticity of phonetic category boundaries and internal category structure as a consequence of phonetic variation. With this context in mind, the other contributors will present experiments that address implications of these findings for learning speech sound categories in bilingual environments. These include findings that examine the role of speaking style and social context on word production in monolingual and bilingual infants exposed to English and/or Spanish. In addition, results from*

*electrophysiological experiments with bilingual and monolingual infants will be presented that examine how speaking style and quantity of language exposure influence early speech sound discrimination. We conclude with findings from a word-learning paradigm that address how exposure to inconsistencies in vowel pronunciation influences vowel categorization in monolingual and bilingual toddlers. Collectively, this symposium will highlight the complex interplay between quantity and quality of early auditory input as it related to language development in monolingual and bilingual populations.*

### **Abstract 1**

## **Functional plasticity of speech sound categories**

*Rachel, M, Theodore, University of Connecticut*

Successful language comprehension entails extracting individual sound categories from the acoustic signal. This is a considerable challenge given that the acoustic-phonetic information specifying a given speech sound varies considerably. For example, consider voice-onset-time (VOT) specifying the voicing contrast of word-initial stop consonants. VOTs in speech production are influenced by contextual factors including speaking rate, phonetic context, and idiosyncratic differences in production across talkers (e.g., Allen et al., 2003; Delattre et al., 1955). To recognize speech sounds, listeners must thus categorize acoustic-phonetic variation with respect to context. Findings from adults indicate that listeners can accommodate some contextual influences by dynamically adjusting both category boundaries and internal category structure (e.g., Volaitis & Miller, 1992). The goal of the current work was to examine how variability in the acoustic environment due to speaking rate, place of articulation, and talker identity influences functional plasticity of speech sound categories. Two experiments were conducted, one that examined plasticity of category boundaries in children 8-10 years of age and one that examined plasticity of internal category structure in adults. Stimuli for the experiments consisted of VOT continua ranging from voiced-initial to voiceless-initial stop consonant endpoints. Experiment 1 used an identification paradigm to determine voicing boundaries for labial-initial and velar-initial continua at two speaking rates. In Experiment 2, two groups of adults were exposed to a talker producing voiceless stop consonants. Characteristic VOTs differed between the two groups and a goodness-rating paradigm was used to measure internal category structure. The results indicate that children show functional plasticity of category boundaries and that such plasticity persists well after the sound structure has been acquired and pervades internal category structure. Collectively, these findings underscore the role of acoustic-phonetic input in language acquisition, particularly for bilinguals, where language itself becomes a context in which listeners must use to interpret phonetic variation.

References

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Delattre, P. C., Liberman, A. M., & Cooper, F. S. (1955). Acoustic loci and transitional cues for consonants. *Journal of the Acoustical Society of America*, 27, 769-773.

Volaitis, L. E. & Miller, J. L. (1992). Phonetic prototypes: Influence of place of articulation and speaking rate on the internal structure of voicing categories. *Journal of the Acoustical Society of America*, 92, 723-735.

## **Abstract 2**

### **The language you hear, the language you speak: The quality of the social interactions in Spanish-English bilinguals' language development**

*Nairan, Ramirez-Esparza, University of Connecticut*

*Adrian, Garcia-Sierra, University of Washington*

*Patricia, K. Kuhl, University of Washington*

The goal of this investigation was to replicate previous findings on monolinguals on a sample of Spanish-English bilinguals (N=25, 11 and 14 months old). In a previous study we found that the quality of speech that monolingual infants receive in their everyday lives relates to language development when they are 24 months old. We investigated relationships between both the style of parental speech, parentese speech (i.e., speech characterized by higher pitch, slower tempo, and exaggerated intonation contours) vs. standard speech, and the social context of speech, one-on-one (1:1) vs. group, on later speech development. The language input variables were assessed at home using digital first-person perspective recordings of the infants' auditory environment. The results showed that only the social interaction variable parentese speech-1:1 related to later word production, controlling for SES. In this study we test the four social contexts in a sample of bilinguals. Each language context was tested in English and in Spanish (i.e., parentese speech-1:1 in Spanish and parentese speech-1:1 in English). We replicate findings from the monolinguals, but significant correlations are specific to language. For example, the amount of parentese speech 1:1 in English correlated with English word count at 24 months, but not with Spanish word count at 24 months, controlling for SES; and the amount of parentese speech 1:1 in Spanish correlated with Spanish word count at 24 months, but not to English word count at 24 months, controlling for SES. Importantly, parentese speech 1:1 across languages correlated significantly with the sum of number of words used in Spanish and English,

controlling for SES. This study has important implications for the understanding of language development on bilinguals.

### **Abstract 3**

## **The contribution of the quantity and the quality of language exposure in infants' discrimination abilities of native and non-native speech sounds**

*Adrian, Garcia-Sierra, University of Washington*

*Patricia, K. Kuhl, University of Washington*

*Nairan, Ramirez-Esparza, University of Connecticut*

We investigated the relation between language exposure and neural commitment to the phonetic units of language in 11-14 month-old English monolingual (N=22) and English-Spanish bilingual infants (N=22). Research has shown that bilingual infants develop phonetic neural commitment at a different pace than their monolingual peers. However, interpretation of the bilingual data requires testing a speech contrast that is non-native for both bilinguals and monolinguals. We assessed quantity and quality of language exposure by acoustic analyses that document the early acoustic-phonetic input of infants' auditory environments. Neural speech discrimination (English, Spanish, Mandarin) was tested using event-related potentials (ERPs) to determine the Mismatch Response (MMR). Both groups showed significant correlations between MMRs and language exposure. However, monolinguals showed negative MMRs and negative correlations between MMR and exposure to English. Bilinguals showed positive MMRs and positive correlations with exposure to both of their languages independently. Negative MMRs are interpreted as established phonetic categories to native speech sounds. Positive MMRs are interpreted as an initial ability to discriminate sounds where establishment of phonetic categories is still in "progress". No correlations were found between Mandarin-MMRs and language exposure. Our results support the view that bilingual and monolingual infants show a different pattern of speech perception development.

### **Abstract 4**

## **Input variability in bilingual contexts alters vowel representation in familiar but not in newly acquired words**



*Marta, Ramon-Casas, University of Barcelona*

*Laura, Bosch, University of Barcelona*

Catalan-Spanish bilingual infants have to learn two distinct phonological systems that involve different vowel repertoires. Previous research has analyzed bilinguals' ability to discriminate and codify the mid-front [e]-[ɛ] vocalic contrast, present in Catalan but not in Spanish. While bilinguals can discriminate and categorize this contrast by the end of the first year of life, they do not consistently use this knowledge in their early lexical representations of familiar words. A series of studies have evidenced that different factors (age, length and amount of exposure, language dominance, cognate status of the words in both languages and input quality) can play a role in the correct categorization of this contrast at the lexical level. Regarding the input to the young bilingual learner, it has been shown that vowel production is less systematic and contains more errors than the input to infants in Catalan monolingual contexts. To explore the role of variability in the representation of this Catalan vowel contrast, a word learning experiment was run. It was hypothesized that the absence of inconsistencies in the pronunciation of the [e]-[ɛ] contrast in the material would facilitate the learning and representation of this contrast in the target words. Two groups of toddlers (N=40) half from Catalan-Spanish bilingual families and half from Catalan monolingual environments were tested at 22 months of age. Results showed that both groups could successfully learn and correctly map two minimal-pair pseudo-words, differing in the [e]-[ɛ] contrast, onto two different novel objects. Thus bilinguals can use their phonetic knowledge in a word learning task and successfully represent this conflicting contrast in newly acquired words. It is suggested that vowel categorization errors in bilingual's lexicon and delays in vowel representation are likely to be the consequence of inconsistencies in the input they are exposed to.

**Abstract 5 (if applicable)**

*Cultural and social factors in child language development*

*Language, general*

## **Children's Peer Talk: Learning Language from Each Other**

*Vibeke Grøver, University of Oslo*

### **Symposium abstract:**

*Peer interaction may offer affordances as well as constraints on language learning. However, until recently few studies have examined children's language learning within peer settings offering less scaffolding support. Building on a pragmatics-based approach to language acquisition, the goal of the symposium is to examine features of first and second language learning taking place within peer interaction in preschools and schools in the US, Sweden, Norway and Israel.*

*A shared theoretical basis for the five papers is Blum-Kulka's conceptual perspective of peer talk as a 'double opportunity space'. The concept represents a framework for examining short- and long-term implications of peer talk on children's learning and development. According to Blum-Kulka peer talk functions on two planes simultaneously. On the first plane, peers construct their way of life through the negotiation of meaning and relationships unique to their childhood culture. The second plane has to do with peer talk constituting a central arena for the development of various language skills, in particular pragmatic skills. The symposium will demonstrate some of the unique dynamics of peer interaction as an arena for co-construction of child culture as well as for the development of language skills. More specifically, the five papers present research addressing the opportunities peer interaction offers for second-language learning in bilingual settings (Ehrlich & Gorbatt; Evaldsson & Sahlström; Grøver, Rydland, Cekaite & Aronsson; Kyratzis), for development of audience' or linterlocutor awareness (Grøver et al.; Nicolopoulou & Ilgaz), and for acquiring argumentative (Ehrlich & Gorbatt), narrative (Nicolopoulou & Ilgaz) and literate (Kyratzis) skills in play.*

*References:*

*Blum-Kulka, S. 2005. 'Modes of meaning making in young children's conversational*

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### **Abstract 1**

## **Affordances of Peer Talk in Preschool Children's Argumentative Events: The Case of Native Language Speakers and Immigrant Children.**

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*Gorbatt, Naomi, The Center for Educational Technology, Israel*

The present study starts from the assumption that peer talk provides a double opportunity space (Blum-Kulka, Huck-Taglicht and Avni, 2004) - a space for sociability and cultural membership as well as for the development of language and communicative skills. From this theoretical framework, we explore the affordances of peer talk in events of argumentative character in native Israeli children and in immigrant children's preschool peer conversations.

Two samples were included: One that consisted of preschool children having first entrance to a Hebrew speaking school (L2 children), and a second sample that includes Hebrew native preschool children. In both cases, ethnographic observations and video or audio documentation of natural peer interactions were conducted. The data were transcribed using CA adapted methods of transcriptions, and events of argumentative character ranging from emotionally driven disputes to more rational discussions were identified and analyzed from a discourse analytic perspective.

Argumentative events played a role in the process of bilingual language socialization with immigrant children, by assisting them in gaining social and cultural membership in the new peer culture. Immigrant children engaged mainly in short disputes, but the very fact of participating, placed them as members in the society in general, as potential conversationalist partners in particular. In this way, L2 children positioning themselves socially and culturally, moving from periphery to centre, despite their very limited language resources.

Instead, in the case of native Israeli children, argumentative events serve as a rich arena that provides children with ample and a variety of opportunities not only for gaining or changing social positions and belonging to the peer culture, but also for learning and for the development of language and communicative skills. These affordances are available for L2 children as long as they master some rudimentary modes of communication in the new language.

Blum-Kulka, S., Huck-Taglicht, D. and Avni, H. (2004). The social and discursive spectrum of Peer Talk. *Discourse Studies*, 6 (3), 307-328

## **Abstract 2**

### **Preparation for Literacy: Children's Framing of Reading in Bilingual Play at a U.S. Preschool**

*Kyrtziz, Amy, University of California, Santa Barbara*

Children's acquisition of extended discourse skills in the preschool years is a basis for emergent literacy (e.g., Blum-Kulka et al., 2004). Before children decode written words, they tell stories and enact book-reading.

The present study examines how children in a bilingual preschool classroom in California enact the activity of reading books aloud to others in peer pretend play.

Examples are drawn from a larger ethnography which followed children's free play interactions in two classrooms of a bilingual Spanish-English preschool in California serving mostly Mexican-heritage families; Spanish was spoken in the home. Classroom activities were conducted in both English and Spanish. However, in preparation for English-only kindergarten, older children were exposed to literacy activities which were inscribed with English practices during small groupwork. Activities of reading aloud to others, often enacted in children's free play, were extracted and analyzed using techniques of talk-in-interaction and ethnography (M.H. Goodwin 2006).

Examples of both peer- and teacher-student interaction taken from different time points in the school year illustrate how teachers organized book-reading activities, having children read aloud to peers in small groupwork, and how children enacted this activity in peer play. As teachers relied increasingly on English later in the school year, so did children, but would switch to Spanish to explain and comment on story content. Examples illustrate the

multimodal, multilingual resources that children use in “building in concert with one another the actions” that define (C. Goodwin 2000) and frame the activity of reading a book aloud to others (e.g., how they perform voices). Also, how this activity provides a “double opportunity space” (Blum-Kulka et al., 2004) for children to learn practices of literacy and for negotiating their local social order.

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### **Abstract 3**

## **Metasociolinguistic Stance Taking and the Appropriation of Bilingual Identities in Everyday Peer Language Practices.**

*Evaldsson, Ann-Carita, Uppsala University, Sweden*

*Sahlström, Fritjof, University of Helsinki, Finland*

This paper explores the accumulation of stances taken over time in peer language alternation practices as an emergent feature of children’s identity-work and socialization to use language. The analysis takes its point of departure in the meta sociolinguistic stances taken by and attributed to an individual, preadolescent, girl with an African immigrant background from Rwanda, in her literal transition from one language community (Finland) to another (Sweden). Jaffe (2009, p. 17) calls such displays of positions taken toward the assumed connections between language and identity with respect to language hierarchies and ideologies a metasociolinguistic stance. We apply a peer language socialization approach to explore how children’s

evaluations of the multiple and sometimes conflicting linguistic and cultural resources at their disposal within linguistically diverse peer groups and educational settings provide an important context for linguistic and cultural socialization (Kyratzis, Reynolds and Evaldsson 2010; Goodwin and Kyratzis 2011).

Of overall interest is how the children's stance taking practices are built up over time in courses of activities across peer group encounters and language communities. We will demonstrate how the focal child Sara appropriates a bilingual identity, as she learns how to use language in culturally appropriate ways. The analysis highlights how the accumulated meta-sociolinguistic stances taken by and attributed to the focal girl are consequential for how her peer group participation shifts over time from being a bilingual novice to a linguistic expert. In particular, we demonstrate how meta sociolinguistic stance-taking (epistemic, affective and moral) in children's peer language alternation practices are important resources for accomplishing social relations, language competencies and more durable stances, indexing bilingual identities. The focal girl's capacity for linguistic creativity in learning how to use languages in culturally appropriate ways draws attention to the agency of language learners, and their manipulation of conventional associations between normatively defined codes.

#### **Abstract 4**

### **Promoting Expressive Elaboration in Young Children's Narratives Through Peer Engagement**

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*Ilgaz, Hande, Bilkent University, Turkey*

This paper focuses on how a narrative- and play-based preschool classroom activity--where children tell stories to and for their friends and later on enact them together-- helped promote the expressive dimension of children's spontaneous fictional narratives as evidenced by their use of evaluative devices. Such devices help to orient the audience to the teller's cognitive and emotional engagement with characters and events. Previous research indicates that the use of evaluative devices in narratives is a late development. Among English-speaking children, the use of such devices is low among Kindergarteners (Ukrainetz et al., 2005), increases slowly during middle childhood (Bamberg & Damrad-Frye, 1991;

Peterson & McCabe, 1983, Ukrainetz et al., 2005), and culminates during the adolescent years (Labov, 1972). Our analysis indicates that this late development may be due to the fact that eliciting narratives from children has usually lacked an appropriate social context to help them become attuned to their listeners' needs, which in turn can promote the use of evaluative devices in their narratives.

We analyzed a total of 120 stories, 60 at the beginning and 60 at the end of the school year, for a total of 10 children each at 3-, 4-, and 5-years of age (two stories per child at the beginning and two at the end of the year). Based on previous research, stories were coded for internalizers, character speech, modifiers, contrastives, and enrichment devices. We found that, while 5-year-olds used significantly more evaluatives than did 3- and 4-year-olds, children at all ages used significantly more evaluatives in their stories at the end than at the beginning of the year. The results are discussed in how this activity serves as an opportunity space that allows children to become sensitive to the audience's needs, which in turn helped to increase their use of evaluative devices.

### **Abstract 5 (if applicable)**

## **Interlocutor Awareness in Young Second-language Learners' Peer Talk**

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An essential developmental task in childhood is to acquire an awareness of how the meaning of something communicated resides not only in what is said, but also in how it is understood. Taking the perspective of the audience is a linguistic and cognitive skill developed throughout childhood. Young children gradually learn to pay attention to the interlocutor's information needs and comprehension challenges as they learn to talk. Children growing up in multilingual settings may in particular get experiences with interactional settings in which they will have to demonstrate an awareness of the interlocutor's comprehension needs in order to make themselves understood. Multilingual peer interaction therefore appears as a unique window for studying the development of these pragmatic skills in naturally occurring settings. Based on Blum-Kulka's concept of peer interaction as 'a double opportunity space' (2005), the paper will present two studies from respectively Norway and Sweden shading

light on young children's development of interlocutor awareness within multilingual peer interaction.

Data consist of video-taped peer play observations in preschool settings, addressing children in Norway with Turkish as their first language and children in Sweden with Kurdish as their first language. The common language in the preschools was respectively Norwegian and Swedish. The analysis will identify precursors of interlocutor awareness demonstrated in play (among children between 4 and 6 years of age), such as paying attention to the interlocutors' needs to have words or the play plot clarified. More specifically, the paper will discuss how children: 1) made use of the first language to enhance their peers' understanding of the second language interaction (and vice versa), 2) demonstrated an awareness of what their peers might know and think and 3) reflected upon the intentions and knowledge of different characters in the pretend play plot.



*New methods in child language research*

*Semantics and lexicon*

## **Cross-linguistic Lexical Tasks (CLT): a way to impartial testing of vocabulary in multilingual children across cultures**

*Haman, Ewa, University of Warsaw*

### **Symposium abstract:**

*Child multilingualism is a norm in many cultures and represents a common way of language development in Europe due to enhanced migration. Bilingual and multilingual children are prone to have smaller vocabularies (at least in one of their languages) compared to monolinguals (Bialystok, Luk, Peets, & Yang, 2010). This is one of the reasons why it is difficult to disentangle typical bi/multilingual development from Specific Language Impairment (SLI, Leonard, 2000). Accurate assessment of lexical knowledge of bi/multilingual children in all of their languages is needed to differentiate bi/multilingual children with typical language development from delayed, impaired or unbalanced language development.*

*This symposium presents an innovative method for constructing picture lexical tasks (Cross-linguistic Lexical Tasks/CLT) for preschool children that are fully comparable across a wide range of languages; baseline results obtained for monolingual children (for 18 languages) and three studies using the CLT in various cultural contexts: (a) bilingual immigrant community in Norway, (b) multilingual European society in Luxembourg, and (c) multilingual African society in South Africa). The CLT is a part of the Language Impairment Testing in Multilingual Settings (LITMUS) battery, designed within the COST Action IS0804.*

*The language specific CLTs were constructed according to the same set of rules and criteria of target words selection for each language and consist of cultural-fair pictures. The CLT comprises picture choice (word comprehension) and picture naming (word production) tasks for nouns and verbs. Language specific CLTs used in combinations assure impartial assessment of vocabulary in all languages of bi-*

*/multilingual child. The CLT can be used to obtain specific language profiles (for comprehension/ production and nouns/verbs).*

*This symposium will bring together studies conducted in 16 countries and will show both similarities and differences in patterns of lexical growth in mono- and multilingual children across various social and cultural settings using the CLT.*

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#### **Abstract 1**

### **Cross-linguistic Lexical Tasks (CLT) and word knowledge in monolingual children**

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*Chyl, Katarzyna, University of Warsaw*

*Dabašinskienė, Ineta, Vytautas Magnus University*

*Engel de Abreu, Pascale, University of Luxembourg*

*Gagarina, Natalia, ZAS*

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*Holm, Elisabeth, University of Oslo*

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*Lindgren, Josefin, University of Uppsala*

*Łuniewska, Magdalena, University of Warsaw*

*Mieszkowska, Karolina, University of Warsaw*

*Potgieter, Anneke, Stellenbosch University*

*Ribu, Ingeborg, University of Oslo*

*Ringblom, Natasha, University of Stockholm*

*Rinker, Tanja, University of Konstanz*

*Roch, Maja, University of Padua*

*Simonsen, Hanne Gram, University of Oslo*

*Slancov, Daniela, Presov University*

*Southwood, Frenette, Stellenbosch University*

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*Vuksanovic, Jasmina, University of Belgrade*

Introductory paper presents the method of the CLT construction and monolingual results obtained for 18 languages (Afrikaans, British English, SA English, Catalan, Finnish, German, Hebrew, isiXhosa, Italian, Luxembourgish, Lithuanian, Norwegian, Polish, Serbian, Slovak, Spanish, Swedish, Turkish).

The CLT was conceived to assess comprehension and production of nouns and verbs in different languages. Picture choice and picture naming tasks were chosen because these procedures least involve other types of linguistic or conceptual skills. Response accuracy

indicates the size of receptive and expressive vocabulary. Error coding (production task) provides additional information about the nature of lexical problems.

We used a unique procedure for designing the CLT in parallel in 34 different languages according to the same criteria.

Phases of the CLT design included:

- (1) Defining a set of candidate words (158 nouns and 142 verbs) that are mostly shared across 34 languages (a picture naming and rating study; 85 competent judges)
- (2) Determining the formal complexity of candidate words for each language (expert informants)
- (3) Determining the age of acquisition (AoA) of candidate words (on-line subjective rating study in each language; over 800 adult participants)
- (4) Selecting a list of target words for each language according to key criteria
- (5) Designing a set of culturally-neutral colored pictures for the selected words
- (6) Preparing uniform instructions for CLT use

All CLT versions were piloted and the lists of target words were verified according to the pilot results.

Cross-linguistic comparison of monolingual baseline CLT results includes data obtained from 449 children (aged 3-6 years). The results show significant effect of age, noun priority in both comprehension and production and interaction of mode and word-class (production of verbs was most prone to errors).

We conclude that the CLT represents an accurate and culture-fair method for assessment of lexical knowledge in preschool children.

## **Abstract 2**

### **The Cross-Linguistic Lexical Tasks in bilingual Polish-Norwegian children: Effects of psycholinguistic properties and language use in the family**

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*Hansen, Pernille, University of Oslo*

*Luniewska, Magdalena, University of Warsaw*

*Holm, Elisabeth, University of Oslo*

*Ribu, Ingeborg, University of Oslo*

*Markiewicz, Stefan, University of Warsaw*

*Chyl, Katarzyna, Un*

Polish citizens are now by far the largest immigrant group to Norway, spread all across the country. Many of them have arrived over the last few years. This makes the study of bilingualism in Polish children an important issue, also to be able to identify possible language disorders.

Using the Norwegian and Polish versions of the Cross-linguistic Lexical Tasks (CLT), we have investigated lexical skills in bilingual children growing up in Norway with at least one Polish parent, comparing them to their monolingual Polish and Norwegian peers. Here, we analyse these results in light of psycholinguistic properties of the target words as well as language use in the children's surroundings.

The participants are 20 bilinguals, 20 monolingual Norwegians and 65 monolingual Polish children, all aged between 3;5 and 6;11. All children are assessed with the computer version of CLT, which allows for measurement of reaction time in addition to performance. All parents are asked to fill in a background questionnaire about medical history and language use in their child's surroundings. The construction of CLT is built on subjective Age of Acquisition and phonological and morphological complexity of each of the words in each language. In addition, data on imageability and phonological neighbourhood density are available for Norwegian CLT target words in an online database.

Results show that all three groups score higher and respond faster on nouns than on verbs, and all groups are also better on comprehension than production. All the bilinguals lag behind their monolingual peers in at least one language. Concerning psycholinguistic properties, Age of Acquisition affects performance while so far complexity of words does not. We will investigate this further applying data on language use in the family, age of onset and amount of exposure to Norwegian.

### **Abstract 3**

## **The Cross-Linguistic Lexical Task in bilingual children from Luxembourg. Psychometric properties and clinical implications**

*Engel de Abreu, Pascale, University of Luxembourg*

The purpose of the present investigation was to examine the psychometric properties of the Luxembourgish version of the CLT in a multilingual sample of preschoolers and to identify implications of the instrument for clinical practice.

Participants were 40 monolingual and 40 bilingual children with a mean age of 5 years and 10 months. Children were recruited from Year 1 and Year 2 of Luxembourgish kindergartens. Monolingual children spoke only Luxembourgish at home and in school. Bilinguals had lived in Luxembourg for at least 2 years and came from families where one or both parents indicated speaking another language than Luxembourgish at home. Groups did not differ significantly in age, gender, or socioeconomic status. Children completed all 4 subtasks of the CLT-Lu (noun & verb comprehension and production tasks respectively), and a nonword repetition and digit recall task assessing phonological processing and verbal short-term memory.

All CLT subtasks reached sufficient internal consistencies with Cronbachs alpha's ranging between .77 and .91. If the sample was split into monolingual and bilingual groups, reliability remained satisfactory for the production tasks (alpha's between .70 - .90). Word comprehension could, however, only be reliably assessed in bilinguals (alpha's of .73 and .79); monolinguals scored at ceiling. The CLT measures correlated significantly with digit recall and nonword repetition ( $r$ 's between .42 - .50). On average bilinguals scored three standard deviations below the performance of the monolinguals on all CLT subtasks and difference were larger for nouns than for verbs.

The study indicates that the CLT is a promising tool to reliably assess word comprehension in monolingual and word comprehension and production in bilingual preschool children in Luxembourg. However, it is crucial to test bilingual children in all of their languages and to establish specific bilingual norms in order to get a better indication of their verbal abilities.

#### **Abstract 4**

### **A comparison of proficiency levels in 4-year-old monolingual and trilingual speakers of South African English, Afrikaans and isiXhosa across SES boundaries, using CLT**

*Potgieter, Anneke, Stellenbosch University*

*Southwood, Frenette, Stellenbosch University*

South Africa is a multilingual country with 11 official languages and a growing number of immigrant languages. For all but two of these (Afrikaans and South African English), there are no instruments available to assess language proficiency in children. The existing instruments are noncomprehensive, and their results are influenced by whether or not the child speaks a standard variety of the language. Up until now, there were no tools for use with multilinguals in all of their languages. CLT-Afrikaans, CLT-South Africa English and CLT-isiXhosa are the first equivalent tasks for assessment of lexical knowledge of South African children.

The questions arose as to whether (i) CLT-Afrikaans, -South African English and -isiXhosa are appropriate instruments for use with trilingual speakers; (ii) the trilingual speakers and age-matched monolingual children obtain similar results on the three instruments, and (iii) CLT-Afrikaans renders comparable results in children from various dialects of Afrikaans across the socioeconomic range.

The CLT-Afrikaans, -South African English and -isiXhosa were respectively administered to 10 4-year-old monolingual speakers of each of the three languages of interest and to 15 4-year-old trilingual speakers of these languages, all from low SES homes. The CLT-Afrikaans was also administered to 10 monolingual 4-year-olds from mid SES homes. Information about language exposure in trilinguals was also obtained.

Results indicate that the trilinguals' proficiency in their dominant language (isiXhosa) does not differ significantly from that of comparable monolingual speakers. Their proficiency in the additional two languages, to which they have had more limited exposure, is, however, significantly lower than that of monolingual speakers. The results of the Afrikaans-speakers of low and mid SES did not differ significantly.

We conclude that our CLT results in trilinguals reflect the extent of exposure they received in each of their languages, and that the CLT-Afrikaans is not sensitive to differences in SES.

**Abstract 5 (if applicable)**

*Child bilingual language development*

*Language, general*

## **Simultaneous and successive acquisition in child bilingualism**

*Harr, Anne-Katharina, Ludwig-Maximilians-Universität München*

### **Symposium abstract:**

*Bilingual language development can follow different paths depending on multiple factors, such as age of onset in simultaneous vs. successive acquisition, language combinations, and input in each language. This symposium aims to examine the role and interactions of some of these factors by bringing together complementary studies focusing on different domains of language and/or gesture in varied databases: longitudinal and cross-sectional, naturalistic and experimental, across different language combinations (English, Spanish, French, German, Swedish), and within a large age range (2-10 years).*

*Paper 1 explores the role of gesture in early bilingualism (English-Spanish). Findings show that bilinguals' gestures are more frequent and informative in their dominant language, and do not serve to compensate for difficulties in their weaker language. Paper 2 studies tense in story-telling (French-English) testing the hypothesis that bilinguals have stronger imagery abilities than monolinguals. As predicted, bilinguals adopted a vivid narrative style from early on, using the present tense more frequently. Paper 3 presents a longitudinal study examining the role of input in bilingual development (Swedish-French) across two different learning contexts (successive, simultaneous). The authors observe more individual differences in successive acquisition, and a parallel development for vocabulary and grammatical constructions, explained by differences in input. Paper 4 compares descriptions of motion events produced by simultaneous and successive bilinguals (English-French). In both groups results indicate the absence of linguistic convergence and a preference for using a single principle of syntactic and semantic organization, rather than two. Paper 5 examines how non-balanced bilinguals (dominant French, weaker German) describe object displacements. Findings show*



*similar responses in the French bilinguals and monolinguals, but lexical and grammatical difficulties in bilinguals' German descriptions, indicating the impact of both language dominance and language-specific factors on development. The general discussion will integrate these results in light of different theories of language acquisition and child bilingualism.*

### **Abstract 1**

## **Gesture's contribution to the language acquisition process in dual-language learners**

*Özçalışkan, Şeyda, Georgia State University*

*Hoff, Erika, Florida Atlantic University*

Children's emerging knowledge of language becomes evident initially in gesture and only later is expressed in speech when children are learning only one language. However, we do not yet know whether gesture plays a similar role in the language development of children who are learning two languages simultaneously (i.e., dual language learners), and who typically differ in their ability to speak each language. One possibility is that gesture might compensate for the difficulties children encounter in the spoken modality when using their weaker language. If so, then we would predict that dual language learners would gesture more and convey more information uniquely in gesture when speaking their weaker language than when using their stronger language. An alternative possibility is that gesture might simply follow the course of speech production. If so, then we would predict that children would gesture more when speaking their stronger language, also conveying more information uniquely in gesture. To explore these possibilities, we focused on dual-language learners, who are acquiring two structurally different languages (English, Spanish) simultaneously. We videotaped 8 dual-language learners (4 English-dominant, 4 Spanish-dominant) from child age 2;6 to 4;0, as they interacted in semi-structured play episodes with their mothers—in comparison to 8 monolingual children growing up in single-language homes (4 English-only, 4 Spanish-only), also between ages 2;6 and 4;0. We asked whether dual language learners would gesture more or gesture differently when speaking their weaker language than when speaking their stronger language. Our preliminary results suggest that gesture follows the course of speech production, with children gesturing more and conveying more information uniquely in gesture when speaking their dominant language. Overall, our study sheds new light on our understanding of gesture's contribution to the process and product of bilingual language development at the early ages.

### **Abstract 2**

## **Poor panther! French-English bilingual children use of tense in oral stories**

*Hoang, Huong, University of Alberta*

*Nicoladis, Elena, University of Alberta*

*Smithson, Lisa, University of Alberta*

Adults can use the historical present in oral narratives to create vivid, imagistic stories (Hellowell & Brewin, 2004). Additionally, adults often shift tenses to highlight important parts of stories, such as the climax. In comparison, children tend to tell stories in the past tense (in many languages though not all) (e.g., Berman, 1988; Nicoladis, Palmer, & Marentette, 2007).

Previous studies show that bilinguals may have stronger imagery abilities than monolinguals (McLeay, 2003). Additionally, research suggests that bilinguals show a preference for imagery strategies in comparison to monolinguals during problem solving tasks (Ransdell & Fischler, 1991). Since bilinguals may use imagery more effectively than monolinguals and may have a stronger inclination to use mental imagery, they may also use a greater proportion of verbs in the present tense compared to monolinguals during narrative production.

In this study, we explored tense use in storytelling among French-English bilingual children (8-10 years), as well as French and English monolinguals from the same age groups. We found no evidence for differences between French and English monolinguals in their choice of tense use: They preferred the past tense for their stories (cf. Dart, 1992). The bilinguals, however, tended to use more present tense than the monolinguals. Importantly this was only the case for their narratives in French, not in English. The bilingual children were also more likely to shift tenses than the monolinguals. A transitional state towards the use of tense shift for rhetorical purposes may appear earlier in development among bilingual children in comparison to monolingual children.

These results suggest that French-English bilinguals, at least by middle childhood, adopt a vivid storytelling style. The adoption of this style might be linked to both bilingualism and a cultural preference among French-English bilinguals in Canada.

### **Abstract 3**

## **The effect of quantity and quality of Input on vocabulary and grammar development in child French**

*Ågren, Malin, Centre for Languages and Literature - Lund University*

*Granfeldt, Jonas, Centre for Languages and Literature - Lund University*

*Thomas, Anita, Centre for Languages and Literature - Lund University*

This study compares longitudinal effects of quality and quantity of input on vocabulary and grammatical development in bilingual French-speaking children. Previous studies on vocabulary development have primarily used cross-sectional data and targeted other languages than French (Pearson et al. 1997). These studies show stronger effects of input on vocabulary development than on grammatical development. A typical profile of a bilingual child is thus a weaker vocabulary and a somewhat less weak grammar compared to monolinguals (Thordardottir, 2011).

Data were collected in a three-year longitudinal case study including successive (cL2) Swedish-French bilingual children (n=3), simultaneous (2L1) Swedish-French bilingual children (n=3) and monolingual French children (n=3), all attending the same school. Elicited production tasks and free conversation were used. The operationalization of quantity and quality of input is based on individual input profiles and vocabulary was measured both quantitatively (VocD) and qualitatively (precision).

Using the same data, we have previously found that some grammatical constructions (e.g. subject-verb agreement in 3rd person plural) were more sensitive to differences in input than others (e.g. finiteness). The strongest correlations were found in the 2L1 children while individual variation characterized the cL2 data.

In the present study, we ask the following main research question: Will the children's individual input profiles, across the three groups, play out more clearly for vocabulary development compared to grammatical development? Findings suggest that a strong input profile is reflected in vocabulary development in the L1 group, partly in the 2L1 group, while the cL2 again shows more individual differences. In conclusion, we find a parallel development for vocabulary and some grammatical constructions which, with some individual exceptions, can be explained by differences in quality and quantity of input.

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#### **Abstract 4**

### **The expression of motion in simultaneous and successive child bilingualism**

*Engemann, Helen, CNRS Laboratoire SFL*

*Hendriks, Henriette, University of Cambridge*

This paper addresses the question whether age of onset plays a role in the acquisition of 'thinking-for-speaking' patterns (Slobin 1996), by comparing the development of motion event expressions in simultaneous and early successive bilingual children.

As a test case, we use the lexicalisation patterns associated with the expression of caused motion in French and English, two typologically different languages (verb-framed and satellite-framed respectively, see Talmy 2000). In an elicited production task, two learner groups (aged 6-10), comprising (i) 36 simultaneous bilingual and (ii) 20 successive bilingual children, described animated cartoons showing caused motion events. Responses were analysed with respect to information organisation (Path, Cause/Manner: inside versus outside the main verb), as well as response architecture (syntactic complexity).

If age were to have an effect on target-like acquisition, then the productions of simultaneous bilinguals should be closer to the monolinguals than those of the successive bilinguals, who learn French as a second language. Results indicated many parallels between the two learner groups. As regards response architecture, neither group of children showed any difficulties with the formally complex structures (gerunds) associated with joint information encoding in French. With respect to information organisation, neither group of children converged with the target, but showed a preference for maintaining satellite-framing language principles, frequently expressing Cause/Manner in the verb, whilst encoding Path peripherally.

The findings suggest that thinking-for-speaking may be shaped extremely early in childhood and that possibly simultaneous bilingual children only consider one way of organising information, rather than two. The paper discusses the implications for our understanding of cognitive and linguistic determinants in bilingual development.

#### **Abstract 5 (if applicable)**

### **How French-dominant bilingual children express object displacements in German**

### **How French-dominant bilingual children express object displacements in German**

*Hickmann, Maya, CNRS & SFL UMR 7039*

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Findings are controversial with respect to whether bilingual children use converging or separate language systems (Costa 2008). The present study examines the role of language dominance in this debate, comparing descriptions of caused motion events elicited from monolingual and bilingual children in two languages, French and German, that differ with respect to lexicalization patterns (verb-/satellite-framed, respectively; Talmy 2000) and degree of transparency, resulting in more systematic structures in German than in French.

A previously developed methodology (Hickmann & Hendriks 2006) was used with monolinguals (4, 6, 8 years, adults) and same-aged bilingual children whose dominant language was French (12 subjects per group). Participants had to describe four types of object displacements (20 items) that were mimed by the experimenter and varied as a function of entities and spatial relations (e.g., putting toys into a bag, a top onto a pan, clothing onto a doll, two Lego pieces together). It was expected that bilinguals should produce the same structures as same-aged monolinguals in each of their language: in French because it was their dominant language and despite the variability of the system; in German because the system is transparent and despite the fact that it was their weaker language.

Results show that the French productions of bilinguals and monolinguals follow the same pattern, displaying verbs that encode specific information (e.g. manner of attachment) used either alone or in combination with neutral prepositions, especially from 6 years on. However, bilinguals' German descriptions differ from those of same-aged German monolinguals, showing difficulties in lexical (verbs) and grammatical (case) development, as well as structures that are semantically less informative (e.g. neutral causative verbs with Path satellites).

These results indicate that these bilingual children use two separate systems. The discussion considers the impact of language dominance and language-specific factors within different theories of child bilingualism.

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*Cognition and language development*

*Semantics and lexicon*

## **Joint learning of the semantics and syntax of constructions**

*Hartshorne, Joshua K., Massachusetts Institute of Technology*

### **Symposium abstract:**

*One important child for the language learner is to determine which verbs can be used in which syntactic contexts. Compare:*

- (1) a. *John broke the vase.*  
b. *The vase broke.*  
c. *\*John broke that the vase was heavy.*
- (2) a. *John hit the vase.*  
b. *\*The vase hit.*  
c. *\*John broke that the vase was heavy.*
- (3) a. *\*John fell the vase.*  
b. *The vase fell.*  
c. *\*John fell that the vase was heavy.*
- (4) a. *\*John thought the vase.*  
b. *\*The vase thought.*  
c. *John thought that the vase was heavy.*

*Early accounts treated these patterns as arbitrary facts about verbs to be learned, placing a considerable burden on the learner. However, it has now long been appreciated that semantics plays a role in these syntactic phenomena (for review, see Levin & Rappaport Hovav, 2005). Thus, a central problem for the child in*

*language acquisition is not only to determine the semantics of individual verbs but also the semantics appropriate for specific constructions.*

*However, there remain a number of unresolved questions. What components of semantics are relevant for which constructions? Is the relationship between semantics and syntax in a frame probabilistic or absolute? Are constructions acquired in a piecemeal, verb-by-verb manner, or are they supported by broad generalizations from the early stages of development? Given that languages differ in the way that meaning is mapped to syntactic structure, how do children all begin at the same starting point but end up at different end points?*

*This symposium brings together four different lines of work on how that acquisition process proceeds. The authors come from a variety of theoretical perspectives and employ a variety of methodologies, including rating studies, novel verb studies, structural priming, and eye-tracking. Significant time will be devoted to questions and discussion.*

*Reference:*

*Levin, B., & Rappaport Hovav, M. (2005). *Argument Realization*. Cambridge, UK: Cambridge*

## **Abstract 1**

### **The retreat from overgeneralization: Frequency, verb semantics, or both?**

*Ambridge, Ben, University of Liverpool*

*Bidgood, Amy, University of Liverpool*

*Pine, Julian M., University of Liverpool*

*Rowland, Caroline F., University of Liverpool*

*Freudenthal, Daniel, University of Liverpool*

At the heart of language acquisition lies a paradox: while children must form generalizations allowing them to use lexical items in non-attested constructions – such productivity is a defining characteristic of human language – they must learn to avoid applying these generalizations when an ungrammatical utterance would result.

One generalization that children must form allows verbs appearing in the intransitive construction to be generalized into the transitive-causative construction:

The ball rolled → John rolled the ball

However, many children over-apply this generalization, leading to errors (e.g. The rabbit vanished → \*The magician disappeared the rabbit). The present study tested three proposals for the mechanisms underlying the retreat from such overgeneralizations: the semantic-verb-class hypothesis (Pinker, 1989) and two statistical-learning accounts: entrenchment (Braine & Brooks, 1995) and pre-emption (Goldberg, 1995).

Participants (5-6yrs, 9-10yrs, adults) rated intransitive and transitive-causative uses of 120 verbs (intransitive-only/transitive-only/alternating) for grammaticality. The dependent measure was the difference score for each verb representing degree of preference for grammatical over ungrammatical uses. To operationalize the semantic-verb-class hypothesis, a separate group of 10 adults rated each verb for the extent to which it exhibits the semantic properties relevant for each class (e.g., caused-motion; emotional-expression), using a 9-point scale. These ratings were combined into a single semantic predictor using Principle Components Analysis. Entrenchment and pre-emption were operationalized by obtaining corpus counts of relevant uses of each verb.

Standard regression analysis (confirmed by mixed-effects modeling) revealed that the semantic-verb-class and entrenchment measures predicted a significant proportion of independent variance at each age. The pre-emption measure did not explain additional variance when added to any of these models, but did explain a significant (though smaller) proportion of variance when entered in place of the entrenchment measure. We conclude by summarizing a new verbal account (and preliminary computational model) designed to yield all three effects.

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Braine, M. D. S., & Brooks, P. J. (1995). Verb argument structure and the problem of avoiding an overgeneral grammar. In M. Tomasello & W. E. Merriman (Eds.), *Beyond names for things: young children's acquisition of verbs* (pp. 352-376). Hillsdale, NJ: Erlbaum.

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## **Abstract 2**

### **Learning non-causal transitive verbs**

*Hartshorne, Joshua K., Massachusetts Institute of Technology*

*Snedeker, Jesse, Harvard University*



Many researchers suggest a Privileged Link between the transitive construction and caused events (e.g., Naigles, 1990). However, transitive syntax is used for a range of events, and we know little about how non-causal transitive verbs are acquired.

Transitive emotion verbs come in two types: experiencer-object (Sally frightened/delighted Mary) and experiencer-subject (Sally feared/liked Mary). Pesetsky (1995) proposes that experiencer-object verbs describe caused events whereas experiencer-subject verbs do not. Confirming Pesetsky's analysis, twenty adults judged the cause of the emotion described by experiencer-object verbs to be the verb's subject but were unsure as to whether there was any cause of the emotion was for experiencer-subject verbs. Out of 258 English emotion verbs, this effect was significant for 90% of the experiencer-object verbs and 95% of the experiencer-subject verbs.

On the Privileged Link hypothesis, one might expect children who are just beginning to acquire emotion verbs would acquire experiencer-object verbs, which follow the Privileged Link, more quickly than experiencer-subject verbs, which do not. Indeed, 4-5yos, who are just beginning to acquire emotion verbs know more experiencer-object verbs (Hartshorne et al., in press). However, this could reflect the input, not the capacity to learn.

4-5yos were presented with two low-frequency experiencer-subject (envy, pity) or two low-frequency experiencer-object (disgust, encourage) verbs, disguised by using novel labels (gorfin, wixter). Experiencer-object verbs were described with causal language, and experiencer-subject verbs, with non-causal language. In the disgust trial, children were read a story in which Birdie experiences gorfin about Rhino, and Lion experiences gorfin about Birdie. The child was then asked who Birdie gorfins. The child who says "Lion" has assigned experiencer-object syntax to gorfin; the child who says "Rhino," experiencer-subject syntax. Children preferred experiencer-object syntax for caused emotions and experiencer-subject syntax for uncaused emotions ( $p < .05$ ), showing they could learn either pattern equally well.

## References

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## **Abstract 3**

## **Structural priming as analogical mapping: How high similarity sentences enable abstract dative construction priming in 4 year-olds.**

*Goldwater, Micah, University of Sydney*

How do children learn the abstract semantics of grammatical constructions given the specific meanings of sentences? For example, dative constructions represent the abstract relation of the transfer of objects or information between participants, yet each sentence describes a specific transfer event. The current work examines children's developing ability to recognize this common relation across dative sentences via a turn-taking scene description task.

Recognizing relational commonalities is also central to analogical reasoning. Gentner's (2010) theory of analogical development describes a characteristic developmental pattern: First children need superficial similarity between domains to recognize abstract relational commonalities. After superficial similarity has supported relational matching, children are then better equipped to see relational commonalities without the "training wheels" of superficial similarity.

The current work applies Gentner's theory to children's language production by hypothesizing that when children are engaged in dialogue they may construct sentences by a semantic and syntactic analogy to previous ones. That is, children will show structural priming (i.e., the re-use of the same dative alternate) when they successfully make such an analogy.

4 year-old children described scenes of transfer (e.g., a man passing a girl some cake) that were either preceded by a high similarity scene (e.g., a woman handing a boy a cookie) or a low similarity scene (e.g., a sale of a bicycle between children) described by an experimenter. In line with the development of analogical reasoning, children were more likely to show dative priming on high similarity trials than low similarity trials. Further, they were more likely to show priming on low similarity trials if those trials were preceded by high similarity trials than if those same low similarity trials were preceded by a different set of low similarity trials ( $p's < .01$ ). Implications for theories of grammatical development will be discussed (e.g., Fisher, 2002; Tomasello, 2003).

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#### **Abstract 4**

### **Developmental and crosslinguistic influences on the linguistic encoding of causative events**

*Bunger, Ann, University of Delaware, University of Pennsylvania*

*Trueswell, John, University of Pennsylvania*

*Papafragou, Anna, University of Delaware*

This study investigates the implications of language-specific constraints on linguistic event encoding for the way that children and adults inspect and describe causative events. When describing causative events (e.g., X pushes Y to Z), English speakers have the option of packaging both the Means (X acts on Y) and Result (Y reaches Z) subevents into one clause (“The boy punched the ball (in)to the basket”). The syntax of Greek does not typically permit this: Greek speakers must either encode the two subevents in separate clauses (“The boy punched the ball and it went (in)to the basket”) or omit one of the subevents from their description (Papafragou & Selimis, 2010). In this study, we ask how early language-specific patterns of causative event description begin to affect the way that English- and Greek-speaking children prepare descriptions of causative events.

English-speaking and Greek-speaking adults, 3-year-olds, and 4-year-olds (n=20 in each age and language group) viewed and described pictures of causative events like in an eyetracking study. Data were assessed for mention of and looks to the Means and Result subevents of each causative target. Developmental changes in the linguistic encoding of causative information were evident in both language groups, with adults more likely than children to mention both Means and Result subevents. Crucially, moreover, there was an overall effect of language background on the content of causative event descriptions, with Greek speakers more likely than English speakers to omit subevents from event descriptions, regardless of age. Finally, the results show that for adult and preschool-aged speakers of both languages, preparing different types of event descriptions changed the way that events were visually inspected. Together, these findings demonstrate that language-specific patterns of causative event encoding influence both production patterns and related attentional mechanisms in children as young as 3 years of age.

#### Reference

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**Abstract 5 (if applicable)**

**First language acquisition**

**Semantics and lexicon**

## **The role of grammar and extralinguistic cognition in verb learning**

*Angela Xiaoxue He, University of Maryland College Park*

### **Symposium abstract:**

*Verbs pick out classes of events. Learning verb meaning requires learners to integrate a wide range of linguistic and extralinguistic inputs. Four sets of studies examine the role of extralinguistic cognition, parsing mechanisms, syntactic distribution and syntactic diversity in shaping verb learning.*

*Talk 1 examines the contribution of linguistic context in verb-learning, and how the ideal contexts vary crosslinguistically: unlike English-learners who learn verbs best with fully specified NPs (e.g. *The girl is blicking the dog*), learners of pro-drop languages (Mandarin, Korean) learn better when arguments' semantic contents are not fully specified (e.g. *She is blicking it*).*

*Talk 2 examines the contribution of sentence processing mechanisms in verb-learning, and how the learner uses early-arriving information more effectively than late arriving information. This is shown through the acquisition of causative morphology in an artificial language learning task, and in differences between Kannada (verb-final) and Tagalog (verb-initial) learners.*

*Talk 3 examines the interaction between verb meaning and syntactic structure by showing that the actionality of a verb best predicts the fit between that verb and the passive construction. In particular, children perform best on passives with verbs judged to be highly actional, pointing to the possibility of a semantic cline associated with the passive.*

*Talk 4 shows that infants may represent an event's participant structure in a way that does not always align one-to-one with sentences' argument structures – for instance, an instrument not assigned argument status may nonetheless be represented as an event participant (e.g. *Anne opens the box with a lever/Anne**

*jimmies the box*). This poses questions to verb-learning theories that rely on a principled mapping between linguistic and extralinguistic encoding.

*Taken together, these studies highlight the range of linguistic and extralinguistic contributors to verb learning and the delicate balance of factors that support successful verb learning.*

### **Abstract 1**

## **When less is more: Evidence from Mandarin-acquiring infants acquisition of novel transitive verbs**

*Kathleen Geraghty, Northwestern University*

*Brock Ferguson, Northwestern University*

*Xiaolan Fu, Chinese Academy of Sciences, Beijing*

*Sandra Waxman, Northwestern University*

For decades, there has been spirited debate concerning the contribution of language input in early verb-learning. Some argue that verbs are acquired earlier in “verb-friendly” languages (e.g., Mandarin, Korean) where, because nouns are frequently dropped, verbs are more frequent and salient in the input to learners. Others propose that what varies across languages is not how early verbs are learned, but the particular linguistic contexts that best support their acquisition.

Recent evidence from 24-month-olds acquiring either English or Korean supported this latter proposal. Infants viewed dynamic two-participant scenes (e.g., a girl petting a dog) while listening to a novel transitive verb, presented in either Rich linguistic contexts with fully lexicalized noun phrases marking the participants (e.g., “The girl is blicking the dog”) or Sparse linguistic contexts in which the lexical NP’s were omitted or replaced with pronouns (e.g., “She is blicking it”). At test, infants chose between two new scenes: Same-Action (e.g., the girl petting a ball) and Same-Object (e.g., the girl kissing the dog). English- and Korean-acquiring infants successfully mapped the novel transitive verb to the Same-Action scene, but the contexts that best supported their verb-learning differed. In English (where NP’s are typically explicitly mentioned), infants succeeded in the Rich contexts, but struggled in the Sparse. Conversely, in Korean (where NP’s are often dropped), 24-month-olds succeeded in the Sparse contexts, but struggled in the Rich).

Here, we advance this cross-linguistic developmental program, testing 40 24-month-olds acquiring Mandarin in the paradigm described above. Eye-tracking analyses revealed that in Mandarin (like Korean), 24-month-olds successfully mapped transitive verbs to the Same-Action scenes in Sparse (but not Rich) contexts.

Rather than characterizing languages dichotomously ('noun-friendly' vs 'verb-friendly'), we favor a more nuanced treatment of the properties of each language and the consequences of these properties on infants' acquisition.

## **Abstract 2**

### **Learner's sentence processing limitations shape word and grammar acquisition**

*John C. Trueswell, University of Pennsylvania*

*Lucia Pozzan, University of Pennsylvania*

*Judith Köhne, University of Pennsylvania*

*Lila R. Gleitman, University of Pennsylvania*

In order to acquire a language, learners must first be able to apply a meaningful analysis to the linguistic input (Fodor, 1998). Here we review evidence from both children and adults demonstrating that characteristics of sentence parsing, in particular difficulties revising initial syntactic/semantic commitments during comprehension, have systematic and predictive effects on a learner's ability to acquire morphological and word meaning. We first review existing evidence demonstrating three-year-old children learning Tagalog, a verb-initial language in which causative verb morphology is a reliable predictor of argument structure, show greater sensitivity to causative morphology than similarly aged children learning Kannada, a verb-final, morphology-final language. This difference is likely because verb morphology can be used to guide parsing in verb-initial languages but only to revise and confirm parsing in verb-final languages. We will then present new results from a three-day artificial-language learning experiment with adult participants showing that both comprehension and production of morphology are delayed when morphological cues to argument structure appear at the end, rather than at the beginning, of sentences, in otherwise identical grammatical systems. Together these results suggest that real-time processing constraints impact acquisition; morphological cues that guide are easier to learn than cues that revise interpretation. Parallel performance in production and comprehension indicates that parsing constraints affect grammatical acquisition, not just real-time commitments. Properties of the linguistic system (e.g., ordering of cues within a sentence) interact with the properties of the cognitive system (conflict-resolution) and together affect language acquisition. Strikingly, preliminary findings suggest that similar effects can be observed in the learning of novel nouns. German speakers learning novel nouns (e.g., "glorp" meaning cake) show improved learning across situations if a semantically restrictive verb ("essen"/eats) appears before, rather than after, the noun in natural German sentences.

### **Abstract 3**

## **Explaining children's difficulties with reversible passives: The role of verb and construction meanings**

*Ben Ambridge, University of Liverpool*

Many comprehension studies (e.g., Maratsos et al, 1985) have found that children's performance is excellent for actional passives (1), worse for theme-experiencer passives (2) and worst for experiencer-theme passives (3).

- (1) Bob was hit by Wendy>
- (2) Bob was frightened by Wendy>
- (3) Bob was seen by Wendy

We propose that this finding is a consequence of children's verb/construction learning, and its relationship with event representations. Specifically, children represent the construction in terms of the semantic prototype: "PATIENT is in a state or circumstance characterized by AGENT having acted upon it". This predicts a cline from best passive performance (and greatest passivizability in a grammaticality-judgment task), from verbs that are most consistent with these semantics, to least.

To test this prediction, we obtained from 10 adults, ratings of the extent to which each of 72 verbs exhibits each of ten semantic properties designed to capture this notion of a semantic prototype (e.g., A is responsible; A enables the event; B is affected). Principle Components Analysis was used to reduce these ratings to a single "actionality" score, for use as the predictor variable in subsequent regression analyses.

We assessed passive performance at four ages (3-4, 5-6, 9-10, adult; N=36 at each age) using two different tasks (all included active sentences as a control): (1) a forced-choice pointing task modeled after preferential-looking studies and (2) an elicited-imitation task.

Looking across verbs (using mixed effects regression models) the semantic actionality ratings predicted (a) the proportion of correct matches in the pointing task at all ages and (b) the rated acceptability of passive sentences for ages 5-6, 9-10 and adults (the youngest group did not complete this task). Together, these findings constitute powerful support for the notion that children's difficulties with certain passive sentences are best understood in terms of a semantic construction prototype.



## **Abstract 4**

### **When participant structure and argument structure do not match: participant structure construction in adults and prelinguistic infants**

*Angela Xiaoxue He, University of Maryland College Park*

*Alexis Wellwood, University of Maryland College Park*

*Jeffrey Lidz, University of Maryland College Park*

*Alexander Williams, University of Maryland College Park*

On one theory, verb-learning complies with Participant-Argument-Match (PAM): each participant in a verb's event representation corresponds to an argument NP in its clause. Yet sometimes it seems that a participant corresponds to no argument NP: Anne robbed Betty has no argument for what was stolen, and Anne jimmied the box has no argument for the implied lever. Are such cases problematic for PAM? To answer this, we need to understand what participant structure learners likely construct for events, independently of language. We assess this with experiments examining the perception of meaningful differences in participant structure in 10-month-olds (using a dishabituation paradigm) and adults (measuring reaction time in a similarity judgment task).

Exps.1-2 target events described by verbs whose natural usage shows participant-argument matching: give (three participants/three arguments) and hug (two participants/two arguments). Exp.1 replicates Gordon (2003)'s finding that infants distinguish give-type scenes depending on whether a teddy-bear is given or not, but do not distinguish hug-type scenes based on the teddy's participation, consistent with PAM. Exp.2 demonstrates adults make the same distinction.

Exps.3-6 target events described by verbs whose natural usage shows participant-argument mismatching: jimmy (three participants/two arguments) and rob (three participants/two arguments). Exp.3 shows that adults treat a lever as a participant in open-type events only when it is used to facilitate the opening. Exp.4 shows that adults view an individual as a participant in take-type events when the toy is taken from them as opposed to near them (take-pickup), and distinguish if they are active or resistant (take-rob). Trends in ongoing data collection for Exps.5-6 suggest infants parallel adults.

If Exps.3-4 predict how infants construe similar scenes in Exps.5-6, this poses a challenge for PAM: represented event/participant structures do not always align one-to-one with the argument structure of their most natural linguistic description.

## **Abstract 5 (if applicable)**

**(This is a discussant)**

*Letitia Naigles, University of Connecticut*

No abstract for the discussant

*Child bilingual language development*

*Language, general*

## **Language Experience and Language Development in Bilingual Environments**

*Hoff, Erika*

### **Symposium abstract:**

*According to recent United Nations data, 232 million people live outside the country in which they were born. One consequence of human migration patterns is the creation of bilingual (and multilingual) environments in which parents raise children who are acquiring a language that is not their own native language and in which children hear both their parents' native language and the language of the larger community.*

*The papers in this symposium investigate the nature of children's language experience in such environments and the consequences of properties of that experience for the children's language development. The goal is to describe some of the heterogeneity that exists in bilingual environments worldwide and to provide new information on the effects of bilingual environments on children's language development. The symposium consists of 4 research papers and remarks by an esteemed discussant.*

*Each paper reports on a different population and a different combination of languages, including Berber-Dutch environments in the Netherlands, Portuguese-German and Portuguese-French environments in Switzerland, Spanish-English environments in the U.S., and Chinese-English and Korean-English environments in the U.S. The ages of the children in these studies span the period from infancy to middle childhood. The questions addressed include (1) what factors influence which language parents speak to their children, (2) how is child-directed speech affected when parents speak to children in a language that is not their native language, (3) how is children's language development influenced by their parents' language use, (4) what is the role of other factors such as peer language use and typological differences between languages in shaping children's bilingual development. These questions are addressed considering formal and functional features of parents'*

*language and considering receptive and productive measures of children's language outcomes.*

### **Abstract 1**

## **Language Experiences and Development of Infants and Toddlers**

### **with Chinese or Korean as Home Language in the US**

*Jia, Gisela, Lehman College*

*Chen, Jennifer, City Univeisity of New York,*

*Kim, Hye Young, New York University*

*Chan, Phoenix Shan, Lehman College*

We investigated the early language development of 132 US infants and toddlers who had Chinese or Korean as their home language. Participants ranged in age from 8 to 39 months (mean = 23.6 months). The main goals were to obtain information about the children's language environment, the growth of both sets of language skills, the relation between lexical and syntactic development, and the children's relative language skills in comparison to English monolingual peers and home language monolingual counterparts. Participants' language environment was measured through a comprehensive caregiver report. Their lexical and syntactic abilities were measured with adapted versions of the MCDI in Chinese and Korean, and the English CDI.

Results showed that the participating families from this US urban area overwhelmingly used their home language with their children. A limited exposure to English occurred through TV and sibling interactions. Even though stronger English abilities of parents predicted significantly more English use at home, the limited effect size reflected the fact that some parents with higher English levels chose to speak to their children in home language. With age, there was a significant increase in home language vocabulary size, but limited increase in English vocabulary size. By using CDI norms, participants' total vocabulary size was found to be comparable to their monolingual English peers, but significantly lower than that of their monolingual home language peers. A significant positive correlation existed between lexical and syntactic abilities, and participants' syntactic ability was comparable to both the English and home language reference groups. Overall, native speakers of Asian languages in such a US urban area relied heavily on their home language to communicate with their young children, and these children acquire a rich set of home language lexical and syntactic skills. Early language assessment should take into account both English and home language skills.

## **Abstract 2**

### **“Look, mi amor“. The language of affect in bilingual child directed speech**

*Shiro, Martha, Universidad Central de Venezuela*

*Filippi, Katherine, Florida Atlantic University*

*Hoff, Erika, Florida Atlantic University*

We examine Spanish-English bilingual mothers' child directed speech in order to compare how expressions of affectivity are used in each language. Research shows that children's language (and emotional) development is influenced by parental reference to emotions (Eisenberg et al. 1998). Affectivity is understood as “the intentional strategic signaling of affective information in speech” (Caffi & Janney, 1994: 328), referring to pleasure, emotion, volition and epistemic stance. The research questions are:

- a. What expressions of emotions do bilingual mothers use when they interact with their children in each language?
- b. Are these expressions more frequent in one of the languages in similar interactions?

The data consist of 69 video recorded spontaneous mother-child interactions with their 30-month-old child. Twenty three Spanish-English bilingual mothers and 23 English monolingual mothers participated in similar interactions with their children. The transcripts were coded for expressions of emotions (“I'm scared”), pleasure (“Good job”), volition (“Do you wanna eat?”), and epistemic stance (“You know what a safari is”) and the type of interaction in which they appeared (object naming, disciplining, pretend play, real world comment). Results suggest that bilingual mothers differ in the ways they use expressions of affectivity in both English L2 and Spanish L1 from the English L1 mothers. Pleasure and emotion are significantly more frequent in English L2 speakers than English L1 speakers, whereas volition and epistemic stance are significantly more frequent in English L1 speakers than in English L2 and Spanish L1 speakers. Additional differences are found in the qualitative analysis of the data, such as, the way the expressions are distributed in the conversation, and the tendency for selecting certain lexical items over others. Thus, children growing up in bilingual homes are exposed to cultural practices related to the expressions of affectivity, which differ from English L1 as well as Spanish L1 speakers.

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### **Abstract 3**

## **Family vs. school language, the challenge of Portuguese children in Switzerland**

*Desgrippes, Magalie, University of Fribourg*

To investigate the language development of migrant bilingual children in different linguistic contexts, we developed a longitudinal study of Portuguese children in the German and French speaking parts of Switzerland. Two research questions are explored in this presentation using the data from 8- to 9-year-old children: How does the parental input profile predict the level in heritage and school language? Does the school language have an influence on heritage language?

To this purpose we analysed the scores obtained in C-tests by 193 Portuguese speakers (97 in the German part, 96 in the French part) and control groups (respectively 59 and 41 children) taking parental input profile, number of languages spoken by the child and age into account, as well as the language region. The C-tests consisted of 4 short texts where every second word was half-truncated from the second sentence as Grotjahn describes (Grotjahn 1992-2002) and thus, can be used as a general indicator for language competence. Portuguese children were administrated C-tests in Portuguese and in the school language. The parental input profile was obtained through a questionnaire where the children could indicate the languages they speak with every parent.

Using mixed effects modelling, we can see that parental input in the school language does enhance the competence of the child in this language but impede Portuguese competence. Children growing up in the French speaking side of Switzerland speak better Portuguese than their German speaking counterparts, which indicates that other factors may play a role. These results are discussed with regards to research with bilingual children in other settings, target languages' proximity and characteristics of the Portuguese community in Switzerland.

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## **Abstract 4**

### **Assessing the effect of non-native input and other external and internal factors in bilingual acquisition**

*van Leeuwen, Dafne, Utrecht University*

*Unsworth, Sharon, Utrecht University*

Previous research on bilingual language acquisition suggests that children's language outcomes are often positively related to amount of input (e.g., Gathercole and Thomas 2009; Hoff et al. 2012). The extent to which they are also affected by type of input, and specifically, non-native input, remains largely unknown. In one of the few studies on this topic, Place and Hoff (2011) find non-native input to be less supportive of language development in bilingual English/Spanish toddlers. In this paper, we investigate whether this finding holds for a different population, namely bilingual Berber-Dutch 4- to 6-year-olds, and to what extent any effect of non-native input interacts with other external/ internal factors.

The Dutch lexical and morphosyntactic proficiency of 33 Berber-Dutch children was tested using a combination of standardised receptive and productive tests as well as spontaneous production. Information concerning language exposure patterns was collected via parental report. A series of regression analyses was used to determine which internal and external factors best predicted children's outcomes.

Results indicated that (i) children with more non-native input were outperformed on lexical diversity by those mainly exposed to native input, and (ii) on the same measure, non-native input from high proficiency speakers was more beneficial than non-native input from low proficiency speakers. These findings are in line with Hoff and Place (2011), and furthermore suggest that the relative level of non-native input is an important factor to consider. In addition, (iii) relative amount of input was a significant predictor of children's productive but not receptive skills, suggesting potential threshold effects (Thordardottir 2011), and (iv) finally, literacy practices were also a significant predictor of children's outcomes (Scheele et al. 2010).

Taken together, these findings reflect the complex and multi-facteted nature of bilingual language development and they highlight the need to examine input quality as well as quantity.

**Abstract 5 (if applicable)**

**Discussant's remarks**

*Serratrice, Ludovica, University of Manchester*



*First language acquisition*

*Phonetics and phonology*

## **Recognizing phonologically similar words: cross-linguistic evidence from familiar and novel words**

*Junge, Caroline; University of Amsterdam*

### **Symposium abstract:**

*While lexical neighborhood density increases in the developing lexicon in the second year of life, word recognition becomes more challenging. When toddlers encounter small deviations of familiar words, these could reflect imperfect input (the speaker making a speech error), or a new word. In addition to the question how neighborhoods are formed in the early lexicon, recent literature asks whether consonants and vowels play different roles in toddler's word recognition(1,2). Conflicting results have been reported, but studies differ in status of words (novel versus familiar); in languages examined; in consonant location; and in age of children being tested.*

*This symposium aims to shed new light on this debate. We will present and discuss five new papers on children's processing of phonologically similar words. The first two papers focus on familiar words. Paper 1 presents evidence that Dutch 18-month-olds find it difficult to recognize familiar words in the presence of a lexical neighbor, particularly when disambiguation occurs early in the word. Paper 2 shows that British-English 20-month-olds notice all types of mispronunciations, but detect them best when mispronunciations occur in the coda. Paper 3 provides evidence that novel words learned prior to test elicit phonological priming effects on familiar words in German toddlers. This suggests that novel words immediately participate in the neighborhood structures. The final two papers examine word recognition for novel minimal pairs. While paper 4 provides evidence for a coda-consonant-bias in British-English and French 16-month-olds, the final paper shows that Australian-English 12-17-month-olds can learn minimal pairs irrespective of the contrast. Collectively, these papers provide detailed insight in toddlers' processing of phonologically similar words: consonants are only under some*

*conditions more important than vowels; coda consonants may be more important than onsets; and novel words immediately participate in the neighborhood structure of the developing lexicon.*

*Words: 296*

*References:*

*1) Nespor, M., Penã, M. & Mehler, J. (2003). On the different roles of vowels and consonants in speech processing and language acquisition. *Lingue e Linguaggio* 2, 203–29.*

*2) Nazzi, T. (2005). Use of phonetic specificity during the acquisition of new words: Differences between consonants and vowels. *Cognition*, 98(1), 13–30*

### **Abstract 1**

## **Phonological neighborhood effects for known words: Evidence from Dutch 18-month-olds**

*Junge, Caroline; University of Amsterdam*

*Benders, Titia; Radboud University Nijmegen*

*Levelt, Clara; Leiden University*

Lexical neighbors are words that differ in one phoneme. At 24 months, children can recognize words in the presence of a lexical neighbor, with disambiguation in onsets ('doll'- 'ball') leading to faster fixation of the target than disambiguation in codas ('doll'- 'dog')[1]. Younger infants have difficulties learning lexical neighbors (i.e., 'bin'- 'din'[2]; novel 'tog' - familiar 'dog'[3]) and recognizing known words in the presence of a novel neighbor[3]. We ask whether these younger infants can recognize familiar words in the presence of a familiar lexical neighbor, whether they process lexical neighbors incrementally, and whether onsets, vowels, and coda's contribute equally to their lexical access.

Dutch one-year olds know two triplets of lexical neighbors, where the disambiguating segment is an onset, vowel or coda: 'hand'- 'hond'- 'mond' (hand-dog-mouth) and 'bed'- 'bad'- 'bal' (bed-bath-ball). 18-month olds (N=32) were asked to look at one of two pictures that were either lexical neighbors ('hond'- 'hand'; dog-hand) or non-neighbors ('hond'- 'voet'; dog-feet).

Results show that infants look less at the target when the distracter is a lexical neighbor than when it is a non-neighbor ( $t=-2.13$ ,  $p=.03$ ). Word recognition on trials with lexical neighbors is particularly impaired when the words differ in the vowel ('bed'- 'bad';  $t=-2.65$ ,  $p<0.01$ ). A time-course analysis shows that infants fixate the target less confidently when the neighbors

differ on the onset or vowel ('hond'-'mond' or 'bed'-'bad') but more confidently when they differ in the coda ('bad'-'bal').

These results provide evidence that in developing mental lexicons, recognition is hampered by the presence of a lexical neighbor. In line with the consonant-bias, consonants appear more important for lexical access than vowels. Contrary to previous findings with toddlers and adults<sup>1</sup>, 18-month-olds disambiguate between neighbors on the basis of codas rather than onsets. Results favor processing models that incorporate continued co-activation of words, such as TRACE or Shortlist-B, with increased reliance on recent information.

(299 words)

References:

[1] Swingle, D., Pinto, J.P., & Fernald, A. (1999). Continuous processing in word recognition at 24 months. *Cognition*, 71, 73–108.

[2] Stager, C. L., & Werker, J. F. (1997). Infants listen for more phonetic detail in speech perception than in word-learning tasks. *Nature*, 388, 381.

[3] Swingle, D., & Aslin, R. (2007). Lexical competition in young children's word learning. *Cognitive Psychology*, 54, 99–132.

## **Abstract 2**

### **Consonant onset, vowel and consonant coda mispronunciation detection in 20-month-old English-Learning Infants**

*Turner, Jacqueline; Plymouth University*

*McLoughlin, Jodie; Plymouth University*

*Ratnage, Paul; Plymouth University*

*Delle Luche, Claire; Plymouth University*

*Floccia, Caroline; Plymouth University*

Intermodal Preferential Looking (IPL) studies with English-speaking infants as young as 14 months show that infants are equally sensitive to consonant and vowel mispronunciations in familiar words (Mani & Plunkett, 2007). However, in word-learning tasks, 16-month-old French-learning infants are only sensitive to consonant contrasts and not vowel contrasts, with English-learning children demonstrating a consonant bias equal to their French counterparts at 30-month-olds (e.g., Havy & Nazzi, 2009). In a recent paper, an evaluation of spontaneous speech with English toddlers aged 12 to 24 months discuss findings which

suggest that infants might be particularly sensitive to coda consonants in CVC items (Demuth, Culbertson & Alter, 2006). This could explain the discrepancy between the English and the French results, as mispronunciation detection studies in English toddlers' directly comparing consonants and vowels have always focused on onset consonants rather than codas. Thus, the matter of a differential role of consonants and vowels in lexical development in English-learning infants is not so clear-cut.

Using a classic IPL procedure and stimuli comparable to Mani and Plunkett (2007), we presented 20-month-old infants with 18 test trials, each made up of two pictures of familiar objects (e.g. ball, cat) along with a correct or an incorrect pronunciation of the monosyllabic target word. Mispronunciations were created by manipulating the phonemic class (consonant/vowel) and the consonant location (onset/coda). The results show that infants look longer at familiar objects when presented with the correct pronunciations compared with mispronunciations, with no asymmetry between onset consonant and vowel. However, our results do show that there is a slight advantage with codas. These findings suggest that the lexical consonant bias needs to be further explored in coda position with English infants.

[278 words]

References: (3)

[1] Mani, N. & Plunkett, K. (2007). Phonological specificity of vowels and consonants in early lexical representations. *Journal of Memory and Language* 57, 252-272

[2] Havy, M. & Nazzi, T. (2009). Better processing of consonantal over vocalic information in word learning at 16 months of age. *Infancy*, 14, 439-456

[3] Demuth, K., Culbertson, J. & Alter, J. (2006). Word-minimality, Epenthesis and Coda Licensing in the Early Acquisition of English. *Language and Speech*, 49 [2], 137-174

### **Abstract 3**

## **Newly learned words prime familiar words in the developing lexicon**

*Altvater-Mackensen, Nicole; Max Planck Institute for human cognitive and brain sciences, Leipzig*

*Mani, Nivi; Göttingen University*

Even 24-month-olds already show phonological priming effects (Mani & Plunkett, 2010): Children's target word recognition is modulated by a picture prime whose label shares the onset consonant with an upcoming target word. For instance, children recognize dog faster after seeing the picture of a doll than after seeing the

picture of a ball. This suggests that phonologically similar words are connected in the child's lexicon and that recognizing a word involves activation of phonologically related words.

The present study investigates if this priming effect only applies to familiar words that have well-established phonological representations in the child's lexicon, or if newly learned words will elicit similar priming effects. Forty-eight German 24-month-olds were taught two novel object-label associations. To control that children had learned the correct pairing, we measured children's preference for the correct object when presenting both objects side-by-side and labelling one of them. The following test trials presented children with a prime image, followed by the presentation of a target and a distracter image side-by-side. Targets and distracters were familiar words that had no phonological or semantic relation. Prime images consisted of images of the newly learned words that were either phonologically related or unrelated to the target word, or the prime image was a blank screen (i.e., the trial was unprimed). Fifty ms after the onset of the target and distracter images, children were presented with the label of the target image. To measure word recognition, we analyzed how long children looked at the target image compared to the distracter image.

Results show that children's target recognition was modulated by the phonological overlap between newly learned prime word and familiar target word, suggesting that new words are readily integrated in the child's phonological lexicon.

[288 words, max. 300]

Reference:

1) Mani, N. & Plunkett, K. (2010). In the infant's mind's ear: evidence for implicit naming in infancy. *Psychological Science*, 21, pp. 908-913.

#### **Abstract 4**

### **Look alike: Evidence of a consonant bias in French and English 16-month-olds**

*Poltrock, Silvana; Université Paris Descartes, & CNRS, Laboratoire Psychologie de la Perception, Paris*

*Delle Luche, Claire; Plymouth University*

*Floccia, Caroline; Plymouth University*

*Nazzi, Thierry; Université Paris Descartes, & CNRS, Laboratoire Psycholo*

The proposal by Nespors et al. (2003) that consonants are more important than vowels in lexical processing has been supported by both infant and adult studies. However, in infants, differences between the two most investigated languages, French and English, have been repeatedly reported: While in French a consonant advantage has been demonstrated from 16 months of age (Havy & Nazzi, 2010), this has not been observed before 30 months of age in English (Nazzi et al., 2009). Here we present a cross-linguistic study using the same task to investigate the potential role of language input for the emergence of the consonant bias. Using eyetrackers, we recorded the eye movements of 24 French- and 24 English-learning 16-month-old infants as well as 24 French- and 24 English-speaking adults while they were watching animated cartoons in a computer-controlled word learning task. The experiment included eight pairs of CVC pseudo-words associated with unfamiliar objects: four pairs involving a minimal vocalic contrast, and the other four involving a minimal consonantal contrast in either onset or coda position. In the testing phase, participants were presented simultaneously to the two objects while one was named. For infants, analyses revealed a naming effect in the consonant-contrast trials ( $t(47)=2.34, p=.02$ ), but not in the vowel-contrast trials ( $t(47)<1$ ). This effect was not modulated by language, but by the position of the contrast: The naming effect appeared only for the coda contrasts. For adults, looking times showed equally fine sensitivity to consonant (onsets and codas) and vowel information. These data suggest that the lexical consonant bias is in part language-general, although previous findings suggest it is also modulated in language-specific ways. Methodological considerations and the onset/coda asymmetry will be discussed.

280 words

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Havy, M. & Nazzi, T. (2009). Better processing of consonantal over vocalic information in word learning at 16 months of age. *Infancy*, 14, 439-456.

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Nazzi, T., Floccia, C., Moquet, B., & Butler, J. (2009). Bias for consonantal over vocalic information in French- and English-learning 30-month-olds: crosslinguistic evidence in early word learning. *Journal of Experimental Child Psychology*, 102, 522–537.

**Abstract 5 (if applicable)**

**Cross-situational learning of phonologically similar words in 12, 14 and 17-month-olds**

*Escudero, Paola; University of Western Sydney*

*Mulak, Karen; University of Western Sydney*

*Vlach, Haley; University of Wisconsin, Madison*

Infant word learning studies typically focus on associations of novel word-referent pairings presented unambiguously, in a single trial. However, in the real world, words are encountered amidst myriad possible referents. Recently, a cross-situational learning paradigm has been used to better model the ambiguity in real-world situations. In a typical experiment, participants are presented with multiple visual referents on a screen as the corresponding spoken words are presented in random order. To learn word-object pairings, learners need to track co-occurrence probabilities of words and referents across trials. Previous studies on cross-situational learning have involved words that are phonologically very distinct (e.g., 'regli', 'colat'; Smith & Yu, 2008). In the current study, we examined whether 52 infants aged 12, 14 and 17 months could learn monosyllabic words that form phonologically minimal pairs (differing in either a consonant ('bon'-'don') or vowel ('deet'-'doot')), near-minimal pairs ('don'-'deet'), and non-minimal pairs ('bon'-'deet'). Infants were presented with a typical cross-situational learning paradigm, with two words and two referents in each trial. During testing, participants again saw pairs of visual referents but heard the spoken word for only one of the images (intermodal preferential looking paradigm). Using a Tobii X120 eye-tracker, the looking time to the named image was recorded. We found that infants, regardless of their age, had a greater proportion of looking to the target picture when presented with minimal pairs than non-minimal pairs. Additionally, infants looked more to the target when consonant and vowel minimal pairs differed on two phonological features compared to one. These findings run contrary to previous studies showing that novel minimal pairs are difficult and that vowel and consonant minimal pairs yield different levels of success. Rather, our results support an advantage for high-density, short words (e.g. minimal pairs) in early word learning (Storkel, 2009).

295 words

references:

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**Cultural and social factors in child language development**

**Pragmatics**

## **Conceptual co-ordination in preschoolers: Evidence from referential pacts**

*Köymen, Bahar, Max Planck Institute for Evolutionary  
Anthropology*

*Grassmann, Susanne, University of Zurich*

### **Symposium abstract:**

*Conversational partners create local ad hoc conventions or referential expressions within an interaction for referring to, for example, the horse instead of (equally felicitously) the pony. These locally created conventions are often referred to as referential pacts (Brennan & Clark, 1996). Throughout the conversation, speakers use and expect to hear these specific referential expressions. By 3 years of age, children are sensitive to referential pacts and expect their partner to appeal to referential pacts established in the interaction (Matthews, Lieven, & Tomasello, 2010). However, the underlying cognitive processes that support these expectations in both adults and children are debated. Moreover, whether children spontaneously adhere to referential pacts in their own productions has been an open question.*

*The studies in this symposium address these questions and, in doing so, help to resolve broader debates about the nature of early pragmatic abilities and their development. Paper 1 reports an eye-tracking study that investigated whether children's expectation of consistent referential expressions is pragmatic or merely memory-based. Paper 2 reports a study that investigated children's selective production of non-canonical referential expressions when talking to the speaker who introduced them but not when talking with another speaker. Paper 3 reports a peer interaction study that investigated whether children form referential pacts and maintain a peer's referential expressions in a partner-specific manner even if it is over-informative. A discussant will integrate and synthesize these findings. Overall, the papers provide converging evidence that pre-schoolers spontaneously form referential pacts. Counterbalancing rich pragmatic accounts, the studies also*



*converge in suggesting strong influence of memory mechanisms on formation and maintenance of referential pacts.*

### **Abstract 1**

## **Do pre-school aged children expect unconventional speakers to maintain consistency in referential expressions?**

*Wellby, Michele, University of Calgary*

*Khu, Melanie, University of Calgary*

*Sedivy, Julie University of Calgary*

*Graham, Susan, University of Calgary*

In a conversation, speakers and listeners typically converge on consistent referential descriptions of objects, establishing a referential pact. Various accounts have been proposed to explain referential pacts, ranging from a collaborative agreement regarding the particular perspective to take on an object to a more general memory-based expectation that a particular speaker will use the same expression. Here, we sought to dissociate these explanations by examining whether expectations of referential consistency diminish if a speaker fails to adhere to typical conversational principles.

Using an eye-tracking paradigm, we tested 4-year-olds in four between-subjects conditions. To establish the pragmatic conventionality of the speaker, the experimenter either used conventional referential expressions (e.g., “Look at the spoon”) or an unconventional referential expression (e.g., “Look at the metal object that helps you eat your cereal and ice cream”) across trials. On other trials, the experimenter used a target expression to describe one object that had two salient visual features (e.g., “Look at the fluffy dog”, to describe a dog that is both spotted and fluffy). Each target object was always referred to using the same expression in order to establish a referential pact. Following training, children were presented with test trials during which the target objects were referred to using either the original expression (e.g., “the fluffy dog”) or a new expression (e.g., “the spotted dog”).

Results indicated that there was a general advantage to using the same expression, regardless of conventionality of the speaker. That is, 4-year-olds looked significantly longer at the target object than at the competitor during the noun when the original expression was used than when a new expression was used. Our results demonstrate that 4-year-olds expect speakers to maintain referential pacts when describing objects. We discuss these results in terms of the debate surrounding the nature of the referential pact effect.

## **Abstract 2**

### **Do 4-year-olds form partner-specific referential pacts in production?**

*Fremery, Jelle, University of Groningen, Groningen*

*Grassmann, Susanne, University of Zurich*

Conversational partners form implicit social agreements on terms to be used during conversation, which are beneficial for communication (Brennan & Clark, 1996). Indeed, listeners expect speakers to use these established terms. This study investigates children's adherence to referential pacts in language production, in particular, children's maintenance of non-canonical labels when addressing a speaker who introduced the particular term. In addition, children's use of the non-canonical terms was correlated with their social skills.

Twenty-three children between 51 and 62 months of age participated in the four within-subjects conditions. The task was to produce referential expressions and tell a puppet which objects had been put in a suitcase. In a 2x2 design it was varied 1) whether the speaker who introduced the terms for the objects used the canonical versus a non-canonical term and 2) whether speaker who introduced terms and the addressee of the child's expression was the same or a different individual.

The dependent measure was how often children use their own preferred, canonical referring expression in each condition. If children form referential pacts, then they should use non-canonical referring expressions that were introduced by a speaker when talking back to him. Specifically, if children produce partner specific referential pacts, then they should use the non-canonical terms only with the individual who introduced them. Children's social skills were assessed by a modified Social Skills Rating System (Gresham and Elliot, 1990). Results show that children use the canonical object label significantly less after a non-canonical term was introduced as compared to the control condition when the puppet used the child's canonical term. However, since no effect of conversational partner was found, this does not seem to be a result of forming partner-specific referential pacts. No correlation was found between children's adherence to partner specific referential pacts and their social cognitive skills.

## **Abstract 3**

# **Young children create partner-specific referential pacts with peers**

*Köymen, Bahar, Max Planck Institute for Evolutionary Anthropology*

*Schmerse, Daniel, PädQUIS gGmbH - Collaborative Institute of Freie Universität Berlin*

*Lieven, Elena, The University of Manchester*

*Tomasello, Michael, Max Planck Institute for Evolutionary*

Human social interaction relies on mutually agreed-upon conventions. Speakers converge on felicitous labels for objects or build “referential pacts” (to call something, e.g., a cushion or a pillow) with their conversational partners (Brennan & Clark, 1996). Most previous research on children’s referential pacts has paired children with adults and used indirect measures of verbal behavior like reaction times (e.g. Matthews, Lieven, & Tomasello, 2010). Little research addressed how children create and use referential pacts among themselves. Two studies investigated how peers establish “referential pacts” and whether they appealed to these pacts partner-specifically.

In Study 1, groups of 4- and 6-year-old German-speaking peers established a referential pact on an artifact, e.g. woman’s shoe, in a referential communication task (e.g. mama shoe). Later, children had to refer to this object when it was presented next to two other pictures: a horse and a tree such that using the term mama shoe would be over-informative. Six-year-olds adhered to referential pacts with familiar partners, despite being over-informative, but shifted to basic-level descriptions, e.g. shoe, with new partners. Four-year olds used basic-level descriptions with both familiar and new partners. In Study 2, 4-year-olds established a pact on a proper name, decided to call a girl, e.g. Ella. Four-year-olds were able to use these pacts partner-specifically: used proper nouns with familiar peers, and used common nouns with unfamiliar peers.

The results suggested that there is a qualitative difference in what 4- and 6-year-olds treat as referential pacts. Four-year-olds treat only proper nouns as referential pacts or as privileged information between partners; whereas 6-year-olds conventionalized even simple common noun phrases within their peer interactions. Therefore, in preschool years children gradually become more flexible with the things they conventionalize in their peer interactions and are able to appreciate the arbitrariness of these conventions among a group of people.

**Abstract 4**

**Discussion: Conceptual co-ordination in preschoolers:  
Evidence from referential pacts**

*Matthews, Danielle, University of Sheffield*

(Discussant)

**Abstract 5 (if applicable)**

**First language acquisition**

**Pragmatics**

## **Acquisition of adversative relations**

*Kuehnast, Milena*

**Symposium abstract:**

*The acquisition of discourse coherence relations and their markers has developed into a vibrant topic in child language research (van Veen et al. 2009; Cain & Nash, 2011), but the processes underlying the acquisition of adversative discourse connectives such as but, however, or nevertheless are still not well understood. Hence, the symposium aims at providing new insights into the intricate developmental patterns of adversativity by discussing experimental and naturalistic data from children with different language backgrounds - Bulgarian, Dutch, German, and English.*

*Additivity, polarity and conventional implicatures have been identified as constitutive elements of adversative connectives (Blakemore 2002). Construing adversative relations involves a comparison procedure that assesses the conjoined clauses with respect to an inferred superordinate concept and identifies them as alternatives or just states a difference. By conventional implicature, adversative connectives trigger the inference that the conjoined clauses should not hold together. Thus contrast relations imply negative polarity involving syntactically overt or covert negation.*

*The linguistic input presents a child with multifunctional adversative connectives, and with different well-formedness conditions on utterances encountered in monologue and dialogue. At the early acquisition stages, adversatives appear to serve more expressive and interactional functions, gradually assuming the function of syntactic conjunctions. Thus the conceptualisation of negation and its syntactic implementation in adversatively co-ordinated utterances appears to be an important factor for shaping intended contrast relations besides the acquisition of the adversative vocabulary.*

*The presentations in this symposium explore developmental stages in the acquisition of syntactic and semantic knowledge involved in the production and*

*comprehension of adversative utterances (negation and co-ordination) in relation with other linguistic and/or cognitive skills like dialogue structuring, sharing of conceptual schemas, inferences and implicatures.*

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*van Veen, R., Evers-Vermeul, J., Sanders, T., & van den Bergh, H. (2009). Parental input and connective acquisition: A growth curve analysis. First Language, 29 (3), 266–288.*

### **Abstract 1**

## **The use of ABER 'but' and negation in early German production data**

*Gülzow, Insa, Centre for General Linguistics (ZAS), Berlin, Germany*

*Bittner, Dagmar, Centre for General Linguistics (ZAS), Berlin, Germany*

The German connective aber 'but' signals an adversative relation between (inferences drawn from two) propositions. The inference inspired by the first connect – anyone who keeps bees likes honey – is directly negated in the second sentence. In the second example, negation is expressed in the first connect.

(1) Peter hält Bienen, aber mag keinen Honig.

Peter keeps bees, but doesn't like honey.

(2) Peter mag keine Hornissen, aber er liebt Bienen.

Peter doesn't like hornets, but he loves bees.

Other uses of German aber exclude the explicit expression of negation. When used as a modal particle, a usage unavailable for English but, aber implies that the speaker normally does not expect temperatures as high.

(3) Heute ist es aber warm!

It's REALLY warm today.

The use of the English discourse markers like but, well and OK to signal relations of more global cohesion in child language like turn-taking and topic return is also not systematically related to negation (Kyratzis & Ervin-Tripp, 1999).

In the present study, a dense corpus of the German child Leo available in CHILDES is analysed for the child's uses of aber and the occurrence of negative particles. While the use of aber as a modal particle is hardly documented in the data, a preliminary analysis suggests that Leo has an early awareness of the relation between aber and negation. When a negative sentence is produced by an interlocutor, Leo often responds to the negative first connect with a sentence containing aber. In most cases Leo tries to exert control over some action or object. This result will be discussed in relation to analyses of English data showing that children may find it difficult to understand negation in some contexts, but use negation first in utterances that are closely related to illocutionary acts of rejection (Pea, 1980).

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## **Abstract 2**

### **Cognitive challenges in young children's comprehension of negation**

*Nordmeyer, Ann E. , Stanford University, Stanford*

*Frank, Michael C. , Stanford University, Stanford*

Negation is a fundamental element of human language, allowing us to express a range of logical concepts. Children produce nonexistence ("no apples") and refusal ("no" in response to an offer) before 18 months and more complex expressions of denial ("that's not an apple") by age 2 [1][2]. Yet little is known about how children process negative sentences.

We tested 2–5-year-old children's comprehension of negation. Children watched a video on an eye-tracker portraying side-by-side characters, one holding a pair of objects (e.g. apples) and one holding either nothing (Experiment 1, N=79) or a different pair of objects (Experiment 2, N=77). In both, children heard sentences of the form "look at the boy who

[has/has no] apples". Experiment 1 tested a conceptually simple form of negation, which could be identified by finding the character with nothing; but this response required children to look away from the more interesting picture. Experiment 2 reduced cognitive demands by making both characters equally salient, but increased conceptual complexity because successful comprehension required evaluating the truth-value of a proposition.

In Experiment 1, children under 4 years of age failed to show comprehension of negation, while 3–5-year-olds showed comprehension in Experiment 2, despite increased conceptual difficulty. 3–5-year-olds in Experiment 2 showed a strong tendency to initially look towards the named noun, however, even when that noun was negated (e.g. looking at apples after hearing “no apples”), with comprehension only emerging 1500 ms after the onset of the noun. This time-course analysis suggests that even when children are capable of producing and comprehending negation, processing negative sentences continues to be a cognitively demanding feat. Inhibitory control rather than conceptual complexity may pose a particular challenge for young children’s comprehension of negation.

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### **Abstract 3**

## **Acquisition of adversative co-ordination – experimental evidence from German and Bulgarian**

*Kuehnast, Milena, Centre for General Linguistics (ZAS), Berlin*

*Bartlitz, Victoria, Centre for General Linguistics (ZAS), Berlin*

*Roeper, Thomas, University of Amherst, Massachusetts*

Additivity and polarity have been identified as cognitive primitives that determine the function of adversative coordinative connectives like *but* as overt markers of the underlying adversative discourse relations (Evers-Vermeul & Sanders, 2009, Lowerse 2001). Negative polarity always implies negation, either overtly expressed or inferred. The present study investigates the impact of syntactic factors like co-ordination and expression of negation on the acquisition of *but* in German and Bulgarian as languages with differently shaped domains of contrast relations.



We present data from a sentence-continuation experiment with 3, 4 and 6-year-old monolingual German and Bulgarian children (N=216) based on pictures depicting alternative actions. Production of additive or adversative sentences was prompted through positive or negative first clauses containing and or but, e.g. ‘She wants to dive and/but...’. We analysed the syntactic complexity of the produced continuations (full clauses, finite predicate, infinitive, or objects) and the realisation of negation. These properties allow inferences about the interpretation of adversative utterances as contrast relations situated on the content, epistemic or pragmatic level.

Besides the expected effect on the polarity of the co-ordinated elements, we found that but affects their syntactic complexity by triggering more clausal co-ordinations than and. The significant interaction of negation and syntactic complexity in adversative sentences appeared due to different factors during the course of acquisition. In both languages, three-year-olds often produced ill-formed adversative sentences by conjoining two positive infinitives, clausal co-ordinations being mostly well-formed. Older children produced significantly more negation markers in all co-ordination types. They used clausal co-ordinations to express inference driven denial of expectation with covert negation, e.g., She wants to dive, but she is afraid. We discuss these findings with respect to developmental processes leading to the functional differentiation of additive and adversative connectives in relation to their syntactic well-formedness conditions in two different adversative systems.

References:

Evers-Vermeul, J., & Sanders, T. (2009). The emergency of Dutch connectives; how cumulative cognitive complexity explains the order of acquisition. *Journal of Child Language*, 36(4), 829–854.

Louwerse, M.M. (2001). An analytic and cognitive parameterization of coherence relations. *Cognitive Linguistics*, 12, 291–315.

#### **Abstract 4**

#### **‘But’ how do children reason with it?**

*Janssens, Leen , KU Leuven, Leuven*

*Drooghmans, Stephanie , KU Leuven, Leuven*

*Walter Schaeken, KU Leuven, Leuven*

Our research aimed at investigating whether 8-to-12-year-old children spontaneously make the conventional implicature induced by 'but' -combined with 'so' and 'nevertheless'- in 'p but q' sentences constructed as distancing-contrastive connections. 'But' (and 'so') direct the reader towards the conclusion stemming from the q-argument (p but q, so q), whereas 'nevertheless' overrules the q-conclusion in favor of the p-argument (p but q, nevertheless p). We presented Dutch speaking children with short stories ending with a 'p but q' sentence and they were instructed to indicate the 'appropriate' conclusion introduced by 'so' ('so p' or 'so q') or the appropriate conclusion introduced by 'nevertheless' ('nevertheless p' or 'nevertheless q'). The p- and q-arguments were either sensible or irrelevant arguments in order to investigate to what extent the content of the arguments is important in processing these sentences. In addition, we measured children's working memory (WM)-capacity in order to explore the possibility that making these inferences is effortful. Our results show that children do make the inferences to a certain extent but they are very sensitive to the content of the p- and q-arguments. Whenever the p- or q-argument is an irrelevant argument (contrasted with a sensible argument), this argument almost always gets ignored in favor of the sensible argument, irrespective of the 'appropriate' conclusion 'but' directs the reader to. Our WM-measures do not show a reliable effect. Children with a high WM-span did not make the inference more often than children with a low WM-span. This suggests that inferring the implicature from 'but' might not be that effortful.

### **Abstract 5 (if applicable)**

### **Discussant**

*Evers-Vermeul, Jacqueline, University of Utrecht*

*Language development in atypical populations*

*Language, general*

## **Designing, implementing, and evaluating shared book reading interventions with preschoolers with language impairment**

*Lavelli, Manuela, University of Verona*

### **Symposium abstract:**

*The impact of shared book-reading interventions on language and emergent literacy skills is well documented for typically developing children, but shown to be more variable for children with language impairment (LI). Critical issues related to this variability are: (a) the effectiveness of shared reading strategies used with children with LI (e.g., strategies that are effective in facilitating these children's conversational participation are not equally effective in increasing their vocabulary and MLU), and (b) the effectiveness of parent-based interventions (e.g., because of differences across parents in program implementation, and their difficulties in scaffolding children who provide little verbal input). The symposium addresses these issues through four studies relying on different research paradigms--including longitudinal case study, observational and experimentally controlled designs--, and a contribution for the discussion, all implemented in different countries (Germany, UK, Italy, USA). The first two papers contribute to design shared book-reading interventions with language-impaired children by showing that reading repeatedly a story with new words is a promising strategy for word learning also in children with SLI (paper 1), and by presenting a tool for examining parent-child interactions during picture-book reading (paper 2). The third and fourth papers evaluate the impacts of shared book-reading interventions implemented by parents (paper 3) and by teachers and parents (paper 4) of children with LI on children's conversational participation and oral language skills, and print-knowledge, respectively. Finally, the last paper contributes to the discussion by raising methodological issues about the recruitment of participants in book sharing interventions. Taken together, these papers provide new evidence of effectiveness of some shared reading strategies on specific skills of language-impaired children. They show that the effectiveness of parent-based interventions*

*varies according to aims and subgroups of children, suggesting the benefit of engaging parents and teachers in shared book-reading interventions complementing speech-language therapy.*

### **Abstract 1**

## **Immediate and long-termed benefits of contextual repetition in children with SLI**

*Rohlfing, Katharina J., Bielefeld University*

*Ceurremans, Josefa, Bielefeld University*

*Trüggelmann, Maria, Bielefeld University*

*Horst, Jessica, University of Sussex*

Recently, [1] have shown that when new words are embedded in the same story that is read repeatedly, children not only recalled the new words better immediately after the readings (immediate test), but they also retained them better and could produce them after a few days delay (retention test) than children who were read a different story three times. In our study, we asked whether children with SLI would show the same benefit from repetition of book readings.

We compared a group of typically developing children (N = 8, aged 41 months) with a group of children diagnosed with SLI (N = 5, aged 40 months). All children were visited 3 times within 14 days and read – without engaging in a dialogue – the same story containing new words repeatedly.

The groups did not differ with respect to age ( $Z = -0.736$ ,  $p = 0.46$ ) but they differed with respect to sentence production ( $Z = -2.422^*$ ), sentence understanding ( $Z = -2.940^*$ ), and marginally for phonological memory ( $Z = -2.723$ ,  $p = 0.06$ ). Our results replicate [1]'s findings for typically developing children. For SLI children, we found that while they performed significantly more poorly immediately after hearing the stories, we could not find any significant difference between the groups in the retention task. Furthermore, both groups retained words at a better than chance level, although the typically developing children showed a significant result ( $Z = -2.539^*$ ), while the SLI children showed only a statistical trend ( $Z = -1.604$ ,  $p = 0.1$ ). These results suggest that while the performance of SLI children differs in the immediate recall task, both group seem to benefit from the repetition in the retention task. Thus, repeating a story with new words is a method that may contribute to improve intervention programs for children with SLI.

[1] Horst, J. S., Person, K. L., & Bryan, N. M. (2011). Get the story straight: contextual repetition promotes word learning from storybooks. *Frontiers in Psychology*, 2(17), 1-11.

## **Abstract 2**

### **The Thorpe Interaction Measure (TIM): An updated tool for evaluating shared book-reading interventions**

*Blackwell, Anna, University of the West of England*

*Babayigit, Selma, University of the West of England*

Shared book reading provides a structured context for observing direct language teaching with children. The Thorpe Interaction Measure (TIM: Thorpe, Rutter & Greenwood, 2003) was designed to examine parent teaching behaviours during picture-book reading. TIM defines six behaviours: labelling, short and long elaboration, concept structuring, linking and encouraging children's involvement as well as responsivity parameters e.g. warmth and control. TIM was originally used in the Avon Longitudinal Study of Parents and Children (ALSPAC <http://www.bristol.ac.uk/alspac/researchers/>), a population-based cohort study, 10% of which (n=1432) were seen every six months. TIM was used with children aged 12 and 61 months, providing normative data. Labelling (34%) and short elaboration (26%) were the most commonly occurring behaviours at 12 months whilst actively engaging children (1%) was the least frequent. At 61 months the pattern changed with a reduction in labelling (15%) and a rise in active engagement (8%). Further work showed that, in particular, elaboration and child involvement at 12 months were associated with later receptive language (Boyle et al., in preparation).

The original TIM has been updated to a colourful photo book. This is being used as part of a longitudinal multiple-case study of early language development of four children with delayed expressive language (> 1.25 SD below the mean at age 2;3-3;5).

Baseline data shows that teaching behaviours of parents were similar to the 12-month normative data. The most frequent behaviours were labelling (33%) and short elaboration (36%). However, the frequency of long elaboration was much higher (14% vs. 3%) and encouraging linguistic involvement was much lower (3% vs. 21%) compared to the ALSPAC cohort. These differences may be related to the range of language profiles in the ALSPAC study compared to the language-delayed children who were at the single-word stage. The usefulness of the TIM for examining parent-child interactions will be discussed.

Boyle, J., Law, J., Roulstone, S., Miller, L.L., Booth, J.N., Ness, A. (in preparation). The Thorpe Interaction Measure – Psychometric properties and prediction of receptive language development in young children: Findings from the ALSPAC birth cohort.

Thorpe, K., Rutter, M., & Greenwood, R. (2003) Twins as a natural experiment to study the cause of mild language delay: II: Family interaction risk factors. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 44, 342-355.

### **Abstract 3**

## **Improving the quality of parent-child shared book reading: An intervention program addressed to parents of preschoolers with specific language impairment**

*Lavelli, Manuela, University of Verona*

*Barachetti, Chiara, University of Verona*

*Florit, Elena, University of Verona*

*Breda, Lara, University of Verona*

*Brotto, Cristina, Dep. of Child Neuropsychiatry, ASL 3 Bassano del Grappa*

*Miottello, Piergiorgio, Dep. of C*

The quality of parent-child interaction with children with language impairment (LI) during shared book-reading--a context extensively documented as highly facilitative of language acquisition--has been found to be poorer than with typically developing children [1]. Training parents of children with LI to use interactive book-reading strategies has shown contrasting results (e.g., [2] vs. [3]). This study examined the effectiveness of an intervention addressed to parents of preschoolers with SLI, aimed to (a) making parents aware of their role in promoting language acquisition, (b) training parents to use shared reading strategies facilitating the child's verbal participation, and then (c) increasing conversational participation and, possibly, oral language skills in their children.

Twenty families with children with SLI (aged 3;5-5;6) were engaged in a 10-week-intervention including individual and small group sessions of parent training, and implementation of shared book-reading at home (4 sessions weekly). Ten families participating in the research project, but not in the intervention, acted as control group. Mother-child book-reading were videotaped before, during, and after the intervention, and were coded to yield measures of maternal and child communicative functions and modalities, mothers' use of shared reading strategies, and children's active participation and linguistic production.

Results show that in the intervention group the durations of book-reading sessions and the mothers' use of some of the strategies learned --sharing control of the book with the child, offering utterances contingent to the child's focus, referring to familiar experiences, expanding the child's utterances-- increased significantly. These changes were associated with an increase in children's conversational participation, indexed by a significant increase of child initiations and linguistic production. However, no intervention effects were found in child lexical and morphosyntactic complexity. No significant changes were found for the control group. These findings

suggest the effectiveness of combining speech-language therapy for children with interventions addressed to parents.

[1] Rabidoux, P. C., & MacDonald, J. D. (2000). An interactive taxonomy of mothers and children during storybook interactions. *American Journal of Speech-Language Pathology*, 9, 331-344.

[2] Crowe, L. K., Norris, J. A., & Hoffman, P. R. (2004). Training caregivers to facilitate communicative participation of preschool children with language impairment during storybook reading. *Journal of Communication Disorders*, 37, 177-196.

[3] Pile, E. J. S., Girolametto, L., Johnson, C. J., Chen, X., & Cleave, P. L. (2010). Shared book reading intervention for children with language impairment: Using parents-as-aides in language intervention. *Canadian Journal of Speech-Language Pathology and Audiology*, 34, 96-109.

#### **Abstract 4**

### **Impacts of print-focused read-alouds for children with language impairment**

*Justice, Laura M., The Ohio State University*

*Logan, Jessica, The Ohio State University*

The purpose of this study was to examine the impacts of print-focused read-alouds, implemented by early childhood special education (ECSE) teachers along or in conjunction with children's caregivers, on the literacy skills of 3- to 5-year-old children with language impairment (LI). Print-focused read-alouds are an approach to sharing books with children in which the forms and functions of print are systematically highlighted. For typically developing children, impacts on literacy skills extend to two years post-intervention (Piasta et al., 2010).

In this study, 83 ECSE classrooms (n = 291 children nested within) were randomly assigned to implement one of three read-aloud conditions specifying the way in which teachers and caregivers read storybooks over a 30-week period (3 sessions weekly). In the school+home program (n = 99 children), teachers and caregivers implemented print-focused read-alouds; in the school-only program (n = 91), teachers only implemented print-focused read-alouds while caregivers read using their typical practices. In the control program (n = 101), teachers and caregivers read using their typical read-aloud practices.

Using a print-knowledge composite as the primary outcome measure to represent children's literacy skills, hierarchical linear modeling showed that children in the school-only program

had significantly better print knowledge compared to children in the control program, but this was not the case for the school+home condition except for children with LI and low nonverbal cognition: for these children, the school+home program had notably positive impacts on literacy skill. Study findings show that print-focused read-alouds boost the literacy skills of children with LI, and that caregiver-plus-teacher implementation is beneficial for subgroups of children.

Piasta, S. B., Justice, L. M., McGinty, A. S., & Kaderavek, J. N. (2012). Increasing young children's contact with print during shared reading: Longitudinal effects on literacy achievement. *Child Development*, 83(3), 810-820. doi: 10.1111/j.1467-8624.2012.01754.x

### **Abstract 5 (if applicable)**

## **Distinguishing language impairment from a lack of familiarity with academic talk in preschoolers enrolled in book sharing intervention studies**

*van Kleeck, Anne, University of Texas at Dallas*

In the U.S., the gold standard for determining the presence of a language impairment (LI), whether by a researcher or a speech-language pathologist, includes a child's performance (a) on norm-referenced standardized tests (NRSTs) (e.g., Paul & Norbury, 2012) or (b) compared to norms available for various language sample analysis (LSA) measures, such as mean length of utterance (Heilmann, Miller, & Nockerts, 2010). The goal of this presentation is to suggest that we replace the notion that these different kinds of assessments (NRST vs. LSA) provide equivalent estimates of a preschooler's overall oral language ability. Instead, it is proposed that preschoolers' oral language be conceived as consisting of two registers, an everyday casual talk (CT) register that is reflected in performance on LSA measures, and an academic talk (AT) register that is reflected in performance on NRSTs. Specifically, previous research results will be reviewed showing that (a) preschoolers with LI do poorly on both LSA and NRST assessments, and (b) preschoolers from low socio-economic (SES) backgrounds perform substantially better on LSA measures than on NRSTs. This latter profile indicates that many preschoolers from low SES backgrounds who are not LI might appear to be on NRSTs because of their lack of familiarity with the AT register that arises from less exposure to it in their homes.

Therefore, when researchers assess preschoolers' oral language skills to identify potential beneficiaries of book sharing interventions, differentiating preschoolers with "true" LI from preschoolers who lack familiarity with AT is important because the response to book sharing interventions would likely be quite different in these two groups. That is, we would expect children who have difficulty learning language to make less progress in their language skills as a result of participation in book sharing interventions than children whose language skills are lower due to less exposure.



Heilmann, J. J., Miller, J. F., & Nockerts, A. (2010). Using language sample databases. *Language, Speech, and Hearing Services in Schools*, 41, 84-95.

Paul, R., & Norbury, C. (2012). *Language disorders from infancy through adolescence: Listening, speaking, reading, writing, and communicating*, 4th Ed. St. Louis, MO: Mosby.

***Cultural and social factors in child language development***

***Language, general***

## **Parent-Child Discourse and Children's School Readiness in Minority Populations**

*Leyva, Diana, Davidson College*

### **Symposium abstract:**

*Both the quality and the quantity of parent-child discourse are related to individual differences in children's school readiness. Children who grow up in language- and literacy-rich environments are more likely to be prepared to learn in school. In this symposium, we examine the relation between parent-child discourse and school readiness in minority populations in three different countries: the Netherlands, Chile and the U.S.A. We are interested in minority populations because these children tend to lag behind in abilities that are foundational to school success such as language, literacy, numeracy and socioemotional skills. Our goal is to identify aspects of parent-child discourse that promote the development of school readiness skills in minority preschool children in different countries. This symposium consists of four papers, two of them explore parent-child math talk and two of them explore parent-child talk in narratives. The first paper examines the link between math talk at home and numeracy skills in Turkish-Dutch and Moroccan-Dutch 3- to 6-year-old children. The second paper investigates the link between math talk at home and numeracy skills in low-income Chilean preschoolers. The third paper examines the relation between parents' vocabulary during book-reading and emergent literacy and socio-emotional skills in Latino children in the U.S. The fourth paper compares parent-child discourse in low- and middle-income families in the U.S. focusing on maternal challenges and its relation to children's narrative skills. Taken together, these four studies highlight the different ways in which minority parents in the Netherlands, Chile and the U.S. support children's school readiness skills through their everyday discourse. Implications for intervention programs working with minority families in these three countries are discussed.*

### **Abstract 1**

## **Math talk at home in first and second language: effects on pre-mathematical development of Turkish-Dutch and Moroccan-Dutch 3- to 6-year-old children**

*Leseman, Paul P.M., Utrecht University*

*van 't Noordende, Jaccoline E., Utrecht University*

*Kroesbergen, Evelyn H., Utrecht University*

Informal math learning at home through math talk is positively related to children's emergent math skills, but the influence of bilingualism is yet unknown. This study investigated to what extent math talk in first and second language predicts bilingual Turkish-Dutch and Moroccan-Dutch children's development of math skills in the second language. Fifty-seven Turkish-Dutch and 50 Moroccan-Berber-Dutch children were followed from age 3 to 6; fifty-eight monolingual Dutch children served as comparison group. At three points in time, a test of early math skills in Dutch was administered. At four points in time, interviews with caregivers were conducted to determine exposure to math talk in both first and second language. Multigroup Latent Growth Modelling revealed significant intercept and slopes for both bilingual groups but no differences in intercept and slope between the groups. A higher intercept of math talk in L1 for the Turkish group compared to the Moroccan group was found, and a decrease in math talk in L1 together with an increase in math talk in L2 in both groups. Combining the growth models of exposure to math talk in L1 and L2 with the growth model of math skills revealed positive effects of math talk in L1 on mathematical skill development in the Turkish group but negative effects in the Moroccan group. Exposure to math talk in L2 was positively related to mathematical skill development in both groups. Math talk at home matters for the emergence of math skills in young children, for monolinguals as well as bilinguals. The effects of exposure to math talk in L1 on mathematical development assessed in L2, however, show a complex pattern, with a positive effect in the Turkish-Dutch group but a negative effect in the Moroccan-Dutch group. A possible explanation concerns the nature and socio-historical background of the languages involved.

### **Abstract 2**

#### **Talking about numbers: Low-income Chilean parent-child talk and its relationship to preschoolers' numeracy skills**

*Leyva, Diana, Davidson College*

*Nolivos, Virginia, Oxford University*

The way that adults talk with children about numbers is related to the development of children's numeracy abilities. Most of the research on adult-child numeracy interaction has focused on classrooms settings. Less is known about parents' numeracy talk with their children and whether this talk is related to preschoolers' numeracy development. In this study, we were particularly interested in low-income parents' numeracy talk. Children from low-income households typically enter school with low levels of numeracy knowledge, and therefore are less prepared to learn mathematics and succeed in school. We examined how low-income Spanish-speaking parents talked about numbers with their preschool children and whether the quantity and quality of this talk was associated with growth in children's numeracy skills. Two hundred twelve low-income Chilean parents and their preschoolers were videotaped playing the grocery-list task, a number-related activity in which parents and children make a list (e.g., 2 apples, 3 pears) and pretend to go grocery shopping. Videos were transcribed verbatim in Spanish. Parental utterances were coded as: counting, approximate quantities, exact quantities, comparing approximate quantities, comparing exact quantities, sequencing, arithmetic, written numerals, geometry, spatial location and grouping. Average inter-rater reliability among coders was  $>.80$ . Children's numeracy skills were assessed at three time points (beginning and end of pre-kindergarten and end of kindergarten) using the Woodcock-Muñoz Applied-Problems subtest. Most parents focused on basic numeric skills such as counting and naming quantities. Very few parents engaged in more sophisticated numeracy interactions such as arithmetic (e.g., how many more apples do we need to get 5 in total?). Preliminary findings suggest that parental talk focused on basic skills (e.g., counting) did not contribute to growth in children's numeracy skills from the beginning of prekindergarten to the end of kindergarten. Findings highlight important cultural differences in the relation between parent-child language interaction and numeracy development.

### **Abstract 3**

#### **Caregiver's vocabulary diversity and sophistication and low-income Latino preschoolers' school readiness competencies**

*Schick, Adina, New York University*

*Melzi, Gigliana, New York University*

*Schick, Elisheva, New York University*

Past research has established that increased exposure to home language during the preschool years is integral to children's emergent literacy development. Yet, the amount of language exposure is not sufficient to ensure positive child outcomes; instead, what appears to matter most is the diversity and quality of the language to which they are exposed. As such, researchers have posited that one reason low-income children might lag behind their middle class peers at school entry is because

they are likely to be exposed to less diverse and sophisticated vocabularies at home. However, most work on vocabulary exposure in low-income homes is comparative in nature, and focuses on frequency, rather than on types and diversity, of language. Thus, little is known about the type of language low-income U.S. Latino children experience in the home. The present study investigated the relation between caregivers' vocabulary during a caregiver-child book reading interaction and children's emergent literacy and social-emotional school readiness skills. Participants included 120 Latino caregivers and their children who were attending a Spanish-English bilingual preschool for low-income children. Naturalistic caregiver-child book sharing narratives were collected early in the preschool year and were analyzed for the quantity and quality (i.e., diversity and sophistication) of the vocabulary used by caregivers. During the final weeks of the preschool year, children's emergent literacy skills (i.e., print-related, vocabulary, and narrative skills), approaches to learning, and self-regulation were assessed. Preliminary findings suggest a positive, predictive relation between caregiver vocabulary diversity and sophistication and children's emergent literacy skills. Moreover, children whose caregivers included a more diverse and sophisticated vocabulary also had stronger self-regulation skills at the end of the year. Findings are discussed in relation to the importance of home language exposure for positive child outcomes.

#### **Abstract 4**

### **Book reading and dinnertime conversations at home: How parental bilingual discourse impact Uyghur children's school readiness in China**

*Jing Zhou, East China Normal University*

*Si Chen, East China Normal University*

*Lanbin Min, East China Normal University*

*Chen Chen, East China Normal University*

Previous research indicates that the quality and quantity of parental discourse at home is a significant predictor of children's school readiness. We explored the link between parental discourse and children's school readiness in a sample of Uyghur families in China. Uyghur families are a language minority group. Their children speak mostly Uyghur (L1) at home and are mandated to learn and speak Mandarin Chinese (L2) in preschool. This study examined whether the quality and quantity of parental discourse in L1 and L2 predicted preschool children's school readiness. Forty Uyghur-Chinese bilingual parents and their children (ages 5 to 6) participated in the study. Parental discourse at home was recorded in

two contexts: picture book reading (in L1 and L2), and dinnertime conversations (in either L1 or L2 depending on the family's preference). Children's school readiness skills were assessed using the Bracken School Readiness Test. Preliminary findings indicate that children's school readiness skills were positively associated with the quality (richness in vocabulary) of parental discourse in L1, and the quantity (length) of parental discourse in L2. This study suggests that parental discourse in both L1 and L2 might play a role in developing the skills that Uyghur children need in order to succeed in Chinese schools. Our findings have important implications for teacher professional development programs and family literacy programs in China.

**Abstract 5 (if applicable)**

*Language development in atypical populations*

*Language, general*

## **Potentially Protective Environmental Factors for Children at Risk for Language and Literacy Difficulties**

*Licandro, Ulla, Leibniz University Hannover*

### **Symposium abstract:**

*Early language skills of typically developing children are strongly dependent on environmental supports experienced in the home context (Hoff, 2006) as well as in the classroom environment (Dickinson & Porche, 2011). Less is known about children at risk for language and reading difficulties, a group that is in special need of high quality environmental support. Therefore, the four contributions of this symposium all seek, in a different way, to identify environmental factors in the home and classroom environments which prevent language and literacy difficulties in preschool-aged children. The first paper compares the home literacy environment of preschool-aged children with a history of speech language therapy to that of typically developing children, whereas the second paper describes associations between measures of the home language environment of bilingual preschoolers and emerging language skills. The third paper presents and discusses a profile model to explore the nature of school readiness among children with language impairment. As teacher instructional behaviors, such as scaffolding, are an important tool to support children's language acquisition in the classroom, the fourth paper analyzes the awareness and frequency of use of these strategies as a crucial aspect of professional development. This symposium delineates how the variability of environmental input shapes emerging skills in preschoolers at risk for language and literacy difficulties. From a prevention perspective, it points to important aspects associated with home language and literacy, as well as classroom environments, which have the potential of supporting language and literacy learning in this population.*

*References*

*Dickinson, D. K. & Porche, M. V. (2011). Relation between language experiences in preschool classrooms and children's kindergarten and fourth-grade language and reading abilities. Child Development, 82 (3), 870-886.*

*Hoff, E. (2006). How social contexts support and shape language development. Developmental Review, 26, 55-88.*

### **Abstract 1**

## **The Home Literacy Environment of Children with a History of Speech and Language Therapy**

*Clausen, Marit, University of Southern Denmark*

*Bleses, Dorte, University of Southern Denmark*

In the last years several studies have shown that the home learning environment (HLE) is of importance for children's language and early literacy skills (Niklas & Schneider, 2013; Weigel et al., 2010; Hood et al., 2008). Despite the growing research body on children's HLE, only little is known about the HLE of children with a history of speech and language therapy. Also, only very little is known about the HLE of children living in Denmark. Thus, the aim of this study was to examine to what extent features of the HLE vary in children with a history of speech and language therapy compared to typically developing children living in Denmark. 5198 parents of preschool-aged children who were enrolled in a randomized control trial completed a home literacy environment questionnaire. 11% of the parents (n=550) reported that their child had a history of speech and language therapy. Independent t-tests were carried out to examine whether there are significant differences in the home literacy environment between the children with and without a history of speech and language therapy. The analyses showed that significant differences were seen both in quantity and quality of parent-child interaction, technology use as well as parent's beliefs about their impact on their child's language development. No significant differences were found in parents' reading routines, library visits nor television use. The relation between children's HLE, socio-economic status and their language skills will be discussed. The study indicates that children with a history of speech and language pathology may have a different HLE than the typically developing children. A better understanding of the contribution of the HLE to children's language and literacy skills may be useful for future interventions in order to support children's development.

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Hood, M., Conlon, E., & Andrews, G. (2008). Preschool Home Literacy Practices and Children's Literacy Development: A Longitudinal Analysis. *Journal of Educational Psychology*, 100(2), 252–271.

Niklas, F., & Schneider, W. (2013). Home Literacy Environment and the beginning of reading and spelling. *Contemporary Educational Psychology*, 38(1), 40-50. doi: 10.1016/j.cedpsych.2012.10.001

Weigel, D. J., Martin, S. S., & Bennett, K. K. (2010). Pathways to literacy: connections between family assets and preschool children's emergent literacy skills. *Journal of Early Childhood Research*, 8(1), 5-22. doi: 10.1177/1476718x09345518.

## **Abstract 2**

### **Home Language and Literacy Environments in Bilingual Preschoolers**

*Licandro, Ulla, Leibniz University Hannover*

*Lüdtke, Ulrike M., Leibniz University Hannover*

The current study was designed to contribute to the understanding of the relation between input patterns, home literacy experiences, and emerging second language skills in young minority language speaking children. Those children, especially if coming from low socioeconomic backgrounds, have been recognized to be at risk for poor literacy outcomes and educational disadvantages (see Gogolin & Krüger-Potratz, 2006). It has been reported that bilingual children's proficiency in each language is strongly related to the amount of input in that language (De Houwer, 2007; Duursma et al., 2007). However, only few studies have investigated other language constellations besides Spanish-English. Therefore, the present study aims to (a) explore home language and literacy environments in preschool-aged children of Turkish descent and to (b) investigate interfaces between the home language input patterns and emerging language abilities. 45 Turkish-German mother-child dyads were recruited. Examined data included child language assessments, standardized parental sociolinguistic interviews, and preschool teacher questionnaires. Bilingual Turkish-German children growing up in German dominant families performed better on selected receptive and productive measures of German than those from balanced and Turkish dominant environments, controlling for time of language exposure. There were no differences between children growing up in Turkish dominant and balanced environments. Also, child minority language use and proficiency was raised according to amount and diversity of environmental input. Furthermore, the higher the educational levels of the mothers, the higher preschool teachers rated children's second language abilities, while standardized language assessments showed no such effects. These and other findings

contribute to our knowledge of language pathways of preschoolers growing up in bilingual family environments and point to strengthening research approaches focusing various scenarios of family bilingualism, as well as perception of child language skills in educational professionals.

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#### **Abstract 3**

### **School-Readiness Profiles of Children with Language Impairment: Linkages to Home and Classroom Experiences**

*Pentimonti, Jill, Ohio State University*

*Justice, Laura M., Ohio State University*

*Kaderavek, Joan N., University of Toledo*

The current study represents an effort to advance our understanding of the nature of school readiness among children with language impairment (LI), a population of children acknowledged to be at risk for poor academic achievement (see Tomblin et al., 2000). The academic, social-emotional, and behavioral competencies with which children arrive to kindergarten affect the nature of their future educational experiences (Ladd et al., 1999), and their overall academic achievement (Claessens et al., 2009). In the present work, we used person-centered methods to examine whether there may be reliable profiles that characterize children with LI just prior to kindergarten entrance, and the extent to which profile membership may be associated with characteristics of children's homes and preschool experiences. Questions addressed were twofold: (1) To what extent are there reliable profiles of children with LI with respect to their school readiness? (2) To what extent is children's profile membership associated with characteristics of their homes and

preschool classrooms? Participants were 136 children with LI from early childhood special education classrooms. We utilized latent class analysis (LCA) to classify individuals into profiles based on individual responses on school readiness measures. We then used multilevel hierarchical generalized linear models to examine the relations between profile membership and children's home/classroom experiences. LCA analyses revealed that a 4-profile solution was the most appropriate fit for the data and that classroom experiences were predictive of these profiles, such that children in classrooms with more instructional/emotional support were more likely to be placed in profiles characterized by higher school readiness skills. In conclusion, these results indicate that young children with LI's membership in school readiness profiles is associated with the quality of children's classroom experiences, suggesting that high-quality classroom experiences can be influential for ensuring that young children with LI arrive in kindergarten ready to learn.

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## **Abstract 4**

### **Training teachers to be aware of own practice: Using self-coding to promote the usage of scaffolding strategies**

*Markussen-Brown, Justin, University of Southern Denmark*

*Bleses, Dorte, University of Southern Denmark*

In the current study, we aimed first to raise teacher's awareness of their own usage of scaffolding strategies, which are instructional behaviours known to be beneficial for

children's language outcomes (Rodgers, 2004), and secondly to ascertain the frequency of these strategies. Changing instructional behaviours, which may be deeply ingrained in teachers regardless of years in service or educational background, is a challenging aspect of professional development (PD) (Domitrovich et al., 2009). However, recent work has found a correlation between teachers' ability to recognize quality interaction on video and one's own observed interactional quality (Hamre et al. 2012). This may indicate that targeting teachers' awareness of instructional behaviours with PD can facilitate an effective change in practice. Teachers (n=68) were 1) trained to use and identify three high and three low support scaffolding strategies, 2) asked to use the strategies in recorded interactive book reading lessons, and 3) required to code the first and last five minutes of their videos for the six strategies. Teachers were further required to code the video of a colleague in order to give an indication of the extent to which there were any coding discrepancies. In the first five minutes, teachers reported using 416 high support strategies and 248 low support strategies. However, this trend reversed in the last five minutes with teachers using 330 high support strategies and 412 low support strategies, indicating that as the lesson progressed, teachers used more cognitively stimulating strategies designed to challenge children further. Of the teachers that were double-coded (n=46), 59% had only one or fewer discrepancies suggesting that over half of the teachers had an accurate understanding of the six scaffolding strategies', an observational skill that appears to be important in facilitating PD. Currently these videos are being master-coded to determine teachers' true use of the strategies.

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#### **Abstract 5 (if applicable)**

*First language acquisition*

*Semantics and lexicon*

## **Syntactic, Semantic and Pragmatic Contributors to the Acquisition of Attitude Verbs**

*Lidz, Jeffrey, University of Maryland*

*Hacquard, Valentine, University of Maryland*

### **Symposium abstract:**

*The acquisition of attitude verbs (think, want, know...) has been extensively studied by those interested in the development of the concepts these verbs express (belief, desire, knowledge...). This research shows that attitude verbs are acquired relatively late, and that crosslinguistically, some (e.g., think) are mastered later than others (e.g., want). This symposium demonstrates the role of syntax and pragmatics, over and above conceptual development, in attitude verb acquisition.*

*Because attitude verbs describe mental states obscure to observation, their acquisition, both correct and incorrect, can be informative about how syntax and pragmatics contribute to word learning. This symposium addresses three questions. (1) How does the syntactic distribution of attitude verbs contribute to their acquisition? (2) How does children's understanding of other people's intentions contribute to the acquisition of attitude verbs? (3) How much of children's performance with attitude verbs derives from their emerging understanding of syntax and pragmatics?*

*The symposium allows us to understand asymmetries between think and want in linguistic terms. Children have difficulties with think but not want, even when the experimental conditions under which they are tested are matched. This difference is not due to a failure with tensed complementation, or with a conceptual problem with belief. Children are sensitive to interactions between think and negation which require a sophisticated understanding of both complementation and negation. This sensitivity extends for many 3 year olds to their understanding of know. Moreover, children's difficulties derive in large measure from the pragmatics of think, which allows an enrichment to "think correctly" in certain situations. Children overapply*

*this enrichment, but do not do so in situations in which it is pragmatically blocked. Finally, children do not succumb to the same pragmatic difficulties with want because the syntax of want is a reliable cue that its meaning is incompatible with these enrichments.*

## **Abstract 1**

### **3-year-olds' difficulty with false belief is pragmatic**

*Lewis, Shevaun, Johns Hopkins University*

3-year-olds notoriously fail to distinguish beliefs from reality when interpreting belief reports like (1). This difficulty has been attributed to non-adult-like conceptual [1], syntactic [2], or semantic [3] representations. We propose that the real culprit is pragmatic ambiguity.

(1) Pluto thinks that Donald is behind the curtain.

While belief reports are literally descriptions of mental states, in context they are often used to proffer information about reality, as in (2). We hypothesize that children assume by default that conversations are about reality, leading to inappropriate responses in mental state contexts. Our experiment shows that when the pragmatic ambiguity is neutralized, 3-year-olds' judgments are adult-like.

(2) A: Where's John?

B: Mary thinks he's at work.

In a truth-value judgment task, we presented children (3;0-4;2, n=40) with hide-and-seek stories where two seekers guess the location of a hider. In target sentences like (1), we manipulated whether the mentioned seeker (e.g. Pluto) had a true belief, false belief, or belief with unknown status. The sentences were literally true or false as belief descriptions.

We predicted that in the false belief condition, children would sometimes judge literally true sentences to be "wrong" with respect to the story if they took the main point to be the hider's actual location. By contrast, children should consistently reject false sentences, since the pragmatic intent is irrelevant.

The results were as predicted. Children showed chance accuracy (44%) for true sentences in the false belief condition. The novel finding is their strikingly better performance (84%) on false sentences. Accuracy was not affected by children's age or ability to pass a standard false belief task.

We conclude that 3-year-olds can represent beliefs and evaluate belief reports. What develops between age 3 and 4 is not a representational capacity, but a pragmatic understanding of how belief reports are used in conversation.

## **Abstract 2**

### **The Factivity of "know" in 3-yr-olds**

*Dudley, Rachel, University of Maryland*

*Orita, Naho, University of Maryland*

Think and know both express a belief of their subject, but only know further presupposes the truth of its complement; only know is 'factive'. In this study, we investigated whether three-year-olds differentiate these verbs based on factivity by testing their understanding of the verbs under negation, an environment diagnostic of factivity (cf. 1b vs 2b).

Participants were asked to find a toy hidden in one of two boxes (red or blue), based on clues using the two verbs. We manipulated two factors within subjects: verb-type (know, think) and negation-type (none, matrix, embedded), with three trials per condition (Figure 1). Responses were recorded as selections of the "mentioned" or "unmentioned" box and adult control data (Figure 2) determined which response was the accurate one. Figure 3 shows three-year-olds' responses.

As a group, three-year-olds were highly accurate in all think conditions (A,C,E), responding in an adult-like way. Three-year-olds were also accurate in the "know-none" (B) and "know-embedded" (F) conditions. Only in the "know-matrix" (D) condition did three-year-olds' performance (40%) diverge from adults' (75%). However, children's performance on "know-matrix" sentences does not reflect guessing because it is distributed binomially in this condition (Figure 4).

A 2x3 ANOVA revealed a significant main effect of verb-type ( $F(1,21)=28, p<0.017$ ) and negation-type ( $p<2.0e-16$ ) and a significant interaction between verb-type and negation-type ( $p<.0072$ ). Planned comparisons revealed that children treat "think-matrix" (C) differently from "know-matrix" (D) ( $p<.017$ ) and "know-matrix" (D) differently from "know-embedded" (E) ( $p<.0088$ ).

Our data suggest that, as a group, three-year-olds do distinguish these two verbs. All three-year-olds seem to have a mature understanding of think under negation. Furthermore, some three-year-olds (~40%) recognize the factivity of know and the non-factivity of think. Some children, however, may start out with a non-factive representation of know, raising the question of how they come to acquire an adult-like representation.

### **Abstract 3**

## **'Want' is easier than 'Think' for preschoolers**

*Harrigan, Kate, University of Maryland*

Previous research suggests that children understand the verb want before think [1,2]. There are differences in the way these verbs have traditionally been tested. Tasks with think involve processing several kinds of conflicts not present in the want case: (a) a conflict with reality and (b) a conflict with the child's own mental state. Even when controlling for differences in the way these verbs have been tested, children are still able to interpret want earlier than think.

Experiment 1 tested 38 children aged 3;0-4;0, and looked at whether a conflict with reality made think harder than want in previous tasks. We tested children's comprehension of want in two conditions, CONFLICT and NO CONFLICT. They heard sentences containing want, and judged whether or not the sentence correctly described a story. There was no difference between conditions ( $p=0.39$ ).

Experiment 2 tested 40 children aged 3;0-4;0, and tested whether a conflict with the child's personal desires made think harder than want. In this study, children played a game with a puppet where they flipped cards, and each card has a color paired with an outcome, which is either desirable to the puppet or the child. In this within-subjects design, we asked children about the puppet's desires, manipulating whether or not it conflicts with the child's. The child was asked to evaluate the truth of sentences about the desires of the puppet. We found that even when the puppet's desires were conflicting with the child's, three-year-olds responded correctly about the puppet's desire, saying "yes" when the puppet got to stamp (74%) and but not when the child did (13%,  $p<.0001$ ).

This set of studies shows that even when we carefully control for differences between the way think and want have been tested, children are able to interpret want sooner than think.

### **Abstract 4**

## **Syntactic Distributions Distinguish Attitude Verb Meanings: Experimental and Modeling Evidence**

*White, Aaron, University of Maryland*



In this paper, we are concerned with how much information about propositional attitude verb semantics can be gleaned from the syntax. We show that syntactic distribution carries significant information about attitude meanings, in both the adult competence and corpus distributions.

Because cognitive states, like thoughts and desires, do not have sensory concomitants, it is unclear how cross-situational word-learning accounts that are posited for words like rock or run could work for attitude verbs like think and want. The syntactic bootstrapping literature posits that children use a verb's syntactic distribution to discover its meaning (Landau and Gleitman, 1985; Gleitman 1990). Fisher et al. (1991) and Lederer et al. (1995) quantify the coarse semantic information carried by syntactic distribution, but no studies to date have similarly investigated the fine-grained distinctions among attitude verb types. We fill this gap here.

Following Fisher et al. (1991), we collected judgments of semantic similarity between 30 attitude verbs using a triad methodology. We also collected acceptability judgments between those 30 verbs and 34 different syntactic frames that occurred with those verbs. We found a significant correlation ( $r=.301$ ;  $p<.01$ ) between the semantic similarity and acceptability judgments, suggesting that the adult competence has significant semantic information carried in the syntax.

To investigate how much semantic information is available in corpus distributions, we fit a bayesian model known as Latent Dirichlet Allocation to corpus word-construction cooccurrence counts (im Walde, 1998). We found a significant correlation between the model's similarities and the semantic similarity judgments ( $r=.341$ ;  $p<.01$ ). This suggests that corpus syntactic distributions carry a significant amount of information about attitude semantics.

We conclude that syntactic distribution is informationally rich enough to support quite fine-grained inferences about attitude verb semantics. Future work will explore learning mechanisms that make use of this information while matching developmental trajectories.

**Abstract 5 (if applicable)**

*First language acquisition*

*Phonetics and phonology*

## **New insights on perceptual reorganization in early childhood**

*Kager, René, Utrecht University*

### **Symposium abstract:**

*Perceptual reorganization (PR) refers to the change from universal to language-specific perception of speech sounds, which occurs in infants' discrimination performance predominantly in the second half of the first year (Werker & Tees, 1984). The onset of language-specific perception has been shown to differ for different contrasts (e.g., Narayan et al., 2010). This symposium provides new insights on processes underlying PR, factors influencing its development, and its role in the formation of phonemic categories.*

*Specifically, talk 1 demonstrates that distributional vowel learning, which is viewed as one of the mechanisms underlying PR (Maye et al., 2002), occurs already in 2- to 3-month-old infants. Talks 2 and 3, which focus on 7- to 15-month-olds' perception of stop contrasts and on 5- to 15-month-olds' perception of vowel contrasts respectively, show that phonemic categories at these ages are not as solid as assumed by earlier research on PR. Moreover, these talks reveal the influence of acoustic salience of contrasts on the development of PR. Finally, talk 4 illustrates how information from a different modality, namely visual information, may influence learning during PR in 8-month-old infants.*

*The combined talks clarify the role of PR in the formation of native phonemic categories, for both consonants and vowels. They show that (1) processes leading to PR begin shortly after birth, and extend well into the second year of life; (2) PR is influenced by several factors such as the acoustic salience of the contrasts, and visual information; and PR is not the endpoint of phonemic category formation.*

## **Abstract 1**

### **Fast phonetic learning occurs already in 2- to 3-month-olds**

*Wanrooij, Karin, University of Amsterdam*

*Boersma, Paul, University of Amsterdam*

*van Zuijlen, Titia, University of Amsterdam*

'Distributional learning' of speech sounds is learning by listening to the frequency distributions of the speech sounds in the environment. It is considered to be an important mechanism underlying perceptual reorganization (PR) in the first year of life. In the lab, where exposure to speech sound distributions typically lasts only a few minutes, distributional learning has been reported for infants of 4 months and older (e.g., Maye et al., 2008). The present study examined whether such fast phonetic learning can be demonstrated already before this age.

2-to-3-month-old Dutch infants were presented with either a unimodal or a bimodal vowel distribution based on the English / $\epsilon$ /~/ $\text{æ}$ / contrast (as in bet vs. bat). Because for such young infants the previously employed behavioral methods could not be used to assess discrimination after exposure, we measured mismatch responses (MMRs), brain responses that can be computed from event-related potentials (ERPs). These ERPs were recorded in an oddball test (Näätänen et al., 2007), where one half of the infants in each group heard a representative [ $\epsilon$ ] as the 'standard' and a representative [ $\text{æ}$ ] as the 'deviant', and the other half heard the opposite pattern.

The results disclosed a larger MMR, which implies better discrimination of the test vowels [ $\epsilon$ ] and [ $\text{æ}$ ], for bimodally trained infants than for unimodally trained infants, thus extending an effect of distributional learning found in previous research to a younger age group and a new method. Moreover, the results revealed a robust interaction between the distribution (unimodal vs. bimodal) and the identity of the standard stimulus ([ $\epsilon$ ] vs. [ $\text{æ}$ ]), which provides evidence for an interplay between distributional learning and a previously reported asymmetry in vowel perception (Polka & Bohn, 1996). It can be concluded that PR relevant for the acquisition of vowel categories occurs already in the very first months of life.

## **Abstract 2**

### **Perceptual reorganization and stop contrast discrimination in the first and second year of life**

*Pohl, Muna, University of Konstanz*

*Grijzenhout, Janet, University of Konstanz*

Infants' sound discrimination abilities are assumed to develop along different paths (e.g., Narayan et al., 2010) and to be completed with perceptual reorganization (PR) at the end of the first year of life (e.g., Stager & Werker, 1997). The present talk focuses on the acquisition of stop contrasts by infants with Standard German (StG) and Swiss German (SwG) language backgrounds, respectively, and examines their perceptual development before, during and after PR. It has been shown that 14-month-olds sometimes have difficulties with phoneme distinction in lexical tasks (e.g., Stager & Werker, 1997). The ability to distinguish the same contrasts in simple discrimination tasks is not in doubt. Yet there are but few studies which examine pure discrimination (without word learning) in the second year of life. In addition to contributing to filling this gap, this talk provides more insights into the acquisition of a hardly researched consonantal length contrast.

Using a visual habituation paradigm, 7-, 11- and 15-month-olds were tested on their ability to discriminate a native stop contrast. For StG children, the contrast consisted of stops differing in VOT. SwG children were presented a native closure duration contrast.

Results suggest that the acquisition of the two types of contrasts follows different developmental paths. StG infants are sensitive to the VOT-contrast at 7 and 11 months of age and thus display a pattern of 'maintenance'. The SwG closure duration contrast is acquired in terms of a 'facilitation' pattern, with only 11- but not 7-month-olds responding to the distinction. Moreover, 15-month-olds of both language backgrounds fail to discriminate the native contrasts. The latter finding demonstrates that speech sound discrimination development is not completed by age 1;0. In line with exemplar-theoretic models of category emergence (Pierrehumbert, 2003), it is argued that input distribution may affect category formation even after the period of PR.

## **Abstract 3**

# **Perceptual reorganization and vowel contrast discrimination in the first and second year of life**

*Liu, Liqun, Utrecht University*

*Kager, René, Utrecht University*

Newborn infants display initial sensitivities to a wide range of native and non-native contrasts. Later they experience a perceptual reorganization (PR) period in the second half of the first year, in which they tune in to the native vowel inventory at 6-8 months (Kuhl et al., 1992). However, not all contrasts abide by PR developmental trajectory. Some native contrasts cannot be discriminated until a relatively later stage (Tagalog /na/-/ŋa/, Narayan et al., 2010; Japanese /pata/-/patta/, Sato et al., 2012). Up to date, these exceptions are only reported in the consonant domain. The current talk reports a unique developmental trajectory for infants' perception of a native vowel contrast.

200 normally developing Dutch infants from 5 to 15 months were tested on their perception of the Dutch /i-I/ vowel contrast, in which the major acoustic difference resides in spectrum but not duration, via a visual habituation procedure. Results show that infants failed to discriminate the contrast at 5-6 and 8-9 months, and succeeded at 11-12 and 14-15 months ( $p < .001$ ).

The initial failure of native contrast discrimination reveals the relative acoustic difficulty of the Dutch /i-I/ vowel contrast, similar to previous findings for difficult native consonant contrasts. The success after 9 months extends the offset of vowel PR to 11 months. Thus, we argue that (1) acoustic salience influences infants' perceptual patterns during PR; and (2) PR should be viewed as part of the larger process of category formation during which continuous perceptual change occurs as according to input properties. Specifically, we display that the target contrast is developed under consistent exposure. Finally, the input-driven perceptual change is not restricted to the consonant domain despite the assumption that consonants are more categorically perceived than vowels.

## **Abstract 4**

# **The influence of multimodal information during perceptual reorganization**

*ter Schure, Sophie, University of Amsterdam*

From birth, infants learn which features of their surroundings are important and consequently develop or inhibit sensitivities to particular features. This perceptual reorganization (PR) happens not only for auditory speech perception, but also for articulation perception: contrary to Spanish 11-month-olds, English 11-month-olds no longer preferentially look at a matching visible Spanish vowel, while they do prefer the matching vowel at 6 months (Pons et al., PNAS, 2009).

One of the mechanisms that has been proposed to account for PR is distributional learning (Maye et al., Cognition, 2002): to discover which contrasts are important for their language, infants attend to the frequency of acoustic cues in their input. If a particular acoustic region contains two frequency peaks, there must be two categories for which the contrast should be retained. But what happens when infants are presented with more than just acoustic cues for this process?

In this study, the influence of multimodal information on infants' perception of a non-native sound contrast was examined by exposing 67 8-month-olds to audiovisual vowels. Video recordings of a woman saying /E/ and /ae/ were manipulated to create a continuum of this contrast. Infants were shown a one-peaked (midpoints most frequent) or a two-peaked (endpoints most frequent) version of this continuum. After 2.5 minutes, all infants were habituated to one of the training videos. Next, a video from the other side of the continuum was played.

Infants in the two-peaked condition, contrary to infants in the one-peaked group, looked longer at this switch video than at a repetition of the habituation video. Also, the two-peaked group reached the habituation criterion faster than the one-peaked group. This finding shows that infants can use the distribution of multimodal information to build non-native vowel categories and underscores the notion that perceptual reorganization happens in a multimodal context.

**Abstract 5 (if applicable)**



*Language development in atypical populations*

*Language, general*

## **Using large corpora to improve clinical practice**

*MacWhinney, Brian, Carnegie Mellon University*

### **Symposium abstract:**

*This symposium will illustrate how large sets of child language corpora (e.g., CHILDES archive) and open access language analysis software (e.g., CLAN) can be used to improve clinical practice in child language disorders. The first speaker will show in detail how typical developmental expectations across a series of 20 measures can be constructed and stored in the CHILDES database and then compared automatically with parallel results for an individual child. The second speaker will describe the current situation regarding the dearth of available norms for syntactic and morphological development other than MLU, especially for younger children. She will explain how existing corpora can be used to derive norms for emerging syntactic constructions in English, as illustrated by norms based on a new large sample of typically-developing children followed from 7 months to 4 years. The third speaker will explore the challenges posed in providing clinical assessments for children from bilingual populations. She will show how we can now construct automatic cross-linguistic comparisons for syntax and morphology, using examples from a large ongoing study of Spanish-English bilinguals. The final speaker will address the use of CLAN in describing and quantifying child language development in children with cochlear implants.*

### **Abstract 1**

## **Using CHILDES as a reference database**

*MacWhinney, Brian, Carnegie Mellon University*

In recent years, the CHILDES database has grown in size, organization, and quality. At the same time, analysis programs such as MOR, GRASP, DSS, and FREQ have become more



comprehensive and automatic. As a result, it has become possible to construct analysis packages that automatically compare a transcript or group of transcripts from a particular child against norms or standards in a larger reference database. For example, one may want to determine where a Spanish-English bilingual 3-year-old stands in comparison with other age-matched bilinguals and in comparison with age-matched monolinguals, both in Spanish and in English. This comparison can now be computed quickly and automatically using the KIDEVAL analysis package. KIDEVAL computes 20 key comparison indices, including basic sentence complexity indices (MLU, MaxWd), overall grammatical measures (DSS, IPSyn), morpheme inventory growth (Brown, 1973), error types, and disfluency patterns. To conduct these analyses, sessions must first be transcribed in CHAT and a morphological analysis tier must be created by running of the MOR and POST programs. The computation of indices for the comparison groups is done on the central database by running the relevant subprograms across subsections of the database and the comparison figures are kept in tables which can then be accessed directly over the web when analyzing a given new transcript set. These facilities can facilitate the tracking of profiles of normal development and the diagnosis and characterization of developmental disabilities. They can be used to conduct fine-grained comparisons involving sex, social class, rural-urban contrasts, ethnicity, and dialect. At the same time, they can also be used to construct and evaluate large-scale group norms that combine across these more particular variables. As we develop new analyses, this method of comparing a given child against a reference database can be continually extended.

## **Abstract 2**

### **Corpus-based assessment of morphosyntactic growth in English**

*Bernstein-Ratner, Nan, University of Maryland*

For clinical assessment, there are few child language sample norms beyond MLU and TTR. Although extremely useful, these norms are limited in ability to assess more specific aspects of developing morphosyntax and complexity of expressive language formulation. While assessments such as Developmental Sentence Score (DSS; Lee, 1974), IPSYN (Scarborough, 1990) would be more informative in guiding clinical assessment and remediation, such measures are tedious to implement in everyday practice and have limited normative data to use in clinical practice. We also lack very early normative data for preschool language assessment purposes prior to age 3, other than vocabulary inventories and MLU.

Using the newly-developed KidEval analysis package, we have documented systematic growth in specific grammatical morphemes and DSS using our current longitudinal database of ~125 children followed from >1 year to 3 years of age, as well as selected data sets in the CHILDES database. We have also examined the relationships among three standardized test scores and language sampling profiles, to examine whether standardized tests are reasonable proxies for language sample analysis or not.

In initial findings for 116 children at 24 months, expressive vocabulary measures (EOWVT and the MCDI) significantly predict the presence of most of the 14 morphemes followed by

Brown (1973) in the children's language during play, but with correlations ranging from  $\sim .25$  to  $.43$ ; inter-correlations among the vocabulary measures were much higher ( $\sim .53 - .59$ ), suggesting they tap into a more homogeneous construct. We are now examining additional relationships with DSS over time to age 3, in a sample that is larger than the original norming population for DSS. We will also discuss opportunities and challenges in creating norms for clinical use using the data from CHILDES contributions across the age range in English and in other languages.

### **Abstract 3**

## **Corpus-based assessment in English-Spanish bilinguals**

*Brundage, Shelley, University of Maryland*

Bilingual children acquire language in different ways and at different rates, making it challenging to characterize typical development of cognitive-linguistic skills in these children. Researchers have addressed methods for establishing norms and describing bilingual development in areas such as reading comprehension (Manis, Lindsey, & Bailey, 2004; Paez, Tabors, Patton & Lopez, 2007), vocabulary (Core, Hoff, Rumiche, & Senor 2013), neuropsychological testing (Rosselli, Ardila, Navarrete, & Matute, 2010; Gasquoin, Gonzalez, & Dayanira 2012). Others have focused on the quality of the input and how it relates to language development (Blom, 2010; Gamez & Levine, 2013). Relatively less work has been published on syntactic development across languages (see Bedore 2004 for a review).

There is a need to characterize the expected development in syntactic and morphologic skills in bilingual children. We will present the results of analyses using Spanish, English, and Spanish-English corpora from CHILDES. We will present morphosyntactic analyses using KIDEVAL on two groups of preschool-aged children: Spanish-speaking monolinguals and Spanish-English bilinguals. We will compare these corpora-derived norms to a new dataset of bilingual Spanish-English children from South Florida ( $n = 40$ ). In addition, for this group of 40 children we will present correlations between their morphosyntactic development, EOWPVT and MCDI at 30 months, as well as a variety of parental input measures (syntax, vocabulary diversity, speaking rate, MLT). Preliminary outcomes suggest that the diversity of vocabulary in the input is correlated with child language outcomes at 30 months. Based on these results, we will consider ways of determining the appropriate comparison group(s) for language norms in bilingual children.

#### **Abstract 4**

### **Is there any overlap in early grammar in children with Cochlear Implants and Specific Language Impairment?**

*LeNormand, Marie-Thérèse, INSERM*

There is an ongoing debate about whether the grammatical deficit observed in children with cochlear implants (CIs) and with specific language impairment (SLI) are due to a domain-specific deficits (e.g., limited to verbal morphology) or domain-general deficits (e.g., auditory perceptual processing). This corpus-based study asks (1) to what extent corpus-based cross-pathology studies may be used to compare developmentally differential profiles of syntactic categories in CI and SLI children, and (2) how we can compare profiles in early grammatical development of CI and SLI children with typically-developing (TD) children ages 2 to 4.

We used the POST program from CHILDES, an automatic part-of-speech tagger which annotates a corpus into 36 syntactic categories. The data were drawn from three large French databases elicited in standardized spontaneous play situations. It included 241 samples from TD children aged 24 to 48 months, 73 samples from CI children who received their implants between 22 and 78 months and 121 samples from SLI aged from 36 to 60 months. Participants were selected on MLU (range 1 to 4). Multiple hierarchical regression analyses were used to determine the best predictors of syntactic categories from lexical or grammatical features.

As predicted, distinct profiles were found among the three groups. Single words such as *ça* (there adv|place) , *là* (there adv|place) *encore* (more adv|) were overused in CI and SLI in comparison to TD, indicating a compensatory strategy. CI and SLI frequently omitted unstressed grammatical morphemes, such as determiners, auxiliaries verbs, copula, pronominal pronouns, in comparison to TD, supporting the view that early grammar production is guided by a surface grammatical knowledge of structural regularities (Ninio, 2011).

These findings support the clinical utility of the POST program and the value of cross-pathology corpus-based studies. The theoretical and empirical significance of corpus analysis for clinicians will be discussed.

#### **Abstract 5 (if applicable)**

*Cultural and social factors in child language development*

*Semantics and lexicon*

## **SES differences in the language learning environments of infants raised in India, Mozambique, Turkey, the Netherlands and the UK.**

*Matthews, Danielle, University of Sheffield*

### **Symposium abstract:**

*Substantial research has focused on socio-economic status as a factor that can explain large individual differences in language learning. However, most of this research has been conducted in Western cultures, where a large number of variables relating to education, values, family networks and living practices are inter-correlated. To disentangle these variables it can be helpful to consider a broader range of cultures. Keller (2012) has proposed three prototypical learning environments: subsistence-based farming families, Western urban families and non-Western urban, middle-class, families. On her account, socialisation strategies in subsistence-based farming families tend to focus on the development of communal action autonomy. Children in these families are expected to participate in the subsistence-based activities from an early age onward and so development of motoric skills and social activities are considered more important than the development of cognitive skills. In contrast, children from Western urban families are expected to perform well at school, so the development of cognitive skills are deemed more important. This is reflected in the style of language socialisation, which is more child-centered and contains plenty object stimulation. Finally, the learning environment of non-Western urban families is characterised as a hybrid between the two other environments. While cognitive development is deemed important, so are the development of skills that foster communal service from early on. The presentations in this symposium all attempt to explore the value of this theoretical framework by considering the language learning environments of high and low SES infants in five countries.*

*Hart, B., & Risley, T.R. (1995). Meaningful differences in the everyday experience of young American children: Paul H Brookes Publishing.*

*Keller, H. (2012). Autonomy and relatedness revisited: Cultural manifestations of universal human needs. Child Development Perspectives, 6(1), 12-18*

## **Abstract 1**

### **Infants' experiences and behaviors at nine months and their language development one year later in rural and urban Gujarat, India**

*Abels, Monika, Max Planck Institute for Ornithology*

Pointing, especially declarative pointing<sup>1</sup> and other behaviors establishing shared or joint attention<sup>2</sup> have been shown to be precursors of children's language development. While it has been assumed that these constitute universal developmental trajectories to language acquisition, surprisingly little variation can be found in the samples on which this has been studied. From research rooted in fields such as anthropology or cross-cultural developmental psychology we know that infants' experiences with their social environment differ vastly with long-term consequences for their development<sup>3</sup>. From linguistic anthropology we know that language teaching and language acquisition differs in different cultural communities.

The aim of this paper is to bring these strands together by assessing infants' behaviors at nine months in two communities with differing socio-cultural profiles and their language development one year later. Samples of 20 families each from a city and villages in Gujarat were observed at home for several hours at 9 months and a video recording was made of the main caregiver showing the child something that was not within arm's length. At 21 months, an adaptation of the Mac Arthur CDI was administered, along with an assessment of the structural complexity of the children's language.

While there were some differences in communicative behaviors both in the unstandardized observations (urban caregivers show certain gesture types more frequently and tend to be more active in creating shared attention with the infants than rural caregivers) and the standardized video-recorded procedure (more rural than urban infants gesture in the video recordings, urban mothers follow children's bodily orientations more while rural mothers tend to redirect the infants) between rural and urban families at nine months, there were no systematic differences in the children's language development at 21 months. This suggests that there are different developmental pathways to language development for rural and urban Gujarati children.

References:

1Colonnesi, C., Stams, G. J. J. M., Koster, I., & Nool, M. J. (2010). The relation between pointing and language development: A meta-analysis. *Developmental Review*, 1–15. doi:10.1016/j.dr.2010.10.001

2Tomasello, M. (1988). The role of joint attentional processes in early language development. *Language Sciences*, 10(1), 69–88.

3Greenfield, P. M., Keller, H., Fuligni, A., & Maynard, A. (2003). Cultural Pathways Through Universal Development. *Annual Review of Psychology*, 54(1), 461–490. doi:10.1146/annurev.psych.54.101601.145221

## **Abstract 2**

### **Speech-gesture integration in caregivers' interactions with first-language learners in Turkey: Naturalistic and lab-based observations**

*Şen, Beyza Ateş, Koç University*

*Altınok, Nazlı, Koç University*

*Savaş, Özge, Koç University*

*Liszkowski, Ulf, Hamburg University*

*Küntay, Aylin C., Koç University & Utrecht University*

Although Turkish learners have interested language development researchers, most of these data came from children growing up in relatively affluent homes. Recent studies established SES gradients in Turkish-learning children's vocabulary (and morphosyntactic) competence by age 3, using large representative samples.

To examine a potential source of socioeconomic differences in the language learning environments of infants, we investigate integration of gesture into child-directed speech about referents. In Study 1, lab-based interactions were obtained in a room decorated with toys from 35 monolingual infants and their mothers (20 with high and 15 with low education), longitudinally when the infants were at 8, 10, and 12. In Study 2, naturalistic data were recorded at 12, 17, and 21 months of age from 4 monolingual children's homes, with 2 low-educated and 2 high-educated caregivers.

Study 1 data showed that how the caregivers integrated index-finger pointing into their speech varied depending on their education level and their infants' age, although frequency of index-pointing did not change across time and different socio-economic groups. How

much mothers used nouns in combination with index-finger points did not change with educational attainment, but low-educated caregivers produced fewer nouns than high-educated caregivers before 12 months. As the infants developed from 8 to 12 months, mothers used index-finger points with demonstrative pronouns and nouns progressively more, and with attention-getters progressively less. In addition, low-educated mothers used attention getters with index-finger points more compared to high-educated mothers, when their infants were at 8 and 10 months. Study 2 with naturalistic data confirmed these patterns. Caregivers of higher education effectively integrate gesture into referential interactions that display vocabulary, supporting language learning. Experimental studies can demonstrate whether certain types of gesture integration into infant-directed speech lead to robust vocabulary learning.

### **Abstract 3**

## **SES differences in British language learning environments: Evidence from video and LENA recordings.**

*McGillion, Michelle, University of Sheffield*

*Pine, Julian, University of Liverpool*

*Herbert, Jane, University of Sheffield*

*Matthews, Danielle, University of Sheffield*

Several large studies have found that differences in socio-economic status (SES) are associated with differences in Infant Direct Speech (IDS) and, subsequently, in early language learning (Hart & Risley, 1995). However, there is currently a dearth of information regarding why this pattern holds (Pan, Rowe, Singer, & Snow, 2005), although suggested factors include parental goals (Rowe & Casillas, 2011) and caregiver wellbeing (Pan et al., 2005) as well as variables associated with the infant (social cognition and temperament). Furthermore, what information there is tends to come from studies in the US (which has a different social structure even to Western European countries), raising questions of cultural specificity. For this study, we are recording 170 first-born, monolingual, typically-developing British 11-month-olds, half of whom come from low SES families (70 families tested to date). Infants and their primary caregiver were recorded on video for 30 minute (15 minutes unstructured, 15 minutes structured play) and with LENA audio recording devices for 32 hours. Quantity and quality of IDS was assessed using ELAN and LENA software to yield measures of: number of utterances, lexical diversity, MLU, speech rate, temporal responsiveness to infant communication and semantic contingency on

infant interest. Infant measures include ability to follow gaze, frequency of vocalising and pointing, parent-reported temperament and gender. Caregiver factors, including their goals, wellbeing, parenting self-efficacy and social support were measured along with a number of SES indicators (including education, income, and the UK neighbourhood deprivation index). We will assess: 1) How differences in the quantity and quality of infant directed speech are explained by different measures of SES in a British sample; 2) Which caregiver and infant factors play an explanatory role in mediating the association between SES and IDS.

Hart, B., & Risley, T. R. (1995). *Meaningful Differences in the Everyday Experiences of Young Children*. Baltimore: Paul H. Brookes.

Pan, B. A., Rowe, M. L., Singer, J. D., & Snow, C. E. (2005). Maternal Correlates of Growth in Toddler Vocabulary Production in Low-Income Families. *Child Development*, 76(4), 763-782. doi: 10.1111/1467-8624.00498-il

Rowe, M. L., & Casillas, A. (2011). Parental goals and talk with toddlers. *Infant and Child Development*, 20(5), 475-494. doi: 10.1002/icd.709

#### **Abstract 4**

### **Cross-cultural differences in three prototypical learning environments**

*Vogt, Paul, University of Tilburg*

*Mastin, J. Douglas, University of Tilburg*

It is well established that the amount of speech and gestures addressed to children is proportional to their families' socio-economic status, and that this predicts later vocabulary size (Hart & Risley, 1995; Rowe & Goldin-Meadow, 2009). Keller (2012) describes three prototypical learning environments (urban industrial, urban non-industrial and rural non-industrial) and argues that one of the features that characterise them is SES. We investigate whether the amounts of infant-directed speech and gestures fit this characterisation.

We carried out naturalistic observations of N=40 infants aged 1;1 from the Netherlands (high SES, n=12), urban Mozambique (low SES, n=14) and rural Mozambique (very low SES, n=14). From these recordings of 30 minutes during standard daily activities, we measured the number of infant-directed utterances, gestures and co-speech gestures.

The Dutch community shows, as expected, the highest amount of infant-directed utterances, followed by the urban and then the rural Mozambican communities. However, the number of



infant-directed gestures occur significantly more frequent in urban Mozambique, followed by the Netherlands and rural Mozambique where we observed equal amounts of infant-directed gestures. The percentage of gestures that are co-speech gestures does reflect the distribution of the infant-directed utterances and is highest in the Netherlands, followed by urban and then rural Mozambique.

To conclude, the amounts of IDS observed in the three communities are in line with those predicted by Hart and Risley (1995) based on SES differences. However, we do not observe Rowe and Goldin-Meadow's (2009) results reflected in the absolute amounts of gestures addressed to infants. Yet, the percentages of gestures that are co-speech gestures do reveal the expected relation between these cultures and SES. The results suggest that high SES caregivers appear to produce co-speech gestures more informatively than lower SES, thus constructing not only a quantitatively but also a qualitative different learning environment.

Hart, B., & Risley, T.R. (1995). *Meaningful differences in the everyday experience of young American children*: Paul H Brookes Publishing.

Keller, H. (2012). *Autonomy and relatedness revisited: Cultural manifestations of universal human needs*. *Child Development Perspectives*, 6(1), 12-18

Rowe, M. L., & Goldin-Meadow, S. (2009b). *Early gesture selectively predicts later language learning*. *Developmental Science*, 12(1), 182-187.

**Abstract 5 (if applicable)**

***Cultural and social factors in child language development***

***Pragmatics***

**Chinese Language Narration: Culture, Cognition, and Emotion**

*McCabe, Allyssa, University of Massachusetts Lowell*

**Symposium abstract:**

*Mandarin is spoken by far more people than any other language, yet narration in this language has received notably less attention than narration in Western languages. This collective effort is a critical addition to our understanding of cross-cultural similarities and differences in how people make sense of experiences through narrative. This symposium will present original research on narrative development in Mandarin, especially as it contrasts to what is known regarding such development in English. The first study compares Taiwanese Mandarin-speaking children's evaluation in personal narratives with that of American English-speaking counterparts. The most striking finding is that while American 4-9-year old children evaluate 50% of their comments at each age, Taiwanese children do so only at most 25% and that at the oldest age. Also, Chinese-speaking children showed significant development both in terms of various measures of the length of their narratives and in terms of the average number and proportion of their comments that are evaluative. In the latter respect, they differ from American children, who did not show significant increases in proportions of evaluation with age. The second study also found development in Mandarin narration between 5 and 9 years in terms of global, though not local, connections in narration of a wordless picture book; only adults provide adequate local connections. The third study looked at vocabulary and syntax in narrative and found that older school-age children in Hong Kong used more target lexical items in connectives, perceptual verbs, psychological and mental verbs, reflecting social cognitive growth in school-age children. The fourth study examined the development of personal narration from four to six of Mandarin-speaking children with Specific Language Impairment (SLI), in comparison to peers with Typical Language. While many aspects developed in children with SLI, the ability to evaluate seemed particularly compromised.*

## **Abstract 1**

### **Evaluation in Mandarin Chinese children's personal narratives**

*Chang, Chien-ju, National Taiwan Normal University*

*McCabe, Allyssa, University of Massachusetts Lowell*

Evaluation is a critical component of personal narrative, the component that conveys to listeners how narrators feel about experiences that happened to them. This paper presents a study of how Taiwanese children develop the ability to evaluate their narratives and a comparison of Taiwanese to English-speaking children in their use of evaluative devices. Prior research (Minami, 1994) suggests that English-speaking mothers provide more evaluation comments in telling past experiences with their children compared to Japanese-speaking mothers. Differences in use of evaluative devices were hypothesized to be evident across Chinese- and English-speaking children in their personal narratives.

Mandarin Chinese-speaking children from Taiwan (N = 171) and 96 English-speaking children from the United States participated in this study. Chinese-speaking children were aged 3 to 9 years and comprised seven groups (at each of those ages). English-speaking, American children were aged 4 to 9 years and comprised six groups. Following a conversational map procedure, the experimenter prompted a number of personal narratives from each child. Evaluation was coded in Chinese using an adaptation of a system developed to code evaluation in English-speaking American children (based on Labov, 1972), which was used with the American children. The percentage of each type of evaluative device per narrative comment was determined and Taiwanese were compared in this way to American children. Taiwanese children included many fewer evaluation comments (13-25% of the children's clauses were partially or fully evaluative) in telling their personally experienced stories compared to American children (50% at each age). Results are interpreted as reflecting deep and pervasive cultural differences: Chinese children are socialized to have an interdependent self (with less emphasis on what an individual felt in the past), while American children are socialized to have an independent self (with early and frequent emphasis on what an individual felt in the past).

Labov, W. (1972). *Language of the Inner City*. Philadelphia: University of Pennsylvania Press.

## **Abstract 2**

## **Global and local connections in Mandarin-speaking children's narratives: A developmental study based on the frog story**

*Sah, Wen-jui, National Chengchi University*

When relating story events, a narrator needs to attend to both local and global aspects of the story. The local aspect involves horizontal alignment of linearly-ordered narrative events, while the global aspect emphasizes interconnecting and integrating events along the vertical dimension. Previous research has relied on a variety of schemes to explore how narrators relate information in a narrative and found age-related differences (e.g., Berman & Slobin, 1994; Trabasso & Rodkin, 1994). However, we still lack knowledge about Mandarin-speaking children's development in this regard. Even less is known about whether they use goal-plan knowledge to construct narratives. Given the significant role of narratives in children's development, this study investigated Mandarin-speaking children's development in relating both locally- and globally-connected narrative events.

We examined narratives from 30 Mandarin-speaking five-year-olds, 30 nine-year-olds and 30 adults. The narrative data were elicited using Frog, where are you? We adopted the plot-structure and goal-plan schemes to analyze participants' ability to maintain global connections, and used a complex event and a sequence of events in the story to assess local connections. The results displayed children's significant progress in establishing global connections and in employing goal-plan knowledge. Regarding local connections, children exhibited increasing ability to encode and to integrate essential event components. Findings suggest that five-year-olds had insufficient ability to establish both global and local connections. Nine-year-olds were more advanced in encoding global connections; however, they were inadequate in integrating event components and in chaining a sequence of events at the local level. Adults could properly relate narrative events at both levels and were more likely to encode characters' internal responses to enhance thematic coherence. Results were considered in relation to capacities for working memory, theory of mind and integration. Narrators' differences in communicative competence and cognitive preferences were also discussed.

### Reference

Berman, R., & Slobin, D. (1994). *Relating events in narrative: A crosslinguistic developmental study*. Hillsdale, NJ: Lawrence Erlbaum.

Trabasso, T., Stein, N., Rodkin, P., Munger, M., & Baughn, C. (1992). Knowledge of goals and plans in the on-line narration of events. *Cognitive Development*, 7, 133-170.

### **Abstract 3**

# **Lexical choice and narrative development in Cantonese-speaking children**

*Hintat, Cheung, Hong Kong Institute of Education*

The development of narrative in children draws support from both lexical and grammatical resources. In this study, developmental changes in lexical choice and their effects on event representations were examined. A total of 250 narratives, produced by Cantonese-speaking children between 5;0 and 11;0, were extracted from the archive of a large-scale normative study in Hong Kong (T'sou, et al., 2006). These samples were elicited by a story-retelling task in which children were orally presented with a model story of a rescue attempt, aided by a 24-frame picture book. Lexical choice on specific connectives as well as verbal predicates (including action verbs, perceptual verbs, psych verbs, and mental verbs) were analyzed. Preliminary results showed that a general growth of using more target lexical items in connectives, perceptual verbs, psych verbs and mental verbs, reflecting a social cognitive growth in school-age children in taking the perspective of others and displaying their understanding of inter-subjectivity. However, the choice of action verbs made by the younger children groups was quite intriguing in that they used a wider range of action verbs than that of older children. In many situations older children unanimously used the same verb as produced in the model while younger children provided many different semantic approximations. These lexical choices were found to have further effects on the syntactic structure of the carrier sentences, such as the inclusion of an adjunct argument that was not mentioned in the model story. Together these findings illustrate how analyses of children's lexical choice reveal their social cognitive capacity and the interactions between lexical and grammatical resources in the production of a narrative.

## Reference

T'sou, B., Lee, T., Tung, P., Chan, A., Man, Y., To, C. (2006). Hong Kong Cantonese Oral Language Assessment Scale. Hong Kong: City University of Hong Kong Press.

## **Abstract 4**

**A study of narrative development of young Chinese children with specific language impairment aged four to six years**

# **A study of narrative development of young Chinese children with specific language impairment aged four to six years**

*Zhang, Fangfang, Nanjing Normal University*

Studies on narration by children with Specific Language Impairment (SLI) in European-American countries have a history of several decades. However, studies on children with SLI in China have just started and studies on the narration of Chinese children with SLI were previously nonexistent.

The present study investigated the narrative development of Chinese Children with SLI aged from four to six years in three dimensions--structure, evaluation and temporality. The data comprised personal narratives of a cross-sectional corpus with sixty children with typical development (TD) and a longitudinal corpus over twenty months with age-matched children with (n=3) and without SLI (n=3) starting at the age of four. The main findings were that the SLI group's narrative structure is lower than that of their peers with TD in length, components, and appropriate use of codas, though they show a rapid growth in narrative structure from the age of four to six. Second, children with SLI produce significantly fewer evaluations than their peers with TD. With age, evaluation in children with SLI develops very slowly. Third, compared to the group with TD, children with SLI show less diversity of vocabulary and types of expressions of temporality. But their temporal ability grows rapidly with age. Among three dimensions, evaluation presents the primary area of difficulty for children with SLI. Future intervention should be focused in this direction.

Narrative structure, evaluation and temporality bear significant positive correlation with each other. Regression analysis shows that the number of complete and explicit sentences and the total number of words remain the major factors that affect the quality of narrative structure in children with SLI. The number of different words contributes to the quality of evaluation. The number of complete and explicit sentences and maze words are key factors that affect the temporality of children with SLI.

## **Abstract 5 (if applicable)**

## **Discussion of Chinese Language Narration**

*Gleason, Jean Berko*

To follow

*Literacy and language*

*Language, general*

## **Narrative Interactions in the Preschool Years: Encouraging Caregivers to Support Children's Skills and Cultural Heritage**

*Melzi, Gigliana, New York University*

### **Symposium abstract:**

*Children across cultures acquire language and develop school readiness competencies through everyday conversations scaffolded by their parents and teachers. This symposium encompasses studies that focus on family and preschool language-based interventions designed to match the specific needs of various groups of children spanning four continents. The first paper offers a descriptive overview of the narrative scaffolding styles preferred by Costa Rican parents from diverse socio-economic backgrounds and discusses how these findings might inform intervention research with low-income families. The second paper describes interventions conducted in the U.S and New Zealand related to maternal narrative elaboration, and provides a synopsis of the current state of knowledge on intervention research in this area. The third paper highlights the benefits of training Australian mothers to adopt a scaffolding style that matches their preschool children's temperament. The final two papers present classroom-based intervention studies conducted in Germany and in the U.S. that train preschool teachers to adapt their classroom language interactions to build on the socialization goals and cultural traditions prevalent in the children's homes. Taken together, these papers will address the challenges inherent in intervention-based research, as well as the implications of developing culturally-sensitive and child-specific language-based interventions to support children's development in their everyday interactions.*

## **Abstract 1**

### **Conversational Styles of Talking about the Past among Spanish-Speaking, Costa Rican Mothers and their Preschoolers: The Role of Socio-Economic Status**

*Carmirol, Ana, Universidad de Costa Rica*

*Ríos, Marcela, Universidad de Costa Rica*

*Salazar, Krissia, Universidad de Costa Rica*

Individual differences have been identified in the discourse styles parents use while reminiscing with their children. Although the role of SES on maternal reminiscing has not been directly investigated for Costa Rican mothers, it appears that low-income mothers across cultures tend to adopt a less elaborative reminiscing style as compared to middle-class mothers (Leyva, Reese, Grolnick, & Price, 2008; Reese & Newcombe, 2007). The aim of the present study was to document the differences in the elaborative styles used by middle-class and low-income Spanish-speaking, Costa Rican mothers while reminiscing with their preschoolers. Sixty-four mothers and their 4-year-olds, evenly divided by gender and socio-economic background, participated. Mothers discussed four past events with their children; conversations were coded for maternal elaboration following Reese and Fivush's (1993) coding scheme. Principal components analyses were run on frequencies of maternal discourse codes. Results identified two components which accounted for 81% of the variance. An elaborative style component was characterized by long conversations, maternal use of elaborations (in the form of open-ended questions, yes-no questions and statements) and evaluations. A repetitive style component was characterized by maternal repetitions in the form of yes-no questions and statements. Mothers' scores on the two styles were entered into a 2 (SES) x 2 (child's gender) multivariate analysis of covariance (MANCOVA), with child age in months and children's general language ability as covariates. An overall effect of SES in the elaborative component was found,  $F(1, 58) = 13,47, p = .001$ . Middle-class mothers showed higher scores in the elaborative style component than low-income mothers. Results point to the role of SES on maternal styles of talking about the past. From a cross-cultural perspective, findings highlight the need to consider intra-cultural variability of reminiscing related to SES when designing language-based interventions.

## **Abstract 2**

### **Elaborative Conversations as an Emergent Literacy Intervention Context**



*Sparks, Alison, Amherst College*

*Reese, Elaine, University of Otago*

Extant research has examined family reminiscing about everyday past events and has documented the many benefits of these conversations for children's development across various domains of learning. This research has been used to create evidence-based elaborative conversation interventions designed to teach parents ways of talking that are believed to enhance children's emergent literacy – the early skills, knowledge, and attitudes that are essential developmental precursors to reading. Evidence from two language intervention studies – one undertaken with a linguistically and culturally diverse set of families in a U.S. urban center and another with middle-class families in New Zealand – will serve as the basis for reflecting upon the processes of creating and implementing interventions with families geared at enhancing preschool-aged children's developing language and literacy. Specifically, the discussion will focus on both the conversational context and the content of the intervention, examining how family reminiscing, a routine activity across cultures, might serve as a key context for these interventions. We will then reflect upon the challenges of training parents to take on a more elaborative style in conversations with their children and to maintain that style over time. We will conclude by presenting recommendations for future narrative interventions with parents and families.

### **Abstract 3**

## **Enhancing Emotion Knowledge in Preschoolers with Disruptive Behaviour: The Role of Mother-Child Emotion Talk**

*Maria Liwag, Australian National University*

*Richard O'Kearney, Australian National University*

*Karen Salmon, Victoria University of Wellington*

*Clare-Ann Fortune, Victoria University of Wellington*

Research has shown that children's socio-emotional abilities initially develop during mother-child emotional interactions and subsequent conversations about emotions. Work with typically-developing children has shown that an elaborative style of mother-child emotion talk enhances children's emotional understanding and empathy development (Laible & Panfile, 2009) and reduces disruptive behaviour

(Fivush & Sales, 2006). However, very few studies have been conducted with non-typical developing children, in particular those with disruptive behavioural problems (Oppositional Defiant Disorder) who are known to have significant deficits in emotional competencies. Very little is known about the relations between deficits in emotional competencies and mother-child emotion talk among ODD families. We present data on a study which contrasts the quality of mother-child emotion talk in ODD (n=70) and non-ODD preschoolers (n = 50) in terms of its emotional focus and structural aspects (i.e., use of descriptive language, causes, attributions, and interrogatives, and the mutuality or connectedness). Specifically, we expected two styles to emerge: For dyads with ODD children higher on the emotional, high arousal dimension of conduct problems, we expected fewer conversations about emotions, constrained and developmentally immature labelling of emotions, limited discussion of emotion causes, and external rather than mentalistic explanations. For mothers of children higher on the unemotional, low arousal dimension, we expect significant difficulties in establishing connected and responsive interactions. The paper also considers whether mothers might be able to promote emotional competencies and improve the behavioural outcomes of their disruptive child by adopting particular styles of emotion talk. We thus report on the outcomes of a training study involving parent management intervention that suggests that high emotional disruptive children benefit from emotional talk rich, elaborative and developmentally appropriate, whereas low emotional, disruptive children will benefit from emotion talk that promotes mutuality and connectedness.

#### **Abstract 4**

### **Elaborative and Socially Oriented Conversations in Preschools: A Culture Sensitive Intervention Study**

*Schröder, Lisa University Duisburg-Essen*

*Dintsioudi, Anna, University of Osnabrück*

*List, Marit, University of Osnabrück*

*Keller, Heidi, University of Osnabrück*

Family reminiscing is a social practice common in various cultures and positively related to many developmental areas, such as literacy and social-emotional development (e.g., Reese, 1995; Van Bergen & Salmon, 2010). Children of different cultures are used to different reminiscing styles (e.g., Melzi, 2000). In autonomous-oriented cultural contexts, for instance, children are used to past event conversations that are child-centered and focus on themselves, whereas in relational-oriented cultural contexts, children are used to

conversations that are socially-oriented and focus on other persons. In German kindergartens, everyday conversations are mostly child-centered and might not allow children from relational cultural backgrounds to participate equally in the ongoing conversations, which might lead to fewer opportunities to develop language skills. In the present study, we investigated the effects of a culturally sensitive preschool intervention designed to boost children's language development. We trained preschool teams to adopt an elaborative and socially oriented conversation style during daily conversations. Four preschool teams with 41 preschool-teachers from Northern Germany participated. All children who were 3 years of age at time point 1 were included in the study (N = 100; 26% of children learned German as their second language). Teachers were trained during two full-time training days that were two weeks apart. Additionally, they got individual feedback on their speech behaviors based on self-recorded conversations. The effect of the intervention was investigated in a pre-post design over one year. Results demonstrated a change in teachers' conversational style with respect to the trained elements. Children's language competencies also increased (relative to age-norms). Comparisons to a control group of children visiting kindergartens with a language-program oriented approach (in contrast to our everyday approach) are in progress and results will be presented and discussed.

#### **Abstract 5 (if applicable)**

### **Oral Stories in the Classroom: Encouraging Preschool Teachers' Use of Cultural Funds of Knowledge**

*Melzi, Gigliana New York University*

*Schick, Adina, New York University*

All children enter school with a wealth of resources intended to help them participate and succeed in the classroom environment. Nevertheless, in the U.S., low-income Latino preschoolers lag behind their peers on various school readiness measures, and this gap only increases with age. Capitalizing on children's cultural funds of knowledge might be one way in which schools can help address the gap that exists between mainstream and culturally-diverse children. Yet, oftentimes schools' curricula are aligned with mainstream practices. Thus, the current intervention study investigated the oral storytelling traditions of pan-Latino families and used that information to develop, implement, and test a culturally-based classroom oral storytelling curriculum designed to improve children's school readiness. The present study is comprised of two phases. Phase I: Focus groups and home visits were conducted to explore the oral traditions and practices common among low-income Latino families (N = 48) in a NYC community. Results from this phase corroborated past ethnographic research showing that low-income Latino families engage in diverse discourse practices, including sharing traditional stories marked by dichos (i.e., popular sayings), and stories with consejos (i.e., advice). These results were used to design a classroom storytelling

intervention. Phase II: As part of a randomized controlled pilot trial, 12 preschool classrooms have been randomly assigned to one of two conditions: oral storytelling or dialogic reading curricula, to be delivered across a 5-month period. Children's (N = 240) school readiness skills will have been assessed at the start and end of the school year. The intervention is ongoing, but initial results suggest that children in the oral storytelling intervention classrooms are making greater gains in socio-emotional and expressive language skills, as compared to children in the dialogic reading control classrooms. Results are discussed in relation to the importance of taking a strengths-based approach to building children's skills.

*Sign language acquisition and gestures*

*Language, general*

## **The developmental interactions between gestures, words and signs**

*Gary Morgan, City University London; Aliyah Morgenstern  
Université Paris III*

### **Symposium abstract:**

*Today there is growing acceptance that language acquisition is multi-modal rather than just the comprehension and production of sounds. Much previous research has shown that children use gestures in various forms (e.g. deictic and representational) in communication during early lexical and grammatical development. This has been observed in many cultures including children exposed to signed languages. It is less clear why gestures are preferred in the early stages with some possible reasons being their relative articulatory and cognitive simplicity and the sensorimotor link they provide between action, word and object. Infants' general production of gestures has indeed been studied as a prerequisite to construct "pre-linguistic" concepts, as a pathway into the symbolic function of language or a bridge between language and embodiment. Gestures are viewed as representational structures, constructed through imitation of actions that are enacted overtly and can be shared with others. The issues discussed across the papers in this symposium are the transition from gesture to word/sign, the linguistic and multimodal reorganisation during language development and whether gestures give access to symbolic meaning or whether access to symbolic meaning is mostly linked to cognitive maturity. We approach these questions by considering gesture and language data from various spoken and signed languages and using a variety of methodologies. Paper 1 describes how young children's linguistic reorganisation from gestures to language is matched by changes in brain organisation as indexed by handedness. Papers 2 and 3 describe the development of*

*negation, representational and deictic gestures and how children use these devices to move onto multimodal constructions in French, English and German in naturalistic interaction and in eye-tracking paradigms. Finally, paper 4 documents how deaf children's first signs and co-speech gestures share formational similarities. The papers are followed by a led-discussion section.*

### **Abstract 1**

## **At 10-12 months, vocabulary and gesture develop hand-in-hand in the left hemisphere**

*Katherine H. Mumford, University of Birmingham*

*Sotaro Kita, University of Warwick*

The close association between language and gesture has been widely studied. It remains unclear, however, when and how this relationship originates ontogenetically. The current study investigated the relationship between vocabulary development and handedness for pointing in 10-12 month old infants. The study used cross sectional data from 16 infants. Infants took part in an imperative pointing elicitation task and a grasping task in order to assess their pointing and grasping handedness. Further, parents filled out the Oxford Communicative Development Inventory (CDI) (Hamilton, Plunkett, & Schafer, 2000) in order to assess their receptive and productive vocabulary. The result showed a positive, significant correlation between receptive vocabulary development and right-handed pointing. This relationship was not due to age or to vocalisations, which have not been ruled out by previous studies. Thus, at the onset of referential communication gesture and language develop together in the left hemisphere. We propose that towards the end of the first year the gesture production mechanism gets linked to the language comprehension process in the left hemisphere. This transition may take place under two possible socio-interactive scenarios. First, when caregivers prompt infants to point by naming an object ("Where is a doggie?"), the word comprehension process activates the left hemisphere, which in turn primes right hand pointing. Second, when infants happen to choose the right hand to point, the motor process in the left-hemisphere is activated. This in turn primes the word learning process in the left hemisphere (the infant points to an object with the right hand, and the caregiver responds with the label (e.g., "That's a doggie!")). Additionally, the study found a positive correlation between the number of points infants produced and their productive vocabulary, which can be attributed to an underlying ability to referentially communicate at this young age.

In order to trace the transitions between action, gesture and speech, we analyzed all the communicative productions of four monolingual children from the ages of 0;10 to 4;0. We

coded the differences between actions (e.g. pushing away, avoiding), and negative conventional gestures (headshakes, shrugs etc.). We analyzed: a) the combined 'redundant' use of gestures and words; b) the use of each modality in isolation; c) the re-introduction of co-verbal gestures after speech only productions. We also coded the first functions of negations, their order of emergence and their forms in different modalities from the very beginning of our data.

The results show that the four children use the two modalities throughout the data collection period for all functions of negation, but with great individual differences in how they combine modalities. Moreover, the children's use of negative gestures has a limited range of meanings and is executed with only slight variations during the acquisition process in contrast to more variable adult uses (Kendon 2002). The visual-gestural modality returns in all four children's data with the production of more diversified co-verbal gestures when speech is more elaborate. Despite marked individual and cultural differences, the four children's use of gestures in negative contexts signals the blossoming of progressively more complex multimodal communication skills.

## **Abstract 2**

### **Multimodal negation in speaking children**

*Aliyah Morgenstern & Pauline Beaupoil*

*Université Paris III - Sorbonne Nouvelle*

This research examines the development of negation in children's language and documents the combined use of speech and gesture in this process. After pointing, manual gestures of agreement and refusal are the first symbolic forms used by children and precede children's first negative constructions in spoken language development (Clark, 1978). This paper asks if such gestures facilitate the development of negation in speech and what is the process of change that the multimodal system undergoes during the language acquisition process?

In order to trace the transitions between action, gesture and speech, we analyzed all the communicative productions of four monolingual children from the ages of 0;10 to 4;0. We coded the differences between actions (e.g. pushing away, avoiding), and negative conventional gestures (headshakes, shrugs etc.). We analyzed: a) the combined 'redundant' use of gestures and words; b) the use of each modality in isolation; c) the re-introduction of co-verbal gestures after speech only productions. We also coded the first functions of

negations, their order of emergence and their forms in different modalities from the very beginning of our data.

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### **Abstract 3**

## **Infants' use of spatial and depicting representations in non-verbal communication**

*Ulf Liszkowski,*

*University of Hamburg*

Around their first birthdays, infants begin to communicate with deictic gestures. They refer others' to specific entities in the environment for various reasons. Representational communication, in contrast, directs attention to one thing (e.g., a sign) which stands in for ('represents') another (the referent). The developmental transition from deictic to representational gesturing is still unclear. Early analyses (Bates, 1979; Acredolo & Goodwyn, 1983) suggested that infants produced conventional iconic and arbitrary gestures, but it has remained unclear whether infants have a cognitive understanding of representations and use these gestures truly representationally or, instead, only situationally (Liszkowski, 2010).

In one study we asked if infants can use and understand places as standing in for objects. Using an eye-tracker we see that around 18 months, infants comprehend that a point to an empty place refers to the object habitually allocated to that place suggesting infants gradually expand their use of deictic gestures to representational communication. In study 2 we asked whether infants can create novel representational gestures to convey a message by somehow depicting relevant aspects of it. This would refute interpretations of a non-representational, situational use of gestures. We found that 4-year-olds requested objects in situations where



verbal and deictic communication were not possible (e.g. the interlocutor wore earphones). All the children were able to refer to the objects by representing what one could do with them through novel non-conventionalized depicting gestures. In a linked study we found 26 month olds but not younger children correct a puppet's errorful actions by depicting the correct action with gestures.

These results reveal that gestural representational communication emerges at an age when conventional language is already being acquired. The protracted development relative to prelinguistic deictic gestures presumably depends on cognitive development and is, in turn, possibly influenced by language acquisition.

#### **Abstract 4**

### **The sign and gesture overlap: implications for language development**

*Gary Morgan, City University London*

*Robin Thompson, University of Birmingham*

*Jenny Lu, UCL*

*Gabriella Vigliocco, UCL*

*Bencie Woll, UCL*

Hearing toddlers in different cultures produce spontaneous gestures when naming pictures (e.g. combing gesture to name a comb picture - Stefanini, et al, 2009). One explanation is that action gestures provide a link between the object or action and the word. Stefanini, et al, (2009) also describe similar actions being prevalent in deaf children's first signs. The research questions we addressed here are: what gestures are used by deaf and hearing toddlers of different language backgrounds during lexical development and how do deaf children change gestures into signs as they become more proficient signers? We hypothesized that children learning spoken and sign language early on might exploit the action biases in gesture in a similar way in order to break into particular meanings but more exposure to sign language would lessen children's reliance on action gestures later on. We compared children aged between 2-3 years, with different experiences of sign language on the same naming task. In this study 20 deaf children of deaf parents acquiring British Sign Language (native signers), 20 hearing children acquiring English (native speakers) and 20 deaf children of hearing parents acquiring English and BSL (non-native signers) were tested following Stefanini, et al (2007). We found that compared with native signers, non-native

signers produced fewer signs, instead they used words and many idiosyncratic representational gestures that were similar in form and meaning to action gestures produced by the hearing group but three times more prevalent. At this stage in their language development the gestures take the role of both signs and words for non-native signers. We will discuss how action gestures might facilitate both sign and spoken language development initially but why sign languages development breaks away from gestures once the lexicon becomes phonologically organised.

**Abstract 5 (if applicable)**

**Discussion of research presented in symposium**

*Eve Clark, Stanford University*

Discussion of research presented in symposium

*Child bilingual language development*

*Morphology*

## **Mastering degrees of regularity: Evidence from bilingual and multilingual children**

*Nicoladis, Elena, University of Alberta*

### **Symposium abstract:**

*Across languages, morphology can differ in regularity, with some languages manifesting subregular patterns and some manifesting highly opaque, irregular forms. Children's acquisition of morphology may be related to their exposure or practice of a particular language, according to Usage-Based theories, with regular morphology requiring less exposure or practice than more irregular forms. Bilingual and multilingual children tend to have less exposure and practice of a particular language than same-aged monolinguals. They may then master regular morphology early on, but may lag behind monolinguals in their acquisition of irregular forms.*

*This symposium considers the morphological acquisition of bilingual and multilingual children, between three and 11 years of age. The children spoke a variety of languages, including those in which there is a complex (e.g., French) or a very complex morphology (e.g., Welsh) to master.*

*There are two findings common to all the studies in this symposium. First, as predicted, bilingual and multilingual children master regular morphology better or earlier than irregular morphology. Second, when the children do not use irregular morphology correctly, they tend to use within-language strategies (e.g., overregularization, irregularization).*

*However, there are several findings that contradict predictions. In the first study, French-English bilingual preschoolers master the more complex French past tense morphology before the simpler English past tense morphology. In the second study, children learning French L2 have no greater difficulty with the complex past tense morphology than L1 French-speaking children. In the third study, Dutch-Hebrew children use a strategy for marking past tense in Dutch that is seen infrequently*

*among Dutch monolingual children. And, in the fourth study, even children as old as 11 years had not yet mastered the Welsh plural system.*

*These studies are discussed in light of other variables needed to explain how bilingual and multilingual children master the morphology of their two languages.*

## **Abstract 1**

### **Fait accompli (and not accomplé): French-English bilinguals' use of past tense morphemes on novel verbs**

*Nicoladis, Elena, University of Alberta*

*Paradis, Johanne, University of Alberta*

Previous research suggests that bilingual children lag behind monolingual children in their acquisition of past tense morphology (Author, 2007; Author, 2011). However, most previous research has focused on children's processing of existing verbs, which are necessarily linked to usage. The purpose of the present study is to test bilinguals' acquisition of past tense morphology as extended to novel verbs.

This study compared French-English bilinguals (3;0-5;0) with same-aged monolinguals. We elicited past tense forms from all the children by labeling novel actions with novel verbs in the present ("Look at the frog! It's kading! It likes to kade"). We then asked the children what the character had done ("Now it's done. What did the frog do?").

The novel verbs were chosen to elicit different past tense forms in both English and French. In English, we elicited all three allomorphs of –ed, since previous research has shown that English monolinguals produce the /t/ and /d/ before the /Id/ (Berko, 1958). In French, we chose verbs whose infinitive forms would be associated with different past participles: participles ending in –é (most frequent), –i and –u (less frequent) ..

The results showed that in English the bilingual children produced more bare verb forms than the monolinguals. When they did add –ed, they used the /t/ and /d/ allomorphs more than /Id/. In French, the bilingual children produced past participles with –é, –i, and –u while the monolinguals only did so with –é and –i. Key findings were: (1) bilingual children were forming the past tense with novel verbs based on sensitivity to language-specific, type frequency patterns, just like monolinguals, and (2) bilinguals lagged behind monolinguals in English but not in French. Results are discussed in terms of how bilingual-monolingual differences in input interact with language-specific morphological learning strategies.

## **Abstract 2**

### **Mastery of default, subregular and irregular French verbs by first and second language learners in school immersion contexts**

*Marquis, Alexandra, Université de Montréal*

*Dionne, Marylène, Université de Montréal*

*Royle, Phaedra, Université de Montréal*

We addressed whether children learning French as a first language (L1) are sensitive to subregular verb conjugation patterns (i.e., neither default, nor idiosyncratic) (Clahsen 1999). In addition, we tested whether children learning a second language (L2) have more difficulty learning these patterns due to their lesser exposure to the language (Nicoladis et al, 2007). We hypothesized that children learning French L1 and L2, would process different verb inflection patterns based on a. their default status (-er verbs), and b. their reliability (e.g., subregular -ir verbs), with L2 children showing weaknesses in non-default types (Royle et al, 2012).

We elicited verbs in 60 children attending preschool (n = 42) or first grade, who were L1 (n = 35) or L2 learners of Québec French, using 24 regular, sub-regular, and irregular participle forms (6 each ending in -é, -i, -u or idiosyncratic) in the passé composé (perfect past). A "storybook" task with images presenting verbs in infinitive and present tense contexts was used to establish the verb conjugation patterns. Children were asked to produce verb forms in the perfect past by answering the question 'What did he/she do yesterday?'

Results reveal higher target production in the first grade and no differences between language groups. Response patterns highlight morphological pattern productivity and reliability effects (-é > -i = -u > idiosyncratic) on children's mastery of French conjugation. Only subtle differences are found between language groups in error patterns.

Contrary to expectations, both language groups show strengths on default patterns and sensitivity to subregular verbs, including those with the final -u vowel, which are considered non-productive (Royle et al, 2012). These data show that even though they have lesser exposure to oral language, L2 children rapidly master verb conjugation patterns to the same level as L1 children in immersive (school) contexts.

Clahsen, H. (1999). Lexical entries and rules of language: A multidisciplinary study of German inflection. *Behavioral and Brain Sciences*, 22, 991-1060.

Nicoladis, E., Palmer, A., & Marentete, P. (2007). The role of type and token frequency in using past tense morphemes correctly. *Developmental Science*, 10(2), 237-254.

Royle, P., Beritognolo, G., & Bergeron, E. (2012). Regularity, sub-regularity and irregularity in French acquisition. In J. van der Auwera, T. Stolz, A. Urdze & H. Otsuka (Eds.), *Irregularity in Morphology (and Beyond)* (pp. 227-250). Berlin: Akademie Verlag.

### **Abstract 3**

#### **Past tense productivity in bilingualism**

*Rispens, Judith, University of Amsterdam*

*de Bree, Elise, University of Amsterdam*

Bilingual children typically receive less input in either language than monolingual children. Slowed acquisition in the domain of the past tense has been reported for this group (Thordardottir et al., 2006; Nicoladis et al., 2007; Schelleter, 2007).

In Dutch, regular verbs are inflected for the past tense by adding the allomorph '-te' (maak-maakte, made) or '-de' (kam-kamde, combed), depending on the phonological characteristics of the verb stem (underlying voiceless stem final phonemes receive '-te' all other instances '-de'). The distribution of these two allomorphs is not equal in the language input: the verb stem + 'te' occurs more frequently than + 'de'. As it has been suggested that morphosyntactic acquisition is sensitive to input properties (Blom et al. 2012; Gathercole, 2007; Nicoladis et al., 2007; Paradis et al., 2010), the current study examined the effect of the differences in frequency of the distribution of the two past tense allomorphs in Dutch in bilingual children relative to monolingual children.

Two tasks eliciting past tenses of regular lexical verbs (balanced for allomorph type and lexical frequency) and novel verbs (balanced for allomorph type) were presented to 11 seven-year-old bilingual children, 30 age-matched monolingual and 21 5-year old monolingual children matched on receptive vocabulary (PPVT) of the bilingual group. Proportions correct of past tense productions were similar between all groups. Furthermore, all three groups showed significant effects of type frequency: -te past tenses were produced more accurately. The bilingual and monolingual children differed in the extent of the effect and the type of errors: for the bilingual children the allomorph type effect was most pronounced in low frequency lexical and novel verbs. The bilingual children further produced the -te allomorph as a default, which was not the case in the monolingual groups. Results may indicate a learning strategy or phonological transfer from Hebrew.

### **Abstract 4**

# **Abstracting degrees of regularities from complex structures: the case of bilinguals in minority language contexts**

*Thomas, E. M., University of Bangor*

This paper explores the extent to which bilingual Welsh-English children are able to abstract out the structural regularities from a complex morphological structure under conditions of minority language exposure. The structure of interest here is the plural morphology of Welsh, which involves a variety of suffix additions/deletions/substitutions/alternations – with or without additional internal vowel changes – which offers relatively opaque, form-function mappings. The more regular aspects of the system involve suffix addition, which may rely somewhat on rule-based learning, with the more irregular aspects involving vowel changes, and may require a more item-by-item learning approach.

A total of 88 children, between the ages of 7 and 11, were presented with a plural production task. The children fell into one of three bilingual groups: L1 Welsh, 2L1 Welsh-English, and L2 Welsh. Results revealed (i) better performance on the more regular, +suffix forms than the less regular forms involving vowel changes, but (ii) 2L1 bilinguals patterned more like L2 Welsh than L1 Welsh bilinguals, suggesting that early acquisition is a poor predictor of performance on this type of structure. However, (iii) non-target-like forms tended to involve forms that are permissible within the system – mainly overextensions of the more regular plural suffixes – rather than using the English –s as a (plausible) default, supporting the idea of strict language segregation and language awareness in bilinguals. Finally, (iv) since all children were struggling to achieve adult-like knowledge of the less regular parts of the system, this raises the question whether those 2L1 and L2 speakers with minimal exposure will ever achieve the magical 'critical mass' of exposure in order to learn these structures either systematically (the +suffix forms) or item-by-item (for the closed sets of items that function less systematically), leading to incomplete acquisition (cf. Montrul, 2008) of the less regular aspects of the structure in particular.

Montrul, S. (2008). *Incomplete Acquisition in Bilingualism. Re-examining the Age-Factor*. Amsterdam: John Benjamins.

**Abstract 5 (if applicable)**

*Child bilingual language development*

*Semantics and lexicon*

## **Risk and Protective Environmental Factors for Early Bilingual Language Acquisition**

*O'Toole, Ciara, University College Cork*

*Gatt, D., University of Malta*

### **Symposium abstract:**

*It is acknowledged that limited vocabulary production in the early years may be the first sign of persistent language impairment. In young children exposed to two languages, however, there is limited knowledge on the expressive lexicon size that is indicative of delayed language development. Moreover, little is known about the influence of child, caregiver and family/community factors on early vocabulary growth in differing bilingual contexts. As a result, the effects of bilingualism and language-learning difficulties on expressive lexical development are often confounded, underscoring the need for research that documents early lexical expression in children receiving bilingual exposure. The proposed symposium documents the vocabulary production skills of children exposed to different language pairs in a variety of contexts to compare their vocabulary development with a bilingual 'norm' instead of the usual monolingual comparison. The aim is to identify those environmental factors that result in proficient bilingual vocabularies and those that place children at risk for incomplete acquisition or attrition, language delay or specific language impairment.*

*A common methodological design based on parental report was employed in each of the bilingual contexts investigated, using language adaptations of the MacArthur Bates Communicative Development Inventory (Fenson et al., 2007). The first abstract presents a large cross-linguistic study involving over 200 typically-developing children acquiring six language pairs in very different contexts. These range from an endangered language, languages with minority status to recent as well as long-established immigrant communities. As will be outlined, a wide range in vocabulary scores was revealed, with significant differences noted between some*



*language pairs. Following this, studies involving four of these language pairs will be outlined in greater detail, namely Irish and English, Maltese and English, English and Hebrew and Polish and English, to help to shed further light on factors that may hinder or facilitate early bilingual vocabulary development.*

#### *Reference*

*Fenson, L., Marchman, V. A., Thal, D. J., Dale, P. S., Reznick, J. S. and Bates, E. (2007). The MacArthur-Bates Communicative Development Inventories (2nd ed.). Baltimore: Brookes.*

#### **Abstract 1**

### **Parent report of early lexical production in bilingual children across varied contexts**

*Gatt, D., University of Malta*

*O'Toole, C., University College Cork*

*Hickey, T., University College Dublin*

*Miekisz, A., University of Warsaw*

*Haman, E., University of Warsaw*

*Rinker, T., University of Konstanz*

*Ohana, O., Bar-Ilan University*

*Armon-Lotem, S. Bar-Ilan University*

*dos Santos, C., Université Francois-Rabelais, de Tours*

*Kern, S., University of Lyon*

This research investigated the range in early vocabulary acquisition of typically developing bilingual children with an aim of identifying those that might be considered at risk for language impairment. It was hoped that the results would help disentangle the effects of bilingualism and language-learning difficulties by establishing profiles for early vocabulary production in children exposed to more than one language across different contexts. The language pairs being acquired were Maltese and English, Irish and English, Polish and English, Turkish and German, French and Portuguese, and English and Hebrew. Each research group used adaptations of the MacArthur Bates Communicative Development Inventories: Words and Sentences (Fenson et al., 2007) to profile the expressive vocabulary in both languages in a group of over 200 young bilinguals aged 24-36 months. In addition, a specially designed language exposure and developmental background questionnaire was

used to gather information on demographic and language exposure variables. The results showed a wide range in vocabulary development which could be somewhat attributed to father's level of education and how often the children were exposed to the second language. We also looked at those children performing more than 1.5 standard deviations below the mean to determine what factors were related to their relative delay. Most of this group came from the Polish-English speakers, recent immigrants to the UK and Ireland, who had high levels of education but low occupations. A feature of the entire group of lower-performing children were lower levels of parental education overall, parental concerns about language development, no two-word combinations and family history of speech and language difficulties. The implications of the study in terms of factors that might help to identify bilingual children at risk for language impairment as well as the language enrichment that might be needed for young bilinguals will be outlined.

#### Reference

Fenson, L., Marchman, V. A., Thal, D. J., Dale, P. S., Reznick, J. S. and Bates, E. (2007). *The MacArthur-Bates Communicative Development Inventories* (2nd ed.). Baltimore: Brookes.

#### **Abstract 2**

#### **Bilingual language acquisition in a minority context: Using the Irish-English Communicative Development Inventory to track acquisition of an endangered language**

*O'Toole, C., University College Cork*

*Hickey, T., University College Dublin*

This study investigated the role of language exposure on vocabulary acquisition in Irish, a minority language in Ireland which is usually acquired with English in a bilingual context. Using a bilingual Irish-English adaptation of the MacArthur- Bates Communicative Development Inventories (Fenson et al., 2007) longitudinal parent-report data were collected from 34 children (19 girls and 15 boys) at 4-monthly intervals, resulting in 61 data-points between the ages of 24-36 months. Language exposure estimates indicated that while the caregivers spoke 'mostly Irish' to the children, both languages were used in most households. The sampled children's vocabulary on the ICDI consisted of more Irish words than English, particularly for nouns, predicates and closed class words, although they knew as many verbs in English as in Irish overall. The pervasive influence of English was also seen in the high number of translational equivalents found. ANOVAs showed no significant effect of main caregivers' Irish use on children's Irish vocabulary, but a significant effect for caregivers' use of English on English scores. Irish vocabulary scores did not differ significantly for those who were 'always' exposed to Irish compared to those with lower exposure rates to Irish. The conclusions are that the verb in acquisition of Irish (a noun-

centred language with lexical verbs) is vulnerable, and could benefit from being a focus of language intervention programmes in this endangered language. The study also shows that caregiver language use gives only a limited view of the child's language exposure, and that family language patterns need to be established in a minority language context.

#### Reference

Fenson, L., Marchman, V. A., Thal, D. J., Dale, P. S., Reznick, J. S. and Bates, E. (2007). *The MacArthur-Bates Communicative Development Inventories* (2nd ed.). Baltimore: Brookes.

### **Abstract 3**

## **Early lexical expression in children receiving Maltese-dominant exposure: considerations for the identification of language delay**

*Gatt, D., University of Malta*

Assessment of productive vocabulary skills in the third year of life is highly relevant to the identification of language delay. However, little is known about markers of delay in young children exposed to more than one language. The current study investigated the expressive vocabulary skills of 33 children aged 24-28 months and 30 children aged 30-34 months whose language input was predominantly Maltese. The participants' language environment was distinctive, in that they were also exposed sporadically to English through their caregivers' language mixing. In addition, bilingualism was present at a societal level, offering further indirect exposure to English. In addition to seeking to gauge the influence of language exposure variables, the investigation also examined the effects of other child-internal and child-external factors, including parental education and occupation, as well as factors associated with risk for language impairment.

Assessment of productive vocabulary skills in the third year of life is highly relevant to the identification of language delay. However, little is known about markers of delay in young children exposed to more than one language. The current study investigated the expressive vocabulary skills of 33 children aged 24-28 months and 30 children aged 30-34 months whose language input was predominantly Maltese. The participants' language environment was distinctive, in that they were also exposed sporadically to English through their caregivers' language mixing. In addition, bilingualism was present at a societal level, offering further indirect exposure to English. In addition to seeking to gauge the influence of language exposure variables, the investigation also examined the effects of other child-internal

and child-external factors, including parental education and occupation, as well as factors associated with risk for language impairment.

The children's word production was measured through parental report, using a bilingual adaptation of the vocabulary checklist found in Fenson, Dale, Reznick, Thal, Bates, Hartung, Pethick and Reilly's (1993) first edition of the MacArthur Communicative Development Inventories: Words and Sentences (CDI:WS). Gauging the range of variation in expressive vocabulary scores provided preliminary reference measures for the identification of language delay in the absence of normative data. Statistical effects of child, caregiver and family factors were also examined. The absence of word combinations emerged as a significant predictor of lower vocabulary counts. Findings pointed towards the importance of considering background variables alongside measures of productive lexicon size when evaluating emergent language skills of young children exposed to language pairs for which normative data are not available.

#### Reference

Fenson, L., Dale, P. S., Reznick, J. S., Thal, D., Bates, E., Hartung, J. P., Pethick, S. J. and Reilly, J. S. (1993) The MacArthur Communicative Development Inventories. San Diego, CA: Singular.

#### **Abstract 4**

### **Bilingual First Language Acquisition of first generation emigrant Polish toddlers living in UK and Ireland: Productive vocabulary as measured by CDI**

*Miękisz, A., University of Warsaw*

*Kuś, K., University of Warsaw*

*Katsos, N., University of Cambridge*

*O'Toole, C., University College, Cork*

*Haman, E., University of Warsaw*

In the current study we compared lexical skills of bilingual Polish-English children from UK and Ireland to their monolingual peers. We used Polish and British English versions of the CDI (MacArthur Bates Communicative Development Inventory, Polish adaptation, Smoczyńska, 1999; UK adaptation, Mains & Fletcher, 2001). Variables such as age, gender,

type of exposure (simultaneous vs. sequential), age of exposure to English, language input (% of Polish and English) and SES were controlled for. Participants were 93 Polish-English first generation emigrants' children (22–39 months old, 42 girls, 51 boys, 19 from Ireland and 74 from UK) matched by age, gender and parental education with 93 Polish monolinguals. Seventy four subjects had both language versions of the CDI filled in. Our data indicate that 35 percent of bilingual participants did not exceed the 5th percentile rank as compared to norms for Polish monolingual children. Over 80% did not exceed the 50th percentile. There was a significant difference between the mean total vocabulary scores (calculated as a percentage of all possible words in both CDIs), mean percent of conceptual vocabulary scores as well as mean percent of L1 scores between the monolingual and bilingual groups. Monolingual children outperformed children raised in bilingual settings, independently of the measure adopted. Our results show substantial differences in language production between children raised in monolingual and bilingual environments when assessed using a monolingual CDI. We will discuss the possible reasons for this discrepancy. Polish children in UK and Ireland have to be able to succeed in English schools or, if parents decide to return to the home country, in Polish schools. Therefore, there is a great need for accurate assessment of their language abilities.

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Meints, K., Fletcher, K. University of Lincoln, UK Lincoln Toddler Development Inventory (version 2001) <http://www.lincoln.ac.uk/home/psychology/research/lincolnbabylab/>

Smoczyńska, M. (1999). Inwentarz rozwoju mowy i komunikacji: Słowa i zdania. [Polish adaptation of The MacArthur-Bates Communicative Development Inventory: Words and Sentences]. Unpublished material. Krakow: Jagiellonian University.

#### **Abstract 5 (if applicable)**

### **A CDI study of bilingual English-Hebrew children - frequency of exposure as a protective environmental factor?**

*Ohana, O., Bar-Ilan University*

*Armon-Lotem, S. Bar-Ilan University*

This study evaluates the bilingual lexicon of English-Hebrew children, exploring the impact of environmental factors. While L1/English is prestigious and highly evaluated by parents and society, children grow in a strong ideologically pro-L2/Hebrew environment. With both languages being equally important, it is possible to address the impact of other environmental factors. The parents of 23 bilingual children (24-35 months) and 17 children (36-48 months), all from mid-high SES, completed the vocabulary checklist of the MacArthur Bates Communicative Development Inventory (CDI) (Fenson et al., 2007) and its

Hebrew adaptation (Maital et al., 2000). Background questionnaires provided information about environmental factors (chronological age (CA), age of L2 onset (AoO), frequency of exposure (FoE) to each language, parental education, and family size). While the mean vocabulary scores for the two languages do not differ significantly within each age group, the range is very wide with no correlations between L1 and L2. The cumulative vocabulary places both age groups within the L1/English monolingual mean. A significant between-groups difference emerges for L2/vocabulary and conceptual vocabulary, but not for their L1/vocabulary. Of the environmental factors, only CA, AoO, FoE/L1 and FoE/L2 correlated with vocabulary. Two stepwise regressions were employed using these factors as independent variables. For L1 vocabulary, less exposure to L2, more exposure to L1 and CA were responsible for more than 50% of the variance. For L2 vocabulary, more exposure to L2 and CA were responsible for more than 30% of the variance. Our findings suggest that equal prestige of the two languages in mid-high SES supports balanced bilingualism, but with different acquisition patterns for different children in the two languages. While L2/vocabulary grows, L1 seems to recede, with frequency of exposure being the major environmental factor which contributes to maintenance of L1 and successful acquisition of L2.

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- Fenson, L., Marchman, V. A., Thal, D. J., Dale, P. S., Reznick, J. S. and Bates, E. (2007). *The MacArthur-Bates Communicative Development Inventories* (2nd ed.). Baltimore: Brookes.
- Maital, S. L., Dromi, E., Sagi, A., and Bornstein, M. H. (2000). *The Hebrew Communicative Development Inventory*. Unpublished vocabulary checklist.

*First language acquisition*

*Language, general*

## **The emergence of determiners and pronouns :a multi-level perspective**

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### **Symposium abstract:**

*The acquisition of determiners and pronouns has usually been tackled through independent studies that treat them either on formal or on pragmatic/semantic grounds. However these markers emerge at the crossroads of the phonological, prosodic, morphological, syntactic, semantic as well as pragmatic levels. For example, fillers have been studied mostly from a phonological, prosodic or morphological perspective, and pronouns and determiners from a syntactic, semantic or pragmatic perspective. However, in the path from fillers to adult-like forms children acquire abilities in these different levels simultaneously. Few studies have addressed the question of the way these levels interact.*

*This symposium aims to tackle this issue by promoting dialogue between contrasted approaches. Participants examine through their data possible interactions between two or more linguistic levels: prosody and semantics, pragmatics and phonology, phonology and morphology, semantics and pragmatics. This dialogue begins with a discussion on the underlying heterogeneity of the concept of filler. By testing phonoprosodic and morphosyntactic hypotheses the first contribution shows that fillers are not a homogenous category but undergo a development in the path towards the appearance of full-fledged grammatical morphemes. The second contribution raises the question of grammatical representations of children presenting fillers, omission or pronoun reversals and the respective weight of factors such as prosody or cognitive development. Non-conventional uses of adult like pronouns is the topic of the third contribution which analyses the interaction between cognitive, pragmatic, semantic and interactional factors as well as the role of the input. The fourth contribution goes back to fillers and investigates the functional contexts of their use whereas the last contribution examines the possible*

*parallel that can be made between the phonological evolution of grammatical words and their pragmatic value. As a whole, the symposium will shed light on the intertwining of formal and functional factors in the emergence of pronouns and determiners.*

### **Abstract 1**

## **There are fillers and fillers on the way to grammatical morphemes: A three-period account in the acquisition of French**

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In the early period of language acquisition many children use fillers, namely, they start adding monosyllabic elements in front of words they used earlier, and may continue to use, without such elements. For example, the sound /ə/, in ədog for English, and in /əpɛ̃/ 'pain' [bread] for French.

In some accounts, fillers are considered early manifestations of grammatical morphemes; in others, phonoprosodic phenomena from which, later, grammatical morphemes develop.

The aim of this presentation is to trace the development of fillers in the longitudinal data of four children acquiring French, studied between the ages of 1;3/1;9 and 2;0/2;3.

Children were recorded audio-visually, at least once a month, while they interacted naturally in their home environment. The data were transcribed in CHAT format, phonologically for the children and in French orthography for the adults, and were linked to the videos. All the lexical items whose targets were nouns and verbs in French were coded for the presence and type of elements occurring at the onset of the lexeme, and specific phonoprosodic and morphosyntactic hypotheses were tested.

Results suggest that fillers cannot be lumped together in a single bag. Indeed, they indicate the existence of three main periods in fillers' production: 1. pre-morphological, where fillers mainly fulfill phonoprosodic functions; 2. proto-morphological, where fillers present incipient properties of grammatical morphemes, hinted by an overall differentiation between noun and verb fillers; and 3. quasi-morphological, where fillers co-occur with well-formed grammatical morphemes, sometimes for the same lexeme, and with developments in children's verbal production. In all three periods, fillers and grammatical morphemes do not reach criterion in obligatory contexts.

The discussion highlights the importance of the developments in fillers' production for understanding the nature of early language acquisition.



## **Abstract 2**

### **Factors influencing the emergence of determiners and pronouns**

*Katherine Demuth, Macquarie University*

Children's use of grammatical morphemes can be highly variable, exhibiting gradual learning curves. This raises the question of the nature of grammatical representations when a child produces 20%, 50%, or 70% of a particular grammatical morpheme in an obligatory context. To examine the nature of this development more closely, we have carried out several longitudinal studies tracking the development of both determiners and pronouns in the speech of 6 English-speaking children between the ages of 1 and 3. Given recent experimental findings by Gerken (1996), we predicted that the appearance of determiners would interact with the prosodic context in which they occurred, with those appearing in a stressed-unstressed Strong-weak context (e.g., WANT the) being more likely to appear than those in a Sww context (e.g., PLAYing the). This was found to hold for 4 of the 5 children examined, suggesting that the early production of determiners is prosodically constrained. As the child's phonology develops larger prosodic structures, more begin to occur in the latter context. Although Gerken (1996) suggests that the same may occur with pronouns, other factors may also play a role. For example, the 2 more precocious children in the corpus showed extensive use of Pronoun Reversal, a process where children use you to mean I, and visa versa. This began to appear around 1;6, when the first pronouns were used, and continued until 2;4 in one case, and was still persisting at the end of data collection at 2;11 for the other child. This contrasts with the other children, some of whom were not using pronouns till later. We suggest that the use of Names and/or null pronominal arguments may occur for many children at the early stages of development, avoiding the need for learning about deixis until they are cognitively/linguistic more prepared to do so.

Gerken, L.A. (1996). Prosodic structure in young children's language production, *Language* 72, 683-712.

## **Abstract 3**

### **The self under construction: a functional approach to children's subject self-reference**

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In their productions about themselves as subject, children might omit the pronoun, use a filler syllable, their name, 2nd, 3rd or 1st person pronouns. Why do they produce several forms to refer to themselves instead of the adult subject pronominal form?

As shown by Budwig for English (1995), each form is usually associated to a particular function in context. In order to retrace how children acquire the linguistic system, we need to tease apart what they borrow from adult language and what they recreate on their own. This can provide us with valuable insights on how they creatively process the language that surrounds them and progressively acquire the tools that enable them to refer to themselves, both as speakers and subjects.

In this paper, we present data from 2 French and 2 American-speaking children, recorded monthly between the ages of 1 and 4 during everyday interactions with their mothers. All productions referring to self as well as to the interlocutor were coded both in the children's and their mother's speech for form, semantic meaning and pragmatic function in context.

Focusing on non-standard uses for self-reference, we observe that children first focus on the most salient semantic and pragmatic functions of the forms provided in the parents' speech. Our first results show that at the beginning of our data, when reference to self is implicit or given, the subject is omitted. The 3rd person and name are produced when the child does not take a first person perspective. Me and moi are used to focus on contrastive agency, and the 2nd person to refer to self in situations where children seem to replicate child-directed speech in fixed scripts.

On their path to conventional language, children's productions thus reflect both the specificities of the surrounding input and their own linguistic and cognitive analyses.

#### **Abstract 4**

### **A discursive approach of pre-nominal fillers production in adult-child interactions**

During the first steps of language development, filler syllables can be observed before nouns and verbs (Peters 2001). These “fillers” have been explored for what they tell us about emerging grammar (Veneziano and Sinclair 2000; Salazar Orvig and Morgenstern 2001). However, what has been put forth to explain their presence and the role they play in the acquisition of grammatical morphemes are mostly formal or grammatical factors. Only few researches have focused on pragmatic aspects of the contrast between presence or absence of fillers for the same noun. Does this fluctuation, which cannot be explained by formal factors, depend on such factors as the accessibility of the referent? This presentation aims at a precise description of pre-nominal fillers produced in young children discourse, as much for their distribution as for the discursive status of the referents they are associated to.

Our study is based on a corpus of three children video-recorded from 1;06 to 2;06. For each noun occurrence, we observed whether it was preceded by a determiner, a filler or a null form. We also characterized the status of the discourse object associated to the noun (given or new), and the speaker’s degree of familiarity with the referent. Data were analysed according to the children’s age and linguistic development.

Our results show that from 1;06 to 2;02, fillers are preferentially used with previously mentioned referents, while omission is found primarily with new referents. From 2;02 to 2;06, for previously mentioned referents, the pre-nominal slot is mostly filled by determiners whereas fillers are more frequently used with firstly mentioned referents. Results show as well that children tend to produce more determiners or fillers when the referent is familiar to them.

These contrasting productions in the pre-nominal slot suggest that even before the child acquires the complete adult-like determiner paradigm, fillers are produced associated to referents having a specific discursive status.

PETERS, A. M., (2001), « Filler syllables: what is their status in emerging grammar ? », *Journal of Child Language* 28, pp. 229-242.

SALAZAR ORVIG, A. et MORGENSTERN, A., (2001), « Can fillers have a discursive function ? » *Congrès International de l’Association d’Etudes du Langage de l’Enfant (IASCL)* Madison.

VENEZIANO, E., et SINCLAIR, H., (2000), « The changing status of ‘filler syllables’ on the way to grammatical morphemes », *Journal of Child Language* 27, pp. 461-500.

### **Abstract 5 (if applicable)**

## **The intertwining of form and function in the emergent path from fillers to determiners**

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Before using grammatical words, children use fillers whose status may evolve from prosodic entities to precursors. Previous work has shown that the acquisition path of syllable onset consonants is different in lexical words and in grammatical words. Acquisition paths in lexical words involve the progressive acquisition of a phonological system and of its contrasts. An analysis in terms of different feature principles, like feature hierarchy and markedness avoidance, was proposed to account for the successive stages in these paths. Before being accurately produced, consonants in lexical words are realized by an unmarked counterpart in the feature organisation. In grammatical words, beside few cases of consonant harmony, most inaccurate productions consist in the specific consonants [d, t, n, j], regardless of the targeted consonant, suggesting an intermediate stage in the formation of grammatical words. Finally, accurate forms emerge, indicating the specification of grammatical words. We can wonder whether this phonological path parallels the development of the pragmatic features of grammatical words.

In order to tackle this issue, we have focused on definite determiners candidates in a longitudinal corpus consisting in spontaneous productions of two French-speaking children recorded monthly between 1;4 and 3;3. Noun phrases were analyzed according to discursive and attentional status of their referent and according to the type of phonetic realization of the determiner candidate (vocalic filler, inaccurate / accurate onset consonant).

First results show that forms with consonant (accurate or inaccurate) never appear in contexts where an indefinite determiner would have been expected, such as introduction of a brand new referent, or labelling. Secondly, a gradual pragmatic specialization of the consonantal forms can be observed. And last, accurate forms correspond to the pragmatic targets of definite determiners. This first analysis suggests the intertwining of form and function in the emergent path from fillers to determiners.

**Quantitative and qualitative input factors**

**Phonetics and phonology**

## **The phonology of baby-talk words**

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**Symposium abstract:**

*Across diverse speech communities, infant- and child-directed speech contains many lexical forms that are unique to, or very typical of, the register. These include lexical replacements such as 'choo-choo' (for 'train'), and modifications such as 'doggie' (for 'dog'). It has long been recognized that such lexical items (baby-talk words) exhibit common form characteristics including the prevalence of reduplication, recurrent endings (e.g., *-i/* in English), lack of consonant clusters (cf. 'stomach' vs. 'tummy'), and favored prosodic structures (e.g., 'CVCV in English, CVG.GV in Arabic). However, little is understood about why baby-talk words exist at all or why they tend to have similar phonological patterns. As these patterns resemble the shape and size of children's early word production, they may also be products of the same underlying phonological constraints. Another possibility suggested by recent experimental work is that the form characteristics reflect perceptual or learning biases which may facilitate lexical learning. For example, word forms containing adjacent repetition of syllables (e.g., *mubaba*) tend to attract the attention in very young infants and word forms with uniform endings are easier to detect/learn. Alternatively, the primary function of baby-talk words may be social/emotional and the common form characteristics may have emerged from caregivers' subjective perception of premature vocalization.*

*The purpose of this symposium is to examine these and other possible accounts of baby-talk words through multiple perspectives. The approaches taken in the presentations include formal analysis of baby-talk words, neural and behavioral experiments of infants' responses to linguistic input containing (or not containing) characteristics of baby-talk words, and a phonetic study of the production and perception of forms that are associated with baby-talk words. Our hope is to set the direction of future research on this neglected aspect of infant/child-directed speech.*

## **Abstract 1**

### **Biases in early speech perception: Repetitions and the consonant-vowel functional asymmetry**

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Recently, several perceptual biases have been identified (Bonatti, Pena, Nespor, & Mehler, 2007; Endress, Nespor, & Mehler, 2009; Morgan & Demuth, 1996) that account for the processing and acquisition of different linguistic phenomena. Here, we explore how two biases, the detection of repetitions and the division of labor between consonants (C) and vowels (V), contribute to early speech perception, potentially shaping the phonology of baby words.

Repetitions are universally frequent in infant-directed speech and children's early vocabulary (Ferguson, 1983). We suggest that this is explained by an early sensitivity to repetitions. Indeed, in a first series of near-infrared spectroscopy (NIRS) studies, we show that newborns can track identical syllable repetitions when those are immediately adjacent, but not when they are at a distance. Further, they combine this information with information about sequential position, as they can discriminate AAB from ABB sequences.

Another bias that influences language acquisition is the division of labor between vowels and consonants (e.g. Bonatti et al., 2007). Vs are believed to constitute a preferred input for morphosyntactic processing, while Cs provide cues for the lexicon. It is therefore interesting to investigate how the repetition bias and the C/V bias combine. Specifically, in another series of NIRS studies with newborns, we ask whether depending on the context (lexical or morphosyntactic), repetitions are better detected when instantiated by the repetition of the V (ABBv "muleve") or the C (ABBc "muleli"). The ABC, ABBv and ABBc sequences were presented in different contexts: in Exp1. the high-variability, hence rule learning context should favour ABBv detection; in Exp. 2. the low-variability, hence lexical context should favour ABBc sequences. Results in Exp. 1 so far confirm the hypothesis (stronger response for ABBv than ABBc sequences); Exp. 2 is under completion.

Bonatti, L. L., Pena, M., Nespor, M., & Mehler, J. (2007). On consonants, vowels, chickens, and eggs. *Psychological Science*, 18(10), 924–925.

Endress, A. D., Nespor, M., & Mehler, J. (2009). Perceptual and memory constraints on language acquisition. *Trends in Cognitive Sciences*, 13(8), 348–353.

Morgan, J. L., & Demuth, K. (1996). *Signal to syntax: Bootstrapping from speech to grammar in early acquisition*. Hillsdale, NJ: Lawrence Erlbaum Associates.

## **Abstract 2**

### **On the origin of CVC:V baby-talk words**

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Ferguson (1964) observes that baby-talk words have the general characteristics of children's babbling and early words. In languages with singleton vs. geminate consonants, CVC:V baby-talk words (with a word-medial geminate consonant) are often attested: *bisse* and *nanna* ('pussycat' and 'food') in Lebanese Arabic, *heppa* and *simmu* ('horse' and 'eye') in Finnish, *ninni* and *pappa* ('sleep' and 'dinner') in Italian, and *kukku* and *nenne* ('shoes' and 'sleep') in Japanese. Consistent with Ferguson's observation, transcription-based acquisition studies report frequent production of word-medial geminate consonants by young children (e.g. Khattab & Al-Tamimi, 2013). However, our acoustic study of Finnish and Japanese children's early words suggests that medial consonants in young children's attempts at CVC:V words have much shorter duration relative to the flanking vowels, as compared to the adult norm. A follow-up perception study suggests that young children's speech segments are often perceived to be phonologically long because of the children's slow articulation rate. This is true not just of the word-medial consonant but also of the vowels in attempted CVC:V words, which are phonologically short. Together, CVC:V baby-talk words appear to reflect the adult's perception of (rather than the actual) ease of production of this word structure for young children.

Ferguson, C. (1964). Baby talk in six languages. *American Anthropologist*, 66, 103–114.

Khattab, G., & Al-Tamimi, J. (2013). Influence of geminate structure on early Arabic templatic patterns. In M. Vihman & T. Keren-Portnoy (Eds.), *Child phonology : whole-word approaches, cross-linguistic evidence*. Cambridge: CUP.

## **Abstract 3**

### **Reduplication facilitates early word-learning: Evidence from preferential looking in 14- to 18-month-olds**

*Skarabela, Barbora, University of Edinburgh*

*Ota, Mitsuhiro, University of Edinburgh*

A well-documented phonological characteristic of baby-talk words across different languages is the frequent use of reduplication (e.g., 'choochoo' for 'train'). Why is reduplication common in baby-talk words? What role does it play in language development? Building on recent evidence that newborns are biased toward repeated segments in the auditory signal, we examined the hypothesis that reduplication may facilitate lexical learning.

Fourteen infants ranging in age from 14 to 18 months (mean = 15.7 months) were tested in a cross-modal preferential looking task, which compared the learning of two types of novel words: reduplicated words (e.g., foofoo) versus control words with an alternative disyllabic structure (e.g., prigle). The experiment began with a familiarization phase during which the infants were exposed to four familiar labels paired with familiar objects (e.g., apple) and two novel labels paired with novel objects (i.e., a reduplicated word and a control word). At test, the infants heard one of the labels (i.e., familiar word, reduplicated word or control word) in a carrier phrase ("Where's the \_\_\_\_?"), while presented with a pair of objects: one object that correctly matched the target word and a competitor from the familiarization phase.

We measured the infants' longest visual fixation to the target object before and after the onset of the target word. This measure increased significantly in the post-target phase for familiar words ( $t(13) = 2.34, p < .05$ ) and reduplicated words ( $t(13) = 2.58, p < .05$ ), but not for the control novel words. Thus, the infants learned to identify novel objects associated with reduplicated CVCV words but not those associated with words with a different disyllabic structure. The implication is that the prevalence of reduplication in baby-talk words may be motivated by the relative ease in learning lexical items consisting of repeated syllables.

#### **Abstract 4**

### **Phonological characteristics of Arandic baby talk**

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*Demuth, Katherine, Macquarie University*

*Ngampart Campbell, April, Northern Territory Department of Education and Training*



Baby Talk (BT) is a non-standard form of speech used by adults when talking to infants. It is found in many languages and cultures (Ferguson, 1964), including those in Australia, where it has been documented for Walpiri (Laughren, 1984). This paper reports on BT forms in the neighboring Arandic languages (ABT), which show similar phonological phenomena to that found in Walpiri. The data for this study are drawn from several sources. Searches of Arandic language dictionaries revealed a large number of unique ABT terms. These were then collated and used as an elicitation tool for ABT terms in Central Anmatyerr, Kaytetye and Alyawarr. For both Central Anmatyerr and Kaytetye, a 40-year-old mother with a child under 5 and three older people of grandparent age were interviewed. Two elicitation sessions were held for each language: a one-person elicitation session and a three-person elicitation session. Audio sessions were recorded digitally and then transcribed and analysed.

It was found that ABT involves the use of a small set of unique but widely known words. Some are derived from standard vocabulary, some are onomatopoeic and others have no known source and are possibly borrowed from more distant Aboriginal languages. As in Warlpiri, ABT contains a simplified phonology that conflates the 4-way coronal contrasts to two (one apical, one laminal), and avoids rhotics and consonant clusters. Although standard Arandic words are mostly vowel-initial, this pretonic initial syllable is omitted in ABT, resulting in 'CVCV(C) word structures formed through patterns of reduplication and/or truncation. Prosodically, ABT is also characterized by a higher and more extreme pitch contour. ABT phonology becomes more complex with the perceived development of the child's phonological competence, a case of fine-tuning over time. The word-forms used suggest the use of more unmarked segmental and prosodic structures, perhaps in line with forms similar to those that young children themselves produce.

Ferguson, C. A. 1964. Baby talk in six languages. *American Anthropologist*, 66, 103–114.

Laughren, M. 1984. Warlpiri baby talk. *Australian Journal of Linguistics*, 4, 73–88.

### **Abstract 5 (if applicable)**

**First language acquisition**

**Morphology**

## **A cross-linguistic look at the use of morphosyntax in child language**

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**Symposium abstract:**

*Children's production of morphosyntax is generally early and error-free. Yet, there is some evidence that some of these productions are rote-learned. This raises the question as to when and how fast the integration of these cues during comprehension becomes adult-like and what factors influence this process. While the nominal and verbal morphosyntax is acquired early in some languages (Ketrez & Aksu-Koç, 2009; Slobin & Bever, 1982), acquisition is relatively late in others (Wittek & Tomasello, 2005; Dittmar et al., 2008).*

*Does this dissociation indicate a split between production and comprehension mechanisms? How gradual is the process of morphosyntactic acquisition? To what extent language-specific features influence the observed patterns? Early crosslinguistic research showed that factors such as reliability and validity of linguistic cues influence their acquisition (Bates & MacWhinney, 1985).*

*This symposium takes a fresh look at the acquisition of morphosyntax with new crosslinguistic data in production and comprehension. It brings together studies from various languages (Polish, Chintang, Russian, Czech, Hindi, and Turkish) and methodologies (child-language corpora, sentence-picture matching, acting-out, eye-tracking) to maintain a deep analysis on the questions below: (1) When do children start using nominal and/or verbal morphology productively in their utterances? (see the papers on Polish, Chintang and Russian). (2) How do they start using morphosyntax independent of other cues (e.g., word order, verb information, or information structure) during comprehension? (see the papers on Czech and Turkish). (3) When do children start using morphosyntax to guide the*

*interpretation of other available or upcoming information (e.g., verb meaning or argument roles)? (see the papers on Hindi and Turkish).*

*Overall, the symposium aims to facilitate a multi-perspective discussion on how comprehension and production data could be combined to further investigate the factors making some morphosyntactic systems easier to acquire.*

*References:*

*Ketrez, F. N. & Aksu-Koç, A. A. (2009). Early nominal morphology in Turkish: Emergence of case and number. In Ursula Stephany, Maria D. Voeikova (eds.). Development of nominal inflection in first language acquisition: a crosslinguistic perspective. Berlin: Walter de Gruyter.*

*References:*

*Slobin D. I. & Bever, T. (1982). Children use canonical sentence schemas: A crosslinguistic study of word order and inflections. Cognition, 12(3), 229-265.*

*Wittek A. & Tomasello, M. (2005). German-speaking children's productivity with syntactic constructions and case morphology: Local cues act locally. First Language, 25(1), 103-125.*

## **Abstract 1**

### **Developmental path to productive use of Polish noun inflections: corpus analyses**

*Krajewski, Grzegorz, University of Warsaw*

*Lieven, Elena, University of Manchester*

The aim of the present studies is to evaluate Polish children's development of nominal inflections. Previous research shows that despite the complexity of the system a 2yo child can use virtually all endings while making surprisingly few errors. Thorough corpus analyses reveal, however, that children's use of these endings may be conservative lexically and contextually. This seemingly adult-like yet highly restricted use of inflections is in line with usage-based approaches to language development, which predict a gradual emergence of productive schemas rather than a rapid formulation of symbolic rules. Lexical restrictedness implies a limited ability to combine endings with stems, whereas contextual restrictedness suggests limited semantics of emerging schemas. What is still missing though is some evidence of the gradual nature of the developmental process.

We present two analyses based on dense corpora of two girls recorded over two periods each, one girl at 1;9 and 2;0 and the other at 2;0 and 3;0. Two recording periods allow comparing the same child across two age-points and potentially capturing a developmental change. Analysis 1 compares the lexical productivity, the average number of inflections per noun type in the child's and the mother's sample and in the child's samples from two periods (Aguado-Orea, 2004; Pine et al., 2013). Analysis 2 compares the average number of syntactic contexts per inflection. Both analyses carefully control potentially confounding factors: differences in vocabulary, sample sizes etc.

Analysis 1 reveals significant improvements with age for both children and differences between them and their mothers (for the older child, the difference later disappears). Analysis 2 shows a significant improvement for one child and marginal differences for both but its results are generally less clear.

The use of inflections, as predicted by usage-based theories, becomes more productive with age but methods of comparing syntactic contexts require further development.

References:

Aguado-Orea, J. (2004). The acquisition of morpho-syntax in Spanish: Implications for current theories of development. Unpublished PhD, The University of Nottingham.

Pine, J. M., Freudenthal, D., Krajewski, G., and Gobet, F. (2013). Do young children have adult-like syntactic categories? Zipf's law and the case of the determiner. *Cognition*, 127(3), 345–360.

## **Abstract 2**

### **The role of complexity in the acquisition of morphology in Chintang and Russian**

*Stoll, Sabine, University of Zurich*

Research on the acquisition of noun and verbs has shown that there are language-specific differences in early acquisition. Whereas in most languages nouns seem to be more frequent in the early language acquisition, in languages such as Korean (Choi & Gopnik 1993), Tzeltal or Tzotzil (Brown 1998, de Leon 1999), verbs are equally or even more frequent than nouns. This paper explores the hypothesis that the important factor for an early noun or verb preference is morphological complexity. This hypothesis is investigated in longitudinal corpora of 4 Chintang and 5 Russian children (age 2-4). Chintang (Sino-Tibetan) is polysynthetic with over 1800 verb forms and Russian has highly fusional morphology and a number of inflectional classes.

Two contradicting factors in the input are relevant: frequency and complexity. In both languages verbs are more frequent than nouns. However, in both languages verbal morphology is more complex than noun morphology.

The study has four main results: First, both Russian and Chintang children other than their surrounding adults use more nouns than verbs in early development. Second, as soon as they adapt their morphological flexibility in verbs to the surrounding adults, as measured by entropy, they also adapt to the adult noun-to-verb ratio. Third, an analysis of the use of noun morphology in Russian shows that complexity is also relevant for the development of the noun system. In the earliest phase Russian children overuse the nominative, which is morphologically most simple and the most frequent case in the input. Fourth, children adapt to the case distributions of their surrounding adults exactly at the same time when they adapt to the noun-to-verb ratio and the morphological flexibility of verbs. These results suggest that morphological complexity has an important impact on the acquisition process of nouns and verbs.

References:

Choi, S., & Gopnik, A. (1993). Nouns are not always learned before verbs: an early verb spurt in Korean. In E. V. Clark, (Ed.), *The Proceedings of the 25th Annual Child Language Research Forum*, 96–105. New York: Cambridge University Press.

References:

Brown, P. (1998). Early Tzeltal verbs: argument structure and argument representation. In E. V. Clark (Ed.), *Proceedings of the 29th Annual Stanford Child Language Research Forum*, 129–140. Stanford: CSLI Publications.

de Léon, L. (1999). Verb roots and caregiver speech in early Tzotzil (Mayan) acquisition. In B. Fox, D. Jurafsky, and L. Michaelis (Eds.), *Cognition and function in language*, 99–119. Stanford: CSLI Publications.

### **Abstract 3**

## **Effects of NP Number, Case Markers, and Verbal Morphology in Syntactic Bootstrapping in Hindi**

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*Naigles, Letitia R., University of Connecticut, CT, USA*

Syntactic bootstrapping (SB) theory states that children utilize the syntactic frames of sentences to acquire or extend verb meanings. For example, when preschoolers are presented with intransitive verbs in 2-NP frames (e.g. \*the zebra goes the lion), they show frame compliance, following the frame and enacting those sentences causatively, whereas adults show verb compliance, enacting them according to the verb's meaning; i.e., noncausatively. A universal component of SB is seen in the pervasive finding that number of NPs influences verb extension even in languages with varying word orders and/or massive NP ellipsis. Language-specificity has also been observed: children learning languages like Turkish use noun morphology (e.g., accusative case markings) to extend verb meanings. Hindī, an Indo-Āryan (SOV) language with relatively free word order, further extends the cross-linguistic examination of SB in two ways: Hindī uses a split-ergative nominal case marking system (unlike Turkish), and regularly distinguishes transitive/causative and intransitive/non-causative verbs by verbal morphology.

Participants belonged to one of 5 age groups: Adults, 10-year-olds, 5-year-olds, 4-year-olds and 3-year-olds. Children enacted critical grammatical and ungrammatical sentences that contained a verb (morphologically transitive or intransitive) in 1-NP or 2-NP frames.

Preliminary data from 10 speakers each in the categories of adults, 5-years-old and 4-years-old reaffirmed the universal significance of number of NPs, and demonstrated that both agentive and accusative case markings influenced verb interpretation in all three age groups. Moreover effects of verbal morphology in verb re(interpretation) were also present: for each age group, the morphologically causative verbs in 'bare' 2-NP frames, i.e. NNV, were enacted more causatively than the morphologically non-causative/intransitive verbs.

Interestingly, few developmental effects were seen, as each of the three groups was frame compliant. Data from 3-year-olds are forthcoming; of special interest will be to examine whether even 3-yr-olds use both verbal and nominal morphology.

#### **Abstract 4**

### **Word order, case marking, and information structure in Czech 3- and 4-year-olds' comprehension**

*Smolík, Filip, Institute of Psychology, Academy of Sciences, Prague*

**Question:** Children acquiring English interpret transitive sentences according to the SVO word order shortly after their second birthday. Other languages, such as Czech or German, use nominal morphology as the primary marker of subject and object roles, which may result in the use of noncanonical object-verb-subject (OVS) word orders. There are mixed findings in the literature as to the age at which children comprehend these noncanonical word orders. The present study examined at which age Czech children comprehend OVS sentences, and whether their comprehension is modulated by the context relevant for information structure.

**Method:** Children acquiring Czech (N=117; 33 to 57 months) heard twelve pre-recorded sentences accompanied with picture pairs, each showing two characters performing the same action but in the opposite roles. Children were asked to point to the picture they heard described. Half of the sentences had SVO and half had the OVS word order. Before each comprehension trial, a context passage introduced one of the nouns as the given entity.

**Results:** Children performed above chance in both word orders, with significantly better performance in SVO sentences (proportion correct for SVO 0.74, for OVS 0.64). Givenness had no significant effects or interactions. When children were split in the younger and older group (at 44 months), both groups showed above-chance performance in SVO sentences, but only the older group in OVS sentences. No signs of below-chance performance were observed for OVS sentences in any group. This shows that even children who do not comprehend OVS sentences have some sensitivity to case marking, otherwise they should systematically misinterpret these sentences.

**Conclusion:** Czech children comprehend OVS sentences at the age of four, only slightly later than SVO sentences. There was no indication that children interpret transitive sentences using word order only.

### **Abstract 5 (if applicable)**

## **Turkish-speaking children predict upcoming arguments using case-marking**

*Özge, Duygu, Harvard University & Koç University*

*Küntay, Aylin, Koç University & Utrecht University*

*Snedeker, Jesse, Harvard University*

English-speaking children use verb predictively to detect argument roles.[1] German-speaking children fail to use case-marking to interpret OVS constructions until age six.[2] German case-marking system subsumes case and gender so may not be very reliable. Do children learning a flexible word-order language with more regular case-marking morphology use case-markers predictively?

We address whether Turkish preschoolers use nominative (unmarked) and accusative case (-i) on NP1 to predict the upcoming NP2 in verb-medial (NVN)(Exp.1) and verb-final spoken sentences (NNV)(Exp.2).

We used a visual-world paradigm.[3] The critical scenes depicted the object labelled by NP1 (rabbit), a potential Theme (carrot), and a potential Agent (fox). This was accompanied by a spoken utterance, where the first argument was either in nominative or accusative case, (1) and (2). There were 25 children (4;6-5;0) and 39 adults in Exp.1; 31 children (4;6-5;0) and 21 adults for Exp.2.

(1) Exp.1, (SVO, OVS):

Tavşan- $\emptyset$  / -1      birazdan    yiy-ecek                      şurada-ki havuc-u / tilki- $\emptyset$ .  
rabbit-Nom/Acc      shortly            eat-Fut                      there-Rel      carrot-Acc / fox-Nom

(2) Exp.2, (SOV, OSV):

Tavşan- $\emptyset$  / -1      birazdan    şurada-ki      havuc-u / tilki- $\emptyset$                       yiy-ecek.  
rabbit-Nom/Acc      shortly            there-Rel      rabbit-Acc / fox-Nom      eat-Fut

SVO&SOV: 'The rabbit will shortly eat the carrot over there.'

OVS&OVS: 'The fox over there will shortly eat the rabbit.'

We analyzed the region preceding NP2 (underlined). Our dependent variable was Agent Preference (%-looks-to-Agent – %-looks-to-Patient). In Experiment-1, children ( $p=.045$ ) and adults ( $p=.003$ ) had a greater Agent preference in the accusative condition indicating predictive use of case with the verb. Critically, this effect persisted in Experiment-2 when the modifier preceded the verb ( $p=.018$ ;  $p=.008$ ).

Turkish-speaking children use case-markers in the absence of verb information to predict upcoming arguments, indicating that 4;6-year-old children apply adult-like incremental parsing mechanism, relying on frequent and valid cues.

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[1] Trueswell, J., Sekerina, I. A., Hill, N. M., & Logrip, M. L. (1999). The kindergarten-path effect: studying on-line sentence processing in young children. *Cognition*, 73(2), 89– 134.

[2] Dittmar, M., Abbot-Smith, K., Lieven, E., & Tomasello, M. (2008). German children's comprehension of word order and case marking in causative sentences. *Child Development*, 79(4), 1152–1167.



[3] Kamide, Y., Scheepers, C., & Altmann, G. (2003). Integration of syntactic and semantic information in predictive processing: cross-linguistic evidence from German and English. *Journal of Psycholinguistic Research*, 32(1), 37–55.

*Other (please, specify) Age of acquisition effects in child language*

*Language, general*

## **Age Effects in Child Language Acquisition: Comparative Studies of Delayed Language Exposure**

*Johanne Paradis, University of Alberta*

### **Symposium abstract:**

*Age effects, especially the critical period hypothesis, are arguably the most longstanding and controversial issues in language acquisition research. While numerous studies have examined age effects in adult L2 learners, much less research has examined child learners who experience delays in onset of exposure to their L1 or L2. Thus, we have limited understanding of age effects in child language acquisition, hence the theme of this symposium. At issue is how early in childhood age effects are evident, whether patterns of child language acquisition are altered by different ages of onset, what levels of competence are attainable in relation to age of onset, and how the nature and magnitude of age effects differs when there is delay in exposure to L1 vs. L2. This symposium aims to address and provoke discussion of these issues by presenting findings on language acquisition in diverse populations of child learners who experience delayed onset of language exposure: typically-developing L2 learners (Study 1), internationally-adopted children (Study 2), and sign-language learners (Studies 3 and 4). Learners in these studies differed in whether their delay in exposure was to L1 or L2, permitting us to contrast acquisition patterns and outcomes along this divide (Studies 1 and 2 vs. 3 and 4). Learners in these studies also varied in amount of delay in language exposure, from 12-24 months (Study 2), to 4 years (Studies 1 and 3), to 10 years (Study 4), permitting us to examine variation in effects as a function of age of first exposure. Additionally, the presentations explore potential causal, or mitigating, factors which underlie and possibly explain language outcomes, including verbal memory*

*(Studies 1 and 2), L1 factors (Studies 1 and 2), amount of exposure after onset (Studies 1, 2, and 4), and the nature and status of the input (Studies 1 and 3).*

## **Abstract 1**

# **Can Early Child L2 Learners Fossilize? Evidence from Chinese L1 Children's Ultimate Attainment with English Verb Morphology**

*Johanne Paradis, University of Alberta*

*Yasemin Tulpar, University of Alberta*

*Antti Arppe, University of Alberta*

Most research on age of acquisition and ultimate attainment in L2 learners indicates native-like outcomes to be unlikely when onset of learning is post-puberty; however, a handful of studies suggest that non-native outcomes can occur even when learning begins at ages 6-8 (DeKeyser, 2012). This study sought to determine if non-native outcomes could occur when L2 learning began before age 6. Our previous research showed that, within the first 3 years of exposure to English-L2, Chinese L1 (Mandarin, Cantonese) children acquired English verb morphology more slowly than L2 children whose L1s are richly inflected (author, 2011; 2012). In this study, we asked whether the Chinese L1-English L2 children in our previous studies would achieve native-speaker levels of production and grammaticality judgements for verb morphology (3sing-s, past-ed, BE, DO) with more extended exposure to English-L2. The children (N=18) began to learn English at mean age 4;1 (range=1;7-5;8), and had a mean of 6.5 years of English exposure in school at the end of the study. Children were given the elicitation and grammaticality judgement probes from the Test of Early Grammatical Impairment (TEGI: Rice & Wexler, 2001). Results showed that 10/18 children did not reach native-speaker levels of performance on one or more TEGI probes, with 3sing-s and DO being the most difficult morphemes to master. Linear mixed-modelling analyses indicated that children with larger English vocabularies, superior short-term verbal memory, and richer English environments outside school were more likely to score as native-speakers. Younger onset of acquisition was not strongly associated with higher scores. This study suggests that fossilization at lower than native-speaker attainment is possible for children who began to learn a L2 before age 6; however, age of L2 onset may not be a significant predictor of individual differences in ultimate attainment in learners younger than 6.

DeKeyser, R. (2012). Age effects in second language learning. In S. Gass & A. Mackey (Eds.), *The Routledge handbook of second language acquisition* (pp. 442-460). New York: Routledge.

Author (2011). Individual Differences in Child English Second Language Acquisition: Comparing Child-Internal and Child-External Factors. *Linguistic Approaches to Bilingualism*. 1:3, 213-237.

Author (2012). Effects of input properties, vocabulary size and L1 on the development of third person singular –s in child L2 English. *Language Learning*, 62(3), 965-994.

## **Abstract 2**

### **Language Acquisition in Internationally-Adopted Children: A Special Case of Early Second Language Learning**

*Fred Genesee, McGill University*

*Audrey Delcenserie, McGill University*

Internationally-adopted (IA) children are an interesting natural experiment in early second language (L2) acquisition – they discontinue acquisition of the birth language as they begin to acquire the L2 (e.g., Glennen, 2002) and they have exclusive exposure to the L2. Thus, they provide a unique opportunity to examine the effects of very early delayed onset of exposure on language development. Previous research has found that pre-school and early school-age IA children score significantly lower than matched control children on tests of expressive and receptive language and, as well, on sentence recall (authors, in press). The present study asked if IA children exhibit longer term lags in their language development and in verbal memory, as suggested by their past performance on sentence recall. We also examined the link between their language outcomes and verbal memory abilities on the hypothesis that their lags in language development are linked to underlying lags in verbal memory. Tests of verbal and non-verbal memory, language abilities, non-verbal cognitive ability, and socio-emotional development were administered to 30 IA children from China (average age=10.8 years), after 9.7 years of exposure to French on average, and to 30 non-adopted monolingual children matched on age, gender, socioeconomic status, and grade level. The IA children scored significantly lower than the controls on all language tests and on measures of verbal memory (short-term, working, and long-term), but not on tests of non-verbal memory, socio-emotional or cognitive development. Regression analyses revealed further that the best predictor of language outcomes among the control children was age (or amount of L1 exposure), but verbal short-term memory was the best predictor among the IA children. The results are discussed in terms of the possible role of delayed exposure and/or attrition of the birth language on IA children's long term language and verbal memory outcomes.

Glennen, S. (2002). Language development and delay in internationally adopted infants and toddlers. *Journal of Speech-Language Pathology*, 11, 333-339.

### **Abstract 3**

## **Phonological Development in Non-Native First Language Acquisition**

*Gary Morgan, University College London*

Studies of the impact of age on phonological development mostly focus on children who learn a second language beyond early childhood. Less is known about how children would acquire a first language when exposure is from non-optimal targets. Just such a situation comes from deaf children learning to sign. Only 5-10% of signers are exposed to sign language from their parents from birth (known as native signers), instead the vast majority acquire language later in development and from adults who are themselves just learning to sign. These children, termed 'non-native signers', typically have a slower and more variable vocabulary development (Woll, 2013), which leads to different adult competencies (Mayberry, Lock & Kazmi, 2002). Surprisingly little research has studied signing in non-native acquisition. The current study looks at what happens in sign development in non-native signers and how their acquisition and input compares with native child signers. Forty deaf children (aged 1-5 years) exposed to British Sign Language between 0-5 years were recorded in spontaneous adult-child interaction and in a picture-naming task. Twenty were native signers with deaf signing parents and 20 were non-native learners with hearing parents themselves learning to sign. Thus, the two groups were matched for age but they differed in how early in life they were exposed to language. We recorded the emergence of three sign language phonological features in the children's sign: handshape, movement and location and recorded any simplifications by both the children and adults. The non-native children had a slower and narrower development of their phonological repertoire compared with their native signing peers. The input from the hearing adult signers was also less frequent and more variable compared with the deaf parents. These results reveal what early non-native language acquisition looks like and point to factors that lead to this group's future linguistic competencies.

Mayberry, R. I., Lock, E. & Kazmi, H. (2002). Linguistic ability and early language exposure. *Nature*, 417, 38.

Woll, B. (2013.) Sign language and spoken language development in young children: Measuring vocabulary by means of the CDI. In L. Meurant, A. Sinte, M. van

Herreweghe, & M. Vermeerbergen (Eds.), Sign language research, uses and practices: Crossing views on theoretical and applied sign language linguistics. Berlin: deGruyter Mouton & Ishara.

#### **Abstract 4**

### **The Character of First-Language Acquisition begun in Adolescence:**

### **The Character of First-Language Acquisition begun in Adolescence: A Longitudinal, Cross-Sectional Study**

*Rachel I. Mayberry, University of California San Diego*

*Naja Ferjan Ramirez, University of California San Diego*

*Amy Lieberman, University of California San Diego*

Infants who are born deaf may have little access to spoken or sign language and as a consequence experience natural language deprivation throughout childhood.<sup>1</sup> A crucial unanswered question is how much language such children can acquire given their early deprivation and late start in language acquisition. Can they capitalize on their cognitive maturity, bypassing the early stages of language acquisition, and quickly use complex language as in L2 learning? Alternatively, must they acquire language from scratch as in infant L1 acquisition? Using a combined longitudinal and cross-sectional design, we followed the American Sign Language (ASL) acquisition of five children who had little or no access to natural language (spoken, signed, or written) prior to being fully immersed in ASL at ages ranging from 10 to 14 years. Three children emigrated from countries with few educational services; two children received little available education. To investigate the trajectory and content of the children's language acquisition, we analyzed spontaneous ASL samples (N=1,100 utterances) collected from them after 12 to 72 months of language immersion: three longitudinal samples from two children, two longitudinal samples from three children, and one sample from one child. Despite their diverse cultural and familial backgrounds prior to ASL immersion, the children showed remarkably similar patterns of language development. Their initial acquisition of ASL signs was faster than that of young deaf children,<sup>2</sup> but their subsequent development was asymptotic and uncharacteristic of the explosive lexical and MLU growth of child L1 learners. The bulk of their utterances were unstructured; utterances that were structured were primarily short and simple and

contained little grammatical inflection, closed class signs, or pronouns. Their ASL discourse and pragmatic abilities showed limited development. This was true after 12 months of immersion and remained true after 6 years of ASL immersion. These results show that some language can be acquired after prolonged language deprivation in early childhood, but that language acquisition begun for the first time in adolescence does not display the same systematic growth of morpho-syntactic and pragmatic complexity characteristic of infant language acquisition.

1Morford, J.P., & Hänel-Faulhaber, B. (2011). Homesigners as late learners: Connecting the dots from delayed acquisition in childhood to sign language processing in adulthood. *Language and Linguistics Compass*, 5/8, 525-537.

2Anderson, D., & Reilly, J. (2002). The MacArthur Communicative Development Inventory: Normative data for American Sign Language. *Journal of Deaf Studies and Deaf Education*, 7, 83-106.

**Abstract 5 (if applicable)**

**Cognition and language development**

**Pragmatics**

## **The role of prosody in the development of communicative intentions**

*Prieto, Pilar, ICREA-Universitat Pompeu Fabra*

**Symposium abstract:**

*The role of prosody in the development of communicative intentions*

*Studies on the early development of intentionality have shown that very young infants understand adults' intentions by relying on social context and common ground (Aureli, Perucchini & Genco, 2009; Clark, 1996). Yet less is known about how children integrate prosodic and gestural features as they develop to express and comprehend intentionality. Recent work has begun to highlight the important role of prosody in children's expression and comprehension of intentions. For example, 16-month-olds can distinguish between a mistake and an intentional action through prosody alone (Sakkalou & Gattis, 2012).. This symposium aims to present and discuss recent findings on how children develop the mapping between prosody and intentions at different stages in language development, through the examination of both production and comprehension.*

*The first talk will discuss recent evidence showing how infants make use of the preceding actions of others to produce pointing appropriately. In addition, they are able to express a variety of intentions underlying their pointing through various vocalizations produced along with the points. These findings will be discussed in light of prior findings about early Theory of Mind development. The second talk will discuss results from two experiments showing that 12-month olds can understand the motives behind pointing acts (requestive, informative, and expressive) when no access to lexical nor to social context and common ground is available. The third talk will discuss results from two experiments on how 3-5 year-olds use prosodic and gestural (facial gesture) cues to speaker disbelief, and how they to weight these cues. The fourth talk will discuss how 4-year-old children are able to process sentence-type and structural ambiguities based on prosody.*



## *References*

*Aureli, T., Perucchini, P., & Genco, M. (2009). Children's understanding of communicative intentions in the middle of the second year of life. Cognitive Development, 24(1), pp. 1-12.*

*Clark, H. H. (1996). Using language. Cambridge: Cambridge University Press.*

*Sakkalou, E., & Gattis, M. (2012). Infants infer intentions from prosody. Cognitive Development, 27 (1), 1-16 DOI: 10.1016/j.cogdev.2011.08.*

## **Abstract 1**

### **Infants communicate meaningfully through use of preceding action contexts and act-accompanying cues**

*Lizskowski, Ulf, University of Hamburg*

In everyday life, the meaning of a point is vastly enriched by its linguistic context, as well as by the preceding shared actions of sender and recipient and accompanying features of the act. One question has been to what extent infants, who cannot yet specify the meaning of points through language, appropriately situate their pointing within a preceding shared action context. A further question is to what extent infants express the different intentions underlying their pointing through different vocal accompaniments. Regarding infants' use of preceding action contexts, our main findings from recent experiments are that infants track others' actions and register when it is relevant that the information of an actor is different from reality, indicating an active use of 'theory-of-mind'. For example, when an actor held a false belief about a desired object, infants provided relevant information before she would act erroneously, but did so less when she held correct information or did not desire the object. Infants' communication also entailed an actor's negative desire and distinguished cases in which an actor lacked information (ignorance) from cases when she was misled (false belief). Regarding infants' expression of communicative intentions, we find in new experiments that infants use different vocalizations to distinguish their social intentions underlying pointing; and that they differentially mark given and new referential information across vocal and gestural modalities. Together, current findings show that infants use both preceding action contexts and accompanying cues to communicate meaningfully. Findings are discussed from the perspective of pragmatic development of communication.

## **Abstract 2**

### **Infants' understanding of intentions: prosodic, gesture, and lexical cues**

*Esteve-Gibert, Núria, Universitat Pompeu Fabra*

*Igualada, Alfonso, Universitat Pompeu Fabra*

*Prieto, Pilar, ICREA-Universitat Pompeu Fabra*

Previous literature found that very young infants can understand the adults' intention behind a pointing gesture by relying on social context and common ground (Aureli, Perucchini & Genco, 2009; Behne, Liszkowski, Carpenter & Tomasello, 2012; Clark, 1996). This study explores the role of prosodic, gestural, and lexical cues in helping 12-month-old infants to infer the adult's intention when the preestablished common ground does not give them enough information. To do it, 48 twelve-month-old Dutch infants participated in two experiments in which they had to comprehend either an expressive, imperative, or informative meaning behind an adult's act when the preestablished common ground was the same across pragmatic conditions (Experiment 1) and when the common ground and the lexical information were the same across pragmatic conditions (Experiment 2). Results of Experiment 1 show that infants react differently depending on the adult's intent, since infants attended the object in the expressive condition, offered the object in the imperative condition, and attended the specific feature of the object in the informative condition. We argue that if infants cannot rely on previous contextual information to understand the intended meaning of a deictic gesture, they rely on the visual and vocal cues available to construct the common ground on-line. Results of Experiment 2 show that some intentions are more easily understood than others: infants associated an expressive intention with expressive and imperative gesture-prosodic strategies, they inferred an imperative meaning when the adult used imperative and informative gesture-prosodic strategies, and they inferred an informative intent when informative gesture-prosodic strategies were used. In conclusion, our results suggest that 12-month-old infants understand the motive of a deictic gesture with the help of prosodic and gesture cues and even if there is no common ground established beforehand.

## **Abstract 3**

### **Child comprehension of disbelief encoded through intonation and gesture**

*Armstrong, Meghan, University of Massachusetts at Amherst*

*Hübscher, Iris, Universitat Pompeu Fabra*

In this talk we present data from two experiments. In the first experiment we explore the age at which Puerto Rican Spanish speaking children between the ages of 4 and 6 can reliably use intonation as a cue to disbelief. The results show that all age groups were significantly above chance in their performance, though 6 year olds were significantly more successful than 4- and 5-year-olds on the task. Since all groups were above chance, the second experiment was designed to understand at which age children begin to be able to use intonation as a cue to disbelief. We include Central Catalan-speaking children between the ages of 3 and 5 in this experiment. Here we include both audio (intonation) and visual (facial gesture) cues to disbelief. Participants from each age group were given either an audio-only, video-only or audiovisual condition. Preliminary results indicate that 4- and 5-year-olds performed above chance for all conditions, and data collection for 3-year-olds is still in progress. We also include a Theory of Mind task to assess whether the ability to pass a false belief task correlates with children's ability to use intonation and gesture as cues to false belief. Finally, we test children's explicit understanding of intonation and gesture through a response justification question, showing that while 5-year-olds tend to have an explicit understanding of the use of intonation and facial gesture for disbelief meaning, 3- and 4-year-olds tend not to.

#### **Abstract 4**

### **Children's understanding of the pragmatic function of prosody in sentence comprehension**

*Zhou, Peng, Macquarie University*

In this talk we present three studies investigating young children's sensitivity to the pragmatic function of prosody in sentence comprehension. Understanding a speaker's prosody is directly relevant to the ability to infer the speaker's mental state or intention, so we were interested to see whether young children are able to use prosody to infer the speaker's intended meaning. We focused on two types of prosodic cues: stress and intonation. The Mandarin examples (1) and (2) are used to illustrate. In (1) stress on Yuehan 'John' indicates the meaning in (1a), whereas stress on shubao 'backpack' indicates the meaning in (1b). Note that stress here is used to signal a contrastive set in the discourse. In (2) a rising intonation on the wh-phrase 'what fruit' indicates a question as in (2a), whereas a level intonation on the wh-phrase indicates a statement as in (2b). Note that intonation here is used to indicate speech acts (i.e., asking a question vs. making a statement).

(1) Zhiyou Yuehan-de shubao shi hongse.

only John-DE backpack is red

'Only John's backpack is red.'

a. John's backpack is red, and no one else's backpack is red.

b. John's backpack is red, and nothing else is red.

(2) Yuehan meiyou zhai shenme shuiguo

John not pick what fruit

a. What fruit did John not pick?

b. John didn't pick any fruit.

Using the visual world eye-tracking paradigm, we investigated whether 4-year-old children can use stress and intonation to infer the intended meanings of the sentences as in (1) and (2). We found that young children are sensitive to both prosodic cues; but they use intonational cues more effectively than stress to arrive at the intended interpretation. We will discuss the implications of the findings for our understanding of how children develop the mapping between prosody and intention understanding.

**Abstract 5 (if applicable)**

*First language acquisition*

*Pragmatics*

## **Which pragmatic factors have the most influence on comprehension and production of referring expressions?**

*Pykkönen-Klauck, Pirita, Norwegian University of Science & Technology;*

*Allen, Shanley, University of Kaiserslautern*

### **Symposium abstract:**

*Over the past ten years, we have seen an increasing number of studies on the role of discourse-pragmatic factors in children's referential choice. However, while many such factors have been investigated, generally studies have focused on only one or two of them at a time and have thus not examined which are the most powerful in influencing referential choice. This is our goal in this symposium. The papers cover three languages (English, French, German), three data types (spontaneous speech, elicited production, comprehension), and a range of discourse-pragmatic features including prior mention, order of mention, topic vs. focus, joint attention, information content, visual presence, and dialogic dynamics.*

*Paper1 tests the contribution of six pragmatic factors to referential choice in spontaneous speech (English, 2-3 yrs). Paper2 investigates the influence of prior mention, joint attention, and dialogic dynamics in demonstrative vs. personal and strong vs. clitic pronouns in spontaneous speech (French, 1-3 yrs). Paper3 explores the contribution of prior mention and focus to whether referents are realized as pronouns or NPs in an elicited production study (English, 5 yrs). Paper4 determines whether informativeness or familiarity is most predictive of the use of adjectives in elicited production (English, 3 yrs). Finally, in Paper5, the roles of topic continuity/shift, focus, order of mention and visual presence are assessed in a meta-analysis of comprehension studies (German, 4 yrs).*

*The result will be a developmental overview of the factors children are sensitive to across the period one to four years of age, and the relative importance of these factors in language comprehension and production. By identifying any gaps in the emerging picture, and promoting interaction among researchers using different methodologies, we hope to establish what research needs to be done to yield a more complete account of which factors matter the most in the development of reference.*

### **Abstract 1**

## **An investigation into the relative strength of six discourse-pragmatic features in the acquisition and use of referential forms in child English**

*Hughes, Mary, Boston University*

*Allen, Shanley, University of Kaiserslautern*

Previous research has demonstrated that children as young as 2;0 are sensitive to discourse-pragmatic context when selecting referential forms. In this study, we explore children's sensitivity to the incremental effect of six discourse-pragmatic features in an attempt to understand the relative strengths of each feature. Statistical measures reveal important information about the strength of each feature and how combinations of features inform choice of referring expressions.

Videotaped data from four monolingual English-speaking children in spontaneous interaction with their caregivers were analyzed at Time 1: 2;0-2;7 and Time 2: 3;0-3;1. The data were coded for discourse-pragmatic information by a set of six binary features which predict the accessibility of a referential argument (i.e., ANIMACY, CONTEXTUAL DISAMBIGUATION, PHYSICAL PRESENCE, PRIOR MENTION, LINGUISTIC DISAMBIGUATION, and JOINT ATTENTION).

Children were sensitive to the incremental effects of accessibility; however, not all features contributed to accessibility to the same degree. By using the statistical measure of logistic regression analysis, certain features were shown to be stronger in predicting children's use of referential forms.

At Time 1, an accessible value for PHYSICAL PRESENCE was the strongest predictor of null subjects, while accessible values for PRIOR MENTION and PHYSICAL PRESENCE were the strongest predictors of pronominal subjects. Moreover, accessible values for PHYSICAL PRESENCE and JOINT ATTENTION were the strongest predictors of demonstratives. At Time 2, an accessible value for PRIOR MENTION was the strongest predictor of null subjects, while accessible values for PRIOR MENTION and JOINT ATTENTION were the strongest predictors of pronominal subjects, and accessible values for PHYSICAL PRESENCE and JOINT ATTENTION were the strongest predictors of demonstratives.

These findings have important implications for Theory of Mind, cognition, and linguistic aptitude for children as young as 2;0, demonstrating that children's ability to determine the context of referential expression occurs at an earlier age than previous accounts suggest.

## **Abstract 2**

### **Demonstratives and personal pronouns in French: Concurrent factors for early contrasts**

*Salazar Orvig, Anne, Université Sorbonne Nouvelle*

*da Silva, Christine, Université Sorbonne Nouvelle*

Recent studies on referring expressions have established the early sensitivity of children to pragmatic/discursive factors. These factors account for the choice between overt and null arguments in different languages (Allen et al., 2008), or nouns versus clitic 3rd person pronouns, or different forms of demonstratives as in Inuktitut or Turkish (Skarabela et al., 2013). In this paper, we examine the distribution of three pronominal forms in French in the light of previous mention, shared attention, and dialogical dynamics.

In French, the strong demonstrative “ça”, the clitic demonstrative “c” and the 3rd person clitic pronouns form a continuum. The demonstrative “ça” is highly preferred for first mentions but it can be used for previously mentioned referents. While both demonstrative clitic “c” and 3rd person pronoun are predominantly used for previously mentioned referents, the latter is overwhelmingly used for topical continuity.

Thirty sessions of natural interactions of children, aged between 1;10 and 2;6, were analysed. The corpus combines cross-sectional and longitudinal data (5 children). All the referential expressions were identified and coded according to their discursive and attentional status (new, under focus, previously mentioned, or reactivated referent) on the one hand, and the dialogical characteristics of their occurrence (repetition, answering, perspective shifting, opposition) on the other hand.

Results show that discursive and attentional status accounts for the main opposition between the referring expressions, drawing a first contrast between strong demonstrative on one side and clitics on the other side. The dialogical factors account for more nuanced contrasts. For example, when a strong demonstrative refers to a previously mentioned referent, it does so in the context of a perspective shifting. Discussion deals with the influence of dialogical and pragmatic factors in the construction of grammatical paradigms in the early steps of language acquisition.

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### **Abstract 3**

## **The role of argument focus and prior mention: Noun phrases and pronouns in the English dative alternation**

*Serratrice, Ludovica, University of Manchester*

This paper investigates the role of argument focus and prior mention in the alternation between pronouns and noun phrases in the description of a transfer event using either the prepositional object (e.g. “Tom handed the baby to Mary”, PO), or the double object dative constructions (e.g. “Tom handed Mary the baby”, DO).

Forty-eight English-speaking monolingual children (age range 5;4-6;5) took part in a priming study. Children were primed with both PO and DO constructions in a within-subjects design where construction type (DO, PO) and discourse context preceding the target (neutral context, focus on theme, focus on recipient) were manipulated. There was no lexical overlap between the verb in the prime and in the target.

Overall the children used fewer DO constructions than PO constructions (PO, N = 526; DO, N = 120), and the distribution of DO constructions was not affected by the model in the prime ( $p = 0.72$ ). More interestingly the manipulation of the discourse context was significant in two important ways: firstly, children produced significantly more DO constructions in the “focus on recipient” condition than in the “focus on theme” ( $p < .001$ ) or the “neutral” condition ( $p < .001$ ); secondly, while they only ever used noun phrases in the DO constructions in the “neutral” condition, they used a pragmatically optimal pronoun for the recipient in 52% of the DO constructions (39/74) in the “recipient” condition ( $p < .001$ ).

The main finding is that, not only was the likelihood of the production of the dispreferred DO dative construction significantly increased by biasing the child’s focus of attention on the recipient, but so was the use of the pragmatically optimal pronominal form for the recipient.



## **Abstract 4**

### **3-year-old's referring expressions balance familiarity with informativity**

*Bannard, Colin, University of Texas at Austin*

*Rosner, Marla, University of California at San Diego*

*Matthews, Danielle, University of Sheffield*

When producing referring expressions, children need to choose a description that best distinguishes the intended referent from other options. That is, they need to choose which words to include according to their information content. As a general rule, frequent linguistic forms carry less information than rare ones (cf. information theory, Shannon, 1948). For example, if we refer to someone as a 'young man', we are, in most contexts, giving less information about them (discriminating them less from other men) than if we use a less frequent term (e.g. 'mean man'). Yet, it is well established that children are quicker to acquire, and more accurate in producing frequent forms. We here explore how 3-year-olds negotiate the tradeoff between a drive to produce easier, familiar forms and a drive to be informative (N= 23 to date).

We paired 8 nouns with 2 different adjectives each (giving 16 unique phrases, all attested in CHILDES). The frequency of each phrase and of the component words was varied so that one of each phrase for each noun was a collocation (as measured using pointwise mutual information, Mackay, 2003; e.g. old woman, pretty dress) and the other was not (e.g. kind woman, little dress).

Children were shown pictures depicting the phrases while E1 described them. They were then shown them again and asked to tell E2 what they could see. Children's descriptions were significantly less likely to include an adjective when E1's adjective had been low information (i.e., part of a collocation like 'pretty dress'), in which case children tended to produce the noun alone. However, when children did produce an adjective, they were significantly more likely to copy the exact one used by E1 if it was part of a collocation. Thus they seemed to balance a preference for familiarity with a drive to inform.

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## **Abstract 5 (if applicable)**

# **A meta-analysis of information structure and visual presence during ambiguous pronoun resolution among 4-year-old children**

*Järvikivi, Juhani, University of Alberta*

*Pyykkönen-Klauck, Pirita, Norwegian University of Science & Technology*

In order to get a view of the relative importance of different pragmatic and discourse factors that children use to resolve pronouns in discourse, we conducted a meta-analysis of four recent visual world eye-tracking (VWP) experiments with 4-year-old German children. VWP has become a popular method to study referential access as it reveals the cues children use during the comprehension process (e.g. Arnold et al., 2007; Clackson et al., 2011). However, typically children's eye movements to referents are measured after they hear a pronoun. In our study, we wanted to ask to which extent eye movement behaviour during the prior context predicts how children are going to resolve the pronoun. Our meta-analysis targeted whether topic continuity/shift, focus, order of mention and visual presence affect children's eye movement behaviour in the context prior to the pronoun and whether those eye movements predict the selection of pronoun antecedents. The eye movement data was modelled with mixed-effects and generalized additive models allowing inspections of random and fixed effects as well as time-related "wiggly" curves like time course curves in VWP (e.g. Baayen, 2013). The results showed that the extent to which the characters were fixated during the prior context significantly predicted the looks to the characters after the pronoun in studies in which visual presence was not manipulated: Pragmatic variables such as topic/focus increased the likelihood to fixate the highlighted entities prior to the pronoun more than other entities. In addition, order of mention in relation to grammatical roles modulated the likelihood of fixations and predicted the pronoun resolution results. However, in the scenes containing dynamic manipulation of the visual co-presence of entities, the eye movement pattern was not a predictor for the pronoun resolution results. The results suggest interesting dynamics of eye movements and pragmatic factors in referential access among young children.

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*Cognition and language development*

*Morphology*

## **Grammatical gender in monolingual and bilingual acquisition:**

### **New approaches in new contexts**

*Rodina, Yulia, University of Tromsø*

#### **Symposium abstract:**

##### *Symposium background*

*In many languages grammatical gender is a complex phenomenon which shows close interrelation of several grammatical features: lexical, phonological, morphological, and syntactic. The aim of the proposed symposium is to contribute to our knowledge of the role of these features in monolingual and bilingual acquisition in previously less studied languages and language combinations. The symposium takes a new approach by comparing the acquisition of gender systems of typologically close and distinct languages and dialects, such as Italian and Venetian, Greek and German, Greek and Dutch, as well as the Tromsø dialect of Norwegian. We investigate how the gender features, which have varying degrees of predictive power in these languages affect the acquisition process and how cross-linguistic differences and similarities contribute to this process. Furthermore, we consider how the various gender features in these languages correlate with other factors, such as age of onset, frequency of exposure, language dominance, vocabulary knowledge, and cognitive abilities of bilingual speakers.*

##### *Symposium questions:*

- 1. How is lexical knowledge and gender marking acquired in typologically similar vs. distinct languages?*
- 2. How are gender systems acquired in close dialectal contact?*

3. *What is the role of age of onset, frequency of exposure, language dominance, vocabulary knowledge, and cognitive constraints in bilingual acquisition?*

*The proposed symposium will thus contribute to the existing debate with original empirical data presented from a range of novel theoretical and methodological approaches within first language acquisition and bilingualism.*

### **Abstract 1**

## **Gender marking and language separation in bi-dialectal children (Venetian-Italian)**

*Klaschik, Ewgenia, University of Hamburg*

*Kupisch, Tanja, University of Hamburg*

The study is concerned with gender marking in children growing up bi-dialectally with Italian and Venetian, and the question whether they separate their two dialectal varieties similar to children acquiring two different languages. More specifically, we investigate (i) transfer in gender assignment if nouns have different genders in Italian and Venetian; (ii) code-switching in one language as compared to the other, and (iii) directionality of language influence.

The study is based on two separate production tasks, one in Italian and one in Venetian, eliciting article-noun-adjective sequences with noun items that either have the same genders in the two dialects (e.g. *el pan* vs. *il pane*) or different ones (Ve. *el pomo* – It. *la mela*). The participants were 25 bi-dialectal children in the Province of Padova and an adult control group. The children were divided into a younger (5-6 years; n=5) and an older group (7-12 years, n=20). The older group included frequent (n=11) and infrequent dialect users (n=9).

The analysis shows no problems across groups with gender assignment in Italian. The Venetian data shows more variation. Beyond target-like Venetian DPs, children use translation equivalents from Italian, showing concord with the article, as well as mixed DPs with nouns that are Italian-based but phonologically adapted to the dialect (*la mea* instead of Ve. *el pomo* or It. *la mela*). The use of target-like Venetian DPs correlates with exposure to the dialect.

Overall, results show language influence in the lexicon, but close to no gender mismatches between the determiner and the noun. The fact that borrowing and code-switching are almost 100% unidirectional and more frequent when Venetian is the target dialect can be taken to suggest that bi-dialectal children separate their two varieties, similar to bilingual children (Genesee 1989, Meisel 1989).

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## **Abstract 2**

### **Gender attribution and agreement in English-Greek & German-Greek bilingual Children: The role of lexical and phonological cues**

*Tsimpli, Ianthi, University of Reading*

*Kaltsa, Maria, Aristotle University of Thessaloniki*

Our study investigates gender attribution and agreement in Greek novel and real nouns by bilingual English-Greek and German-Greek children. German and Greek are grammatical gender languages whereas English is not. In novel nouns, gender can only be assigned via exploitation of phonological cues on noun endings while in real nouns lexical gender is deterministic. Adult monolinguals use phonological cues for gender attribution post-lexically and only for borrowed and novel nouns (cf. Bates et al 1995; Hohlfeld 2006). Monolingual Greek children become sensitive to noun endings gradually attaining adult performance on novel nouns around age 5 (Mastropavlou 2006).

In the current study, we assessed the involvement of lexical and morpho-phonological knowledge by comparing participants' performance in elicited production tasks with novel and real nouns. We profiled participants for type of bilingualism through independent vocabulary measures, and ethnographic questionnaires. Elicited production tasks for novel and real nouns in determiner-noun and adjective-noun contexts were used. For real nouns (54 items), we tested eight different endings across gender values: three for masculine and neuter and two for feminine. All novel nouns (56) shared the same endings as real nouns, were three syllables long and penult-accented. Results showed better performance on real than novel nouns. Higher accuracy scores on real nouns correlated with lexical abilities while German-Greek bilinguals appeared to outperform English-Greek ones. However, age of onset and amount of exposure reveal differentiating effects, such that Greek-dominant bilinguals show the strongest role for lexical cues.

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### **Abstract 3**

## **The relative scope of linguistic and general cognitive constraints in the bilingual acquisition of grammatical gender morphology**

*Sorace, Antonella, University of Edinburgh*

A recent study (Unsworth et al 2012) found that English-Greek bilingual children acquire Greek gender morphology earlier than English-Dutch children acquire Dutch gender morphology, and the quality and quantity of input plays a more important role for Dutch gender than for Greek gender. These findings are in line with differences between Greek and Dutch monolingual children (Blom et al 2008) as well as with previous studies of bilingual Dutch children (Hulk & Cornips 2006). This paper offers an interpretation of these patterns in terms of the greater role played by attentional control and other late-developed executive function abilities in the development of opaque gender systems, such as Dutch, which are less sensitive to linguistic constraints. It suggests a parallel with other late-acquired structures (e.g. pronominal anaphoric dependencies), which also rely on efficient executive functions. Finally, it proposes that linguistic and general cognitive conditions may each have greater or narrower scope and may show different modes of interaction for different language phenomena.

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#### **Abstract 4**

### **The gender system of the Tromsø dialect of Norwegian:**

#### **Language acquisition and language change**

*Rodina, Yulia, University of Tromsø*

*Westergaard, Marit, University of Tromsø*

The acquisition of grammatical gender in the dialects of Norwegian is largely understudied. Like standard Norwegian, the Tromsø dialect distinguishes masculine, feminine, and neuter. Previous research suggests that the acquisition of gender may be delayed and that masculine is frequently overgeneralized with neuter and especially feminine nouns by children (Gagliardi 2012).

The present study investigates 1) when gender is acquired, 2) what aspects of gender are problematic for children, and 3) whether feminine is late acquired or in the process of being lost. We conducted two elicited production experiments with 15 monolingual pre-schoolers (M=5;2) and 12 school children (M=7;6). The tasks were designed to elicit indefinite (eiF grønn såpe(F) 'a green soap') and double definite DPs (denM/F grønne såpaF 'the green soap'). Study 1 tested knowledge of all three genders, while Study 2 focused on the acquisition of the feminine in four classes of nouns expressing different semantic (+/- female) and morphological cues (+/- -e).

The results of Study 1 show that preschoolers overgeneralize masculine 85% with feminines, but only 21% with neuters. School children make only 8% errors in the neuter, while feminine is still highly error-prone – 91%. Study 2 shows that both age groups use masculine agreement approximately 80%, irrespective of the feminine noun class (enM grønn såpe(F)). At the same time, the feminine definite article (which is a suffix, -a) is used correctly 94% and 100% by preschool and school children respectively (denM/F grønne såpaF). This suggests that children have problems with gender agreement, but not gender assignment (Enger 2004, Lødrup 2011).

We argue that feminine is being lost due to a combination of factors: considerable dialect mixture/language contact in Tromsø in recent years, and paradigm similarities between the masculine and the feminine.

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**Abstract 5 (if applicable)**



*Cognition and language development*

*Language, general*

## **Longitudinal studies on predictors of early language acquisition: Methodological challenges and initial findings**

*Rohlfing, Katharina, Bielefeld University*

### **Symposium abstract:**

*In conducting longitudinal studies, researchers seek not only to identify predictors for language skills but also to understand the learning mechanisms and interactions among different precursor abilities that drive developmental change. We report on four on-going longitudinal studies that all focus on early language acquisition. They share a broad theoretical perspective whereby early communication emerges from precursor skills that are related to joint attention and joint action (Csibra & Gergely, 2007; Tomasello, 2008). Study 1, a training study with high and low SES families, tests the hypothesis that parental contingent talk promotes infant language development; study 2 reports an analysis of the relation between informative pointing and later receptive and expressive vocabulary; study 3 focuses on the separate contributions that infants and parents make to joint attention and how each predict language learning; study 4 assesses the longitudinal relations between joint attention, joint action, informative pointing and vocabulary development.*

*The goal of the symposium is twofold: One goal for each contributor will be to introduce the precursor abilities that the study is investigating, discuss their relationship to language acquisition and present first results. The main goal, however, is to address methodological challenges in the coding of precursor abilities. Most of the predictors of interest involve complex verbal and nonverbal behavior, the classification of which requires simultaneous attention to several dimensions. One consequence of this is that context-independent coding is difficult and there is a dearth of agreed-upon coding conventions in the literature. In the symposium, we will therefore exchange operationalization strategies, practices and definitions of different behavior in order for the field to achieve a transparent*

*consensus on possible predictors of language acquisition in early interaction. We will thus discuss methodological problems and solutions from each study and consider how we could agree on a core set of coding recommendations.*

### **Abstract 1**

## **A training study to promote contingent talk and test its effect on language development.**

*McGillion, Michelle, University of Sheffield*

*Pine, Julian, University of Liverpool*

*Herbert, Jane, University of Sheffield*

*Matthews, Danielle, University of Sheffield*

Contingent talk refers to a style of communication whereby the caregiver talks about what is in the infant's current focus of attention. Longitudinal studies demonstrate a positive correlation between early contingent talk and later vocabulary learning (e.g., Carpenter et al, 1994; Masur et al., 2005). Furthermore, such studies suggest that increasing parental contingent talk would promote language development specifically for those at risk due to social disadvantage (Hoff, 2003). However, based on correlations alone, it is difficult to establish whether contingent talk is a cause of better language outcomes and whether it is possible to intervene in such a way as to promote language growth. An added complication is that different studies operationalize contingent talk in different ways and there is currently no consensus as to which measure is most important (Masur et al., 2005). We address these issues with a properly controlled, longitudinal intervention study for which data collection is ongoing (current sample: 58 infants. Anticipated sample: 150 infants. 50 % low SES; 50 % randomized to training). Parents in the training condition were shown a video about contingent talk and asked to practice engaging in it for a month. Contingent talk was measured at baseline (when infants were 11 months) and after training (when infants were 12 months) by coding a 30 minute video recording and by automatically analyzing 32 hours of LENA audio recordings. Measures include temporal contingency (responses to infant vocalizations) and semantic contingency (talk about infant's focus). Preliminary observations demonstrate a marked difference in the rates of temporally contingent talk on the video recordings compared to the longer audio recordings. Analyses will test for an effect of training on contingent talk and for interactions with SES. Finally, the effect of SES and training on receptive and expressive vocabulary at 15 months will be reported.

### **Abstract 2**

## **Do declarative gestures reflect a general motivation for communication?**

*Grimminger, Angela, Bielefeld University*

*Rohlfing, Katharina, Bielefeld University*

*Lüke, Carina, University of Dortmund*

*Liszkowski, Ulf, University of Hamburg*

*Ritterfeld, Ute, University of Dortmund*

Declarative pointing represents a special type of nonverbal behavior that can be found in typically developed children (Tomasello & Camaioni, 1997). Motivated by Liszkowski et al. (2007), we present a longitudinal study, in which specific settings were used to elicit either declarative or imperative pointing in infants aged 12 and 18 months (current sample: 33 infants; anticipated sample: 60 infants). Our hypothesis was that the amount of declarative gestures that the children produce in interaction – either to share their interest or to provide information – predict their later vocabulary development. Preliminary regression analyses reveal that infants' use of index finger points to share their interest at 12 months together with the maternal educational level predict 37 % of the variance of their receptive vocabulary at 16 months ( $F(2,26) = 9.28, p < .005$ ). Infants' use of index finger points also explain 14 % of the variance of their productive vocabulary at 18 months ( $F(1,31) = 6.40, p = .017$ ).

In addressing the methodological challenges, we will report difficulties in identifying declarative gestures. More specifically, in one setting, in which hand puppets appear behind the experimenter, we assume that infants will express their interest by pointing at the puppets. However, it seems as if infants also point imperatively, i.e. asking for the puppet to reappear. We therefore intend to discuss characteristics of each type of pointing motive when the context, even when controlled, makes more than one option possible.

Another methodological challenge concerns the judgment of appropriate communicative behavior, which is usually not limited to one observation. E.g., when the experimenter accidentally drops an object and asks for it, some infants will search for it and also point but to some other referent in the room. Thus, while children seem to cooperate, their communicative behavior is not informative and thus not correct.

### **Abstract 3**

## **The active child and early language development.**

*Gattis, Merideth, Cardiff University*

Historically, theories of human development have differed in the extent to which children are viewed as active contributors to their own development versus the product of social environments. The construct of joint attention implicitly incorporates the notion of an active child because joint attention episodes involve active engagement with a social partner, such as a parent, and some third entity, such as a toy or another person. Numerous longitudinal studies have now established that joint attention is an important precursor ability to language development. However, the nature of the study designs and measurement tools in these studies has often led to an entity-like conceptualization of joint attention abilities rather than an activity-based conceptualization. In this talk, I will describe and evaluate various ways in which infants can be active contributors to early language development through joint attention. My aims are 1) to identify specific, active infant behaviours, 2) to identify specific, active parental behaviours, and 3) to compare the relative contributions of each to early language development. I will draw on analyses from First Steps, a longitudinal study of infants from birth to 18 months (N = 39) that included at-home diaries and structured parent report as well as naturalistic observations. The first set of analyses I will present evaluates and confirms that infant self-locomotion contributes to early vocabulary development. The second set of analyses I will present evaluates and confirms that infant following of maternal attention contributes to vocabulary development. Finally, I will discuss how each of these infant contributions to language development interact with, and go beyond, maternal contributions.

#### **Abstract 4**

### **Joint attention, joint action and language development in a child's second year.**

*Białek, Arkadiusz, Jagiellonian University Krakow*

*Białecką-Pikul, Marta, Jagiellonian University Krakow*

*Stępień-Nycz, Małgorzata, Jagiellonian University Krakow*

Joint attention (JA: the ability to coordinate attention to an object of mutual interest) provides the shared perceptual space in which joint action (JAc: the ability to coordinate one's own actions with those of others to bring about a change in the environment) takes place. Both abilities are crucial for language acquisition and use (Tomasello, 2008). Additionally, if one function of language is informing recipients, its development should also be related to use of pointing gestures (a component of JA) with an informative function (IP). We investigate the relationship between these abilities (JA, IP and JAc) and language development in a longitudinal study. 320 Polish-learning children were tested at the ages of

12, 18 and 24 months. We used the Early Social Communication Scales (Mundy et al., 2003) to measure initiating and responding to JA (12 and 18 mths), tasks aimed to elicit an IP (at 12, 18 and 24 months) and a task to measure cooperative JAc (at 18 and 24 months). Receptive and expressive vocabulary were measured at 24 months with the use of the Picture Vocabulary Test: Comprehension (Haman & Fronczyk, 2012) and children's spontaneous production of words during the different tasks. The analyses to date (concerning data collected at 12 and 18 months) have revealed positive relations between using JA and IP (at 12 months) and longitudinally between responding to JA (at 12 mths) and JAc (at 18 months). The difficulties with operationalisation of the studied phenomena will be discussed (e.g. JAc based on motor coordination vs that based on recognition of intentions). Finally, we raise the issue of the multimodal and dynamical qualities of early interaction: the need for detailed simultaneous examination of vocal and motor components, which enable identification of contingencies between communicative behaviours and for treating the infant and caregiver as a coupled system.

**Abstract 5 (if applicable)**

*Cultural and social factors in child language development*

*Language, general*

## **Fostering Preschool Children's Academic Language**

*Rowe, Meredith, University of Maryland*

### **Symposium abstract:**

*When children arrive at school, they are expected to converse in “academic language,” the discourse used in schooling situations to make an argument, to comprehend a text, to give a presentation, to integrate information across multiple passages, etc. (e.g., Schleppegrell, 2004). Academic language is dense, abstract, and decontextualized and, as such, is distinct from the more contextualized language that young children are typically exposed to in their daily lives (Snow & Uccelli, 2009). Academic language can thus present children with significant challenges. It is possible, however, that certain experiences, at home and at school, can help foster preschool children's oral language skills and prepare them for these challenges. Specifically, parent and teacher input that resembles the lexical and syntactic properties of academic language contributes to children's oral language skills such as vocabulary and narrative ability (e.g., Dickinson & Tabors, 2001). The goal of this symposium is to build on the prior work in this area by bringing together researchers who examine factors that contribute to preschooler's oral language skills to engage in a discussion about how to best prepare children for academic language. Two of the studies examine aspects of parent's decontextualized input in the home environment in relation to preschoolers' vocabulary, narrative or syntax skills. The third paper presents results from parent-focused interventions to enhance parent-child use of narratives as well as children's phonological awareness. The fourth paper presents results of a preschool-based intervention to improve teachers' scaffolding of children's oral language skills. Children from a variety of populations are represented in the talks (e.g., diverse SES backgrounds, typically-developing children and children with brain injury). We also include a discussant who is an expert on these topics and*

*who can speak to the importance of parents' and preschool teachers' roles in preparing children for the challenges of academic language.*

### **Abstract 1**

## **A Comparison of Preschool Children's Discussions with Parents During Picture and Chapter Book Reading**

*Leech, Kathryn, University of Maryland*

*Rowe, Meredith, University of Maryland*

One way in which parents can prepare children for the challenges of academic language is through conversations during picture book reading (Bus, van Ijzendoorn, & Pellegrini, 1995), especially conversations that include a form of abstract language known as extended discourse (e.g., Dickinson & Tabors, 2001). With a recent report of increased chapter book reading among families with preschool children (Bosman, 2010), it is unknown whether chapter books also facilitate these types of conversations. Further, the substantial variation in preschoolers' language ability raises the question of whether chapter book reading may be beneficial for all children of this age. In the present study, we asked whether parent-child discussions differed while reading picture books compared to chapter books. We also asked if children's narrative skills affected their ability to participate in these discussions, especially during chapter book reading.

To address these research questions, we transcribed all non-text speech from parents and their 5-year-old children (n=33) while reading a picture book and the first chapter of a chapter book. Speech measures included quantity of non-text talk, vocabulary diversity, and extended discourse (e.g., narratives, predictions). Independent from reading, children's narrative ability was measured by counting the number of plot events mentioned while narrating a wordless picture book.

We found substantial variability in the amount and types of speech parents and children used during both books. While measures of parent non-text speech did not differ between book readings, children talked more, used more diverse vocabulary, and used more extended discourse during picture book reading. Further, children with higher narrative skills used more speech than children with lower skills during chapter book reading, whereas no differences emerged for children's talk during picture book reading. Results will be discussed in terms of how book genre can influence book reading discussions that prepare children for academic language.

## **Abstract 2**

### **Vocabulary, syntax, and narrative development in typically developing children and children with early unilateral brain injury: Early parental talk about the there-and-then matters**

*Demir, Ozlem Ece, Northwestern University*

*Rowe, Meredith, University of Maryland*

*Heller, Gabriella, University of Chicago*

*Levine, Susan, University of Chicago*

*Goldin-Meadow, Susan, University of Chicago*

Although children's earliest conversations with parents are often limited to topics in the here-and-now (i.e., they are contextualized), parents, at times, engage in conversations with their children that are about the there-and-then—about invisible entities and abstract ideas (i.e., the talk is decontextualized) (Snow, 1990). During these conversations, children experience the rich vocabulary, complex syntax, connectives, and meaningful relations between different parts of the discourse that are important for the development of later language skills (Curenton & Justice, 2004). Indeed, parents' use of decontextualized language relates to children's language skills (Dickinson & Tabors, 2001). Here we examine the role of parents' use of decontextualized input in the development of vocabulary, syntax, and narrative skill in typically developing (TD) children and in children with pre- or perinatal (BI) brain injury. We found that parent decontextualized talk is lexically and syntactically richer than contextualized talk. For all children, parent decontextualized talk at child age 30 months was a significant predictor of child vocabulary, syntax, and narrative performance at kindergarten, controlling for parent contextualized talk, demographic factors, and child preschool language skill. Decontextualized talk played a larger role in predicting narrative skill at kindergarten for children with BI than for TD children, primarily because children with BI had lower narrative scores than TD children. When the two groups of children were matched in terms of narrative skill at kindergarten, the impact that decontextualized talk had on narrative skill did not differ for children with BI and for TD children. Thus, decontextualized talk is a strong predictor of later language skill for all children, but particularly for children with lower language skill. The findings also suggest that the variability in children with BI's language development is influenced not only by the biological characteristics of their lesions, but also by the language input they receive.

## **Abstract 3**

### **A Time to Talk:**



# **A Conversational Intervention for Children's Language Learning**

*Johnston, Jessica, University of Otago*

*Reese, Elaine, University of Otago*

*Schaughency, Elizabeth, University of Otago*

*Das, Shika, University of Otago*

Children's oral language skills – especially vocabulary, narrative, and phonological awareness – pave the way for school success. Research shows that the way parents read books and converse with their children helps their vocabulary and narrative skills, and ultimately their school achievement (Dickinson & Tabors, 2001), but we know little about the ways that parents can help their children's phonological awareness. We are training parents to read and talk about books with their preschoolers in ways that we expect to advance children's oral language, including their academic vocabulary, their narrative skills, and their phonological awareness.

**Methods.** We are piloting two styles of reading and talking about books for parents of 4-year-olds: Rich Reading and Reminiscing (RRR) and Strengthening Sound Sensitivity (SSS). RRR involves requesting and providing information about the storyline and word definitions during book-reading, followed by shared reminiscing about a related past event. SSS involves requesting and providing information about the sounds of words (rhyming and onset) during book-reading, followed by a related soundplay activity. Children and parents in both experimental conditions will interact with the same 12 books over a 6-week period. Children are pre- and post-tested on their vocabulary, narrative, and phonological awareness skills using established measures. A total of 90 families will participate in the intervention in 2013-2014 (n = 30 for each experimental condition and for a control condition in which parents receive resources about school readiness but no storybooks or training).

**Anticipated Results and Conclusions.** We expect that children in the RRR condition will show greater increases in their vocabulary and narrative skills, and children in the SSS condition will show greater increases in their phonological awareness skills at post-test compared to children in either the alternate treatment or control conditions. These results could ultimately inform a comprehensive oral language intervention with parents of at-risk preschoolers.

#### **Abstract 4**

### **Teachers' Use of Scaffolding Strategies to Differentiate Early Language Instruction in Preschool Settings**

*Pentimonti, Jill M., The Ohio State University*

*Justice, Laura M., The Ohio State University*

*McGinty, Anita S., University of Virginia*

*Slocum, Laura, The Ohio State University*

*O'Connell, Ann, The Ohio State University*

The present study sought to examine the exposure to scaffolding strategies that young children receive in their classrooms and to further explore the possible relationship between scaffolding and children's language development. Scaffolding can be defined as the process of temporarily providing support to a learner and then gradually withdrawing this support as the learner becomes capable of independence in performing tasks (Wood, Bruner, & Ross, 1976). The use of scaffolding strategies has been shown to be an effective method for providing differentiated instruction (e.g., Juel, 1996) and teachers' ability to provide differentiated instruction may help in reaching the range of learners teachers encounter in their preschool classrooms. Children within today's preschool classrooms demonstrate a wide range of skills, as more children come from low-income backgrounds, are second language-learners and experience a multitude of risk factors, including delays in the development of language skills (Bowman, Donovan, & Burns, 2001). This diversity among young children indicates the necessity to investigate ways in which their different learning needs can be supported. Therefore, the aim of the present work was to examine teachers' ability to use scaffolding strategies to differentiate instruction and to support children's language development. Participants were 37 preschool teachers and the 177 children in their classrooms. Videotaped classroom observations were carried out and coded for the frequency of teachers' use for six types of scaffolds. Children were assessed on measures of language skills. Study findings indicated that teachers utilized scaffolding strategies at relatively low rates and that they utilized low-support scaffolding strategies more frequently than high-support strategies. Further, results suggested that the use of certain types of scaffolding strategies may be beneficial for children's development of language skills. Findings from this work suggest that preschool teachers may benefit from professional development opportunities focusing on the use of scaffolding strategies.

#### **Abstract 5 (if applicable)**

## **Discussant**

*Snow, Catherine, Harvard University*

*Language development in atypical populations*

*Syntax*

## **Grammatical and pragmatic abilities in high-functioning children with Autism Spectrum Disorder (ASD): which ones are impaired, and why?**

*Schaeffer, Jeannette, University of Amsterdam*

### **Symposium abstract:**

*This symposium discusses the linguistic abilities of high-functioning children with an Autism Spectrum Disorder (ASD), in particular within the domains of grammar and pragmatics. Autism Spectrum Disorder is a developmental disorder characterized by various impairments including delays and deficits in language. While research on language impairment in children with ASD is still relatively rare, it has mainly focused on pragmatics, showing deficits in this domain that are potentially related to cognitive deficits (e.g., in Theory of Mind, Executive Function) in the same population. For example, a deficient Theory of Mind could cause low performance on Informativeness Tasks (Katsos et al., 2013). Nonetheless, not all areas of pragmatics seem to be or remain impaired. High-functioning adults with ASD perform well on pragmatic inferences such as scalar implicatures (Pijnacker, 2009). As for grammar, some recent studies examine grammatical abilities in children with ASD, but report mixed findings. Some claim that basic grammatical knowledge is generally intact in children with ASD, and that the observed grammatical problems are related to pragmatic challenges (e.g., Naigles, 2013). Others argue that the grammatical development of children with ASD is atypical (LeNormand et al., 2013).*

*The goal of this symposium is to obtain more clarity on the selective pragmatic and grammatical deficits in high-functioning children with ASD, and their potential relationship with other areas of cognition. Insights in the interaction between linguistic deficits and cognitive deficits in children with ASD can inform us about language acquisition (theories) in general: which linguistic phenomena develop*

*hand-in-hand with which cognitive phenomena? Are there any linguistic phenomena that develop independently of cognitive development? Moreover, repercussions of these findings for linguistic theory will be discussed.*

## **Abstract 1**

### **Uncovering the source of deficits in pronominal object clitics of children with ASD**

*Terzi, Arhonto, Technological Educational Institute of Western Greece at Patras*

*Marinis, Theodoros, University of Reading*

*Francis, Konstantinos, University of Athens*

Recent work, motivated by impairments in reference of reflexive pronouns among English speaking children with autism (Perovic et al., 2013), found that high functioning Greek speaking children with Autism Spectrum Disorder (ASD) do not have difficulties with binding of reflexive pronouns, but have subtle difficulties in the reference of pronominal object clitic pronouns (Terzi et al., in press). The same study revealed object clitic omission in production, but it is unclear, whether these difficulties are caused by deficits in morpho-syntax, pragmatics, or prosody, since all these domains are required for successful comprehension and production of clitics.

To uncover the source of difficulties such as the above, we developed a series of comprehension and production tasks which manipulate the pragmatics and prosody of sentences that employ pronominal clitics in Greek. Moreover, a control condition tests the children's ability to use intonation for comprehension in structures that do not require, or even do not allow, clitics. 20 high-functioning children with ASD with an age range between 6 and 8 years, and 20 typically developing children individually matched on age and language abilities are currently taking part in the comprehension and production tasks, alongside a battery of baseline tasks that measure non-verbal abilities, working memory, vocabulary, grammar, and pragmatics. The results will reveal whether the difficulties with pronominal object clitics are caused by deficits within the morpho-syntax domain or whether these are modulated by deficits in pragmatics or intonation, two areas known to be affected in ASD. Use of clitic and strong pronouns is also being tested via a narrative, in order to compare production of clitics in this and the experimental conditions. The use of subject strong pronouns in particular is also important, and has not been tested before for children with ASD that speak a pro-drop language.

Word count: 297

#### References

Perovic, A., N. Modyanova & K. Wexler. 2013. Comparison of grammar in

neurodevelopmental disorders: The case of binding in Williams syndrome and autism with and without language impairment.' *Language Acquisition* 20: 133-154.

## **Abstract 2**

### **Investigating syntax in autism: Comparisons with SLI, links with cognition**

*Durleman, Stephanie, CNRS Lyon; University of Geneva*

*Delage, H el ene, University of Geneva*

Recent work exploring syntax in autism spectrum disorders (ASD) has identified morphosyntactic deficits and argued that these are independent of cognitive skills [1]. More specifically, researchers have now claimed that subgroups with ASD have syntactic profiles reminiscent of Specific Language Impairment (SLI) [2, 3], the latter prototypically showing a dissociation between language deficits and non-verbal intelligence. With this study, we further investigate the nature of syntactic impairment in ASD, its parallelism with SLI and its potential relation to other aspects of cognition, namely non-verbal intelligence, working memory and theory of mind (ToM).

Our participants included 22 individuals with ASD (aged 5-16), 22 individuals with SLI (aged 5-16), and age-matched as well as younger controls. Experimental tasks were conducted to evaluate the production and comprehension of 1st and 3rd person accusative clitics (considered as a clinical markers of SLI). We also administered standardized tasks assessing general morphosyntax, verbal working memory (digit-span task and non-word repetition), non-verbal reasoning (Raven's Progressive Matrices) and ToM (Sally-Anne).

Overall scores for both clinical groups reveal quantitatively similar deficits for accusative clitics and general morphosyntax. However upon closer inspection a significant subgroup of children with ASD showed intact grammatical skills, contrary to those with SLI. The only weakness identified across the entire ASD population was for 1st person clitics; however the task used to elicit these required perspective shifting and thus the lower scores which resulted can be accounted for in terms of the well-documented ToM deficits in ASD. This is further supported by the observation that better scores at ToM tasks led to improved performance with 1st person accusative clitics. In addition, difficulties on all working memory measures were revealed for ASD and SLI and crucially found to correlate with performance on clitics in both groups. In contrast, non-verbal reasoning did not correlate with syntactic measures.

Word count: 300

References

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3. Roberts, J., Mabel, A., Rice, L., & Tager-Flusberg, H. (2004). Tense marking in children with autism. *Applied Psycholinguistics*, 25, 429-448.

### **Abstract 3**

## **Contrasting linguistic profiles of children with SLI and autism: Evidence from complex syntactic structures**

*Perovic, Alexandra, University College London*

*Wexler, Kenneth, Massachusetts Institute of Technology*

Reports of an aetiological overlap between autism and SLI, in terms of both their genetic underpinnings and linguistic abilities, have been both supported (e.g. Tager-Flusberg, 2006) and disputed (e.g. Whitehouse, Barry & Bishop, 2008). The literature directly comparing syntactic knowledge of the two populations is sparse, however. In this study, we compare the performance of 16 children with ALI (Autism plus Language Impairment) to 16 children with SLI, aged 8-16, matched on age and verbal MA, in addition to a group of verbal-MA matched typical controls, on three tasks assessing comprehension of passives of actional vs. psychological verbs (short and long), reflexive and personal pronouns, and subject-to-subject raising.

Our results show that children with SLI follow a typical pattern in their acquisition of the above structures, though they are considerably delayed. Their knowledge of binding and coreference seems to be in line with younger matched controls. They also demonstrate a better comprehension of actional passives than psychological passives, and a better comprehension of unraised as opposed to raised sentences, again in line with the patterns reported in young typical children. In contrast, children with ALI show poor comprehension of both actional and psychological passives, short and long, a deficient knowledge of reflexive binding but an MA-appropriate mastery of coreference, and an extremely poor comprehension of raised but not unraised structures.

The severe difficulties with grammatical structures tested in our sample of children with ALI signal a profound syntactic impairment in this population, while patterns

observed in SLI signal a delay, but closely follow what we see in typical development. Rather than an overlap, the observed patterns indicate very distinct linguistic profiles in the two populations.

Word count: 275

## References

Tager-Flusberg, H. 2006. Defining language phenotypes in autism. *Clinical Neuroscience Research*, 6: 219–224

Whitehouse, J., Barry, J., & D. Bishop. 2008. Further defining the language impairment of autism: Is there a specific language impairment subtype? *Journal of Communication Disorders*, 41: 319-336

## **Abstract 4**

### **Oral narratives in children with autism: Syntax and coherence**

*Balimtsi, Eleni, Aristotle University of Thessaloniki*

*Peristeri, Eleni, Aristotle University of Thessaloniki*

*Tsimpli, Ianthi Maria, Aristotle University of Thessaloniki and University of Reading*

Research question. Narrative production represents a rich source for investigating the nature of deficits in high-functioning autism (HFA). The aims of this study were, first, to explore the macro- and microstructure of oral narratives of HFA children, and, second, to investigate whether HFA children's narrative abilities correlate with performance on verbal measures and Theory of Mind (ToM) abilities.

Method. Thirty-six children with HFA (age range: 5;1-12;11) participated in the study. Children had received prior clinical diagnosis confirmed by using the Autism Diagnostic Interview-Revised (ADI-R; Lord et al., 1994). All children performed within the normal range of intelligence and were matched to two groups of typically-developing (TD) children on the basis of age and expressive vocabulary. Oral narratives were elicited using the Edmonton Narrative Norms Instrument and two children's picture books, namely, "Harry the dirty dog" and "Peter's chair" (Keats, 1967). Children were also administered verbal tasks testing both production and comprehension, as well as a battery of first- and second-order cognitive and affective ToM tasks.



Results. With respect to macrostructure, HFA children's narratives lacked cohesion, specifically relating to the children's inability to attribute affect relationships and plot events within a causal-explanatory framework. Microstructure analyses revealed no significant differences between HFA children and controls although use of tense and pronouns was found to be pragmatically deviant in the HFA group. Analyses have also revealed significant correlations between children's narrations and specific verbal measures as well as performance in ToM tasks.

Conclusions. Narrative production appears to be a reliable tool for detecting cognitive and emotional deficits in HFA. Results also support the role of ToM deficits in negatively affecting HFA children's ability to use internal state terms and organize their oral narratives with purpose and clarity.

Word count: 288

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Keats, E. J. (1967). *Peter's chair*. New York: Harper & Row (Viking).

Lord, C., Rutter, M., & Le Couteur, A. (1994). Autism Diagnostic Interview—Revised: A revised version of a diagnostic interview for caregivers of individuals with possible pervasive developmental syndromes. *Journal of Autism & Developmental Syndromes*, 24, 659–685.

#### **Abstract 5 (if applicable)**

### **Direct object scrambling in children with Autism Spectrum Disorder (ASD)**

*Schaeffer, Jeannette, University of Amsterdam*

Previous research on typically developing (TD) Dutch child language has shown that Dutch children <4 sometimes fail to place ('scramble') the referential direct object in a position preceding negation or an adverb in obligatory contexts. One explanation is that young children have not acquired the pragmatic requirement that speaker and hearer assumptions are always independent. The lack of this requirement inhibits adultlike establishment of referentiality, resulting in problems with scrambling of referential objects.

As this pragmatic requirement reminds us of Theory of Mind (ToM), and children with ASD are often assumed to lack ToM, we predict that children with ASD >4 fail to scramble in obligatory environments.

We carried out an elicited production task with 8 children with ASD aged 6-13, 8 TD age controls, and 8 normal adults. There were 3 conditions: 1) definite objects (target:

scrambling); 2) referential indefinite objects (target: scrambling); 3) non-referential indefinite objects (target: no-scrambling).

The results show that in the obligatory scrambling conditions (1 and 2), the children with ASD failed to scramble around 50% of the time, differing significantly from the TD age controls (6%) and the adults (3%). This suggests that children with ASD >4 may still lack the pragmatic requirement that speaker and hearer assumptions are always independent, causing problems establishing referentiality, and therefore with the scrambling of referential objects.

Interestingly, in condition 3 (target: no-scrambling) virtually all participants correctly left the object unscrambled. (ASD: 94%; TD age controls: 97%; adults: 97%). This demonstrates that the placement of direct objects is not random in Dutch-speaking children with ASD.

Concluding, this study provides evidence for the hypothesis that certain parts of pragmatics, or possibly even part of cognition (ToM) are necessary conditions for the correct realization of certain linguistic phenomena such as direct object scrambling.

Word count: 293

*Cognition and language development*

*Language, general*

## **Symposium Information processing in SLI**

*Verhoeven, Ludo, Radboud University Nijmegen*

### **Symposium abstract:**

*Language processing is a complex process that interacts with the development of other neurocognitive functions. According to the information processing perspective maturational changes of the brain contribute to children's mental development. It is an ongoing process that includes mechanisms of attention and perception for bringing information in, memory for holding information, and executive functions to manipulate information and control information processing.*

*Previous studies have shown that the development of these neurocognitive functions affects language learning. Processing limitations may significantly affect children's abilities to access language from the input and, once acquired, use it with facility. This raises questions about the role of information processing deficits in children with Specific Language Impairment (SLI). In the past decades, growing evidence indicated that besides linguistic factors, non-linguistic factors such as attention, memory and executive functions may contribute to the problems associated with SLI.*

*In this symposium the results of five studies examining the relationship between information processing limitations and language processing in Dutch children with SLI will be presented. In order to further explore the nature of information processing deficits in children with SLI, we will discuss different components of information processing that might be problematic for these children, namely auditory information processing, attention, working memory and executive functions and the influence on language abilities.*

*Hoffman, L.M. & Gillam, R.B. (2004). Verbal and Spatial Information processing Constraints in*

*Children with Specific Language Impairment. Journal of Speech, Language and Hearing Research, 47, 114-125.*

*Im-Bolter, N., Johnson, J. & Pascual-Leone, J. (2006). Processing limitations in children with specific*

*language impairment: the role of executive function. Child Development, 27(6), 1822-1841.*

*Leonard, L.B., Ellis Weismer, S., Miller, C.A., Francis, D.J., Tomblin, J.B., & Kail, R.V. (2007). Speed*

*of Processing, Working Memory and Language Impairment in Children. Journal of Speech, Language and Hearing Research, 50, 408-428.*

## **Abstract 1**

### **Auditory information processing in children with SLI**

*Baas, Erwin, Royal Dutch Kentalis*

Children with SLI have a lot in common with hard of hearing children and even share a stream in special education in the Netherlands. Therefore it sounds reasonable to check hearing and auditory processing in these children: developing language skills and receiving knowledge of the world by the auditory canal not only assumes sufficient hearing but also auditory processing capacity.

In this study we explore the auditory processing skills of normal hearing children with SLI compared to typically developing children of their own age. In the field of audiology a large debate is going whether auditory processing disorders exist and if they are related to attention problems. Therefore we compare different forms of attention: visual and auditory, but also selective and sustained attention and the capability to understand speech in noise in children with SLI.

Data are collected from 238 children with SLI, in the age range of 4 to 13 years. Results show that many of these children have different forms of attention problems or difficulties with understanding speech in noise, but that auditory processing difficulties cannot be explained by attention problems only. In our presentation we will discuss these results and the impact on effective treatment for these children.

## **Abstract 2**

### **Language and information processing in children with SLI**

*Verhoeven, Ludo, Radboud University Nijmegen*

The question of whether language learning problems are specifically language-based or more generically related to information processing is highly relevant. Information processing involves sub-aspects such as: selective attention, auditory discrimination, memory, encoding/decoding of information and temporal processing. In order to find out to what extent information processes are related to language impairment, a study was conducted with samples of children with SLI: 99 6-year-olds, 125 7-year-olds, 125 8-year-olds and 133 9-year-olds and representative samples of over 500 per age bgroup typically language acquiring peers. In this study, children's proficiency in the linguistic domains of phonology, lexicon and syntact was assessed by means of receptive and productive tasks. Besides, their proficiency in the information processing domains of auditory discrimination, auditory memory, speech decoding, nonword repetition and verbal working memory was measured. Confirmatory factor analysis showed that in the typically developing groups of children language and information processing abilities loaded on two separate factors. For the groups of SLI children, the two types of abilities turned out to be much more related. Moreover, by means of discriminant analysis it was found that the children's information processing profiles added to their language profiles when it comes to predicting SLI group identification. The present data show that language and information processing abilities in children with SLI are substantially related which seems to indicate that language learning problems at least partly have their origins in information processing. A clinical perspective of these outcomes will be discussed.

## **Abstract 3**

### **Development of working memory performance and EF behaviors in children with SLI**

*Vugs, Brigitte, Royal Dutch Kentalis*

Although growing evidence indicates limitations in executive functions (EF), and particularly working memory (WM) in children with SLI, research on the development of these factors in SLI is still scarce. In this longitudinal study we therefore explored the development of WM performance and EF behaviors in children with SLI, and the relation of this to language.

We compared the performances of 58 children with SLI aged 4 and 5 years to that of 58 age-matched typically developing (TD) children on neurocognitive measures of WM (AWMA), behavioral ratings of EF (BRIEF-P), language measures (PPVT, Reynell and Schlichting), and nonverbal intelligence (SON-R 2½-7). Of this group, 30 children with SLI and 30 TD children were retested at the age of 8 years.

The results showed that the children with SLI perform significantly worse than TD children on the neurocognitive measures of WM and behavioral measures of EF, both at the age of 4/5 years and 8 years. The deficits in WM performance were not restricted to the verbal domain, but also affected visuospatial WM, although in varying degrees in both age groups. The deficits in EF behaviors included problems with inhibition, shifting, emotional control, and planning/organization. The patterns of associations between WM performance and EF behaviors differed for the SLI versus TD groups, with non-significant correlations in the SLI group. Factor analyses indicated that the underlying structure of the different components of WM was mainly comparable in both age groups, while structural models of the associations between WM and language differed. Implications of the present data for assessment and remediation in clinical practice will be discussed.

#### **Abstract 4**

### **Executive functioning in children with SLI**

*Cuperus, Juliane, Royal Dutch Kentalis*

There is an accumulating body of evidence identifying problems in executive functioning in children with SLI. The majority of studies investigating executive functioning have been using performance-based tasks. Children's task performance may not be fully representative for their everyday life. Therefore, it is important to evaluate the executive functioning of children with SLI in more naturalistic environments, as well. In this study parent and teacher perceptions of the executive functioning of a clinical sample of primary school

children with SLI were investigated (n=225). The Behavior Rating Inventory of Executive Functions (BRIEF; Goia, Espy & Isquith, 2003) was used. The PPVT was administered to document their receptive vocabulary skills. Also, a performance-based test on working memory was used. The results showed that the children with SLI have more EF-problems in everyday life compared to an age and gender matched control group. EF-problems were found to be worse in the school environment than at home. Mean index-scores on Working memory and Initiate were above the borderline range. Teachers rated 63% of the children with SLI in the clinically significant range on Working Memory. In contrast, parents rated only 13% of the children having WM-problems in the clinical range. A weak correlation was found between the observation scores and the performance based WM-test which is in line with earlier findings. Detailed, in-depth information is provided on the high Initiate index-score with an eye on clinical implications. Children with SLI might well be rated as poor on some items of the BRIEF not because of an EF impairment, but because of their linguistic deficits.

### **Abstract 5 (if applicable)**

## **The relationship between executive functions and narrative ability in children with SLI**

*Scheper, Annette, Royal Dutch Kentalis*

*Boelhouwer, Wendy, Royal Dutch Kentalis*

It is well-known that children with SLI experience problems in different domains of language and to varying degrees. However, in the past decades several studies have shown that these children also experience problems outside the language domain, namely in the area of central executive processes. Executive Functions (EF) is the common term to denote a set of neurocognitive processes that control and regulate thought and action, i.e. working memory, planning, cognitive flexibility, attention control and switching, inhibition and auditory and visual attention.

Narrative tasks combine all levels of language, since children need to develop at a phonological, morphological, syntactic, semantic and pragmatic level in order to become good narrators. Moreover, the events and episodes of a story need to be ordered in a hierarchical way. In order to do this, children need to develop their EF capacities to be able to logically, temporally and causally order and relate events. Therefore the ability to tell a story in a coherent way is closely-linked to both language ability and EF.

In the current study, the relationship between EF and narrative development was examined, both in children with SLI (n = 80) and an age-matched control group (n = 80), in order to search for different profiles on the basis of EF skills and outcomes on specific narrative abilities. For narrative development, both a story retelling task (bus story) and a story generation task (frog story) were administered. EF was measured using subtests of the TEA-Ch and the BADS-C, WISC digit recall, nonword repetition and WMTB-C block test. Results

show that narrative skills are related to specific aspects of EF, i.e. inhibition, working memory, planning and attention control & switching. These results and the consequences for diagnostics and intervention of children with SLI will be discussed.



*Other (please, specify) Bilingual Specific Language Impairment*

*Language, general*

## **Language Impairment Testing in Multilingual Setting (LITMUS): Disentangling bilingualism and SLI**

*Armon-Lotem, Sharon, Bar Ilan University*

### **Symposium abstract:**

*The demographic changes in the western world in the last two decades have led to a rapid growth in the number of bilingual children; in many locations, bilingual children represent a majority of the school population. As a result, researchers as well as educators and practitioners face a diagnostic dilemma which arises from similarities in the linguistic manifestation of child second language acquisition and Specific Language Impairment (SLI).*

*COST Action IS0804 “Language Impairment in a Multilingual Society: Linguistic Patterns and the Road to Assessment” addressed the issue of identifying children with bilingual SLI (BISLI), which was an understudied and vulnerable population in Europe (though already well studied in the US [1,2] and Canada [3]). The Action took a bilingual approach which drew from previous work on bilingualism and SLI.*

*This new approach promoted:*

- a. testing in both languages in tandem with tools that are sensitive to the nature of bilingual acquisition;*
- b. assessing several levels of linguistic and non-linguistic representation, and tapping into processing and memory skills which go beyond language use;*
- c. taking into consideration sociolinguistic factors beyond language and parental background, e.g., social identity, attitudes, preferences.*

*The work carried within COST Action IS0804 shows that:*

1. *Bilingualism and SLI can be disentangled when well designed tasks are used;*
2. *Bilingualism and SLI do not show cumulative effects;*
3. *Bilingualism and SLI show distinctive errors patterns;*
3. *Bilingualism may offer a partial compensation, but cannot replace therapy in children with BISLI.*

*While testing is still on-going, to validate these tools clinically, the symposium presents some of the tools and the findings already available in experimental and clinical settings which disentangle bilingualism and SLI. The presentations offer insights into syntax and its interfaces with semantics, narrative ability (storytelling and retelling), phonological processing, and executive functions across several languages and populations.*

### **Abstract 1**

## **Exhaustive wh-questions in Bilingual SLI**

*Schul-z, Petra, Goethe University*

*Prévost, Philippe, University of Tours*

*Armon-Lotem, Sharon, Bar Ilan University*

*Vuksanovic, Jasmina, University of Belgrade*

*Bjekic, Jovana, University of Belgrade*

Exhaustivity is a central feature of the semantics of wh-questions. Arguably, exhaustive wh-questions exist in all languages, and their interpretation rules seem to be universal. Nevertheless, there is cross-linguistic variation regarding the availability of multiple wh-questions and types of wh-movement [1]. Data (collected in COST A33, COST IS0804) from 300 typically developing children across 20 languages, using a question-with-picture exhaustivity task [2, 3], confirm the hypothesis that acquisition of exhaustivity is cross-linguistically robust. Mastery of single wh-questions (1) (around age 5) precedes mastery of multiple wh-questions (2)-(3) (around age 6) with no difference between paired and triple wh-questions. Cross-linguistic uniformity was also found regarding the non-target answers, indicating that the underlying universal quantifier(s) were not computed when interpreting the question [2].

(1) Who is holding a soccer ball?                      single

(2) Who is eating what? paired

(3) Who is giving what to whom? triple

Recent results from English, German, French, and Serbian [3] indicate that exhaustivity in wh-questions is problematic in monolingual children with SLI, suggesting that SLI may affect the semantic domain [2].

In this study we investigated whether bilingual children with SLI (BISLI) show deficits in exhaustive wh-questions, by comparing their performance in the exhaustivity task [3] to that of bilingual children with typical language development (BITLD). A total of 100 5- to-9-year-olds was tested, across typologically different languages (Hungarian/Serbian; Russian/Hebrew; different L1's/German; English or Arabic/French).

Children with BISLI showed persistent difficulties up to age 9, compared to their BITLD peers. Interpretation of multiple wh-questions was especially impaired, with less than 20% correct answers (vs. above 50% for all BITLD groups). This study provides first evidence that exhaustivity in wh-questions is problematic in BISLI as well. The vulnerability of exhaustivity in SLI together with its cross-linguistically robust acquisition path makes this structure a very good candidate for disentangling typical from impaired bilingual acquisition.

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[3] Schulz, P. (submitted). Exhaustivity. In S. Armon-Lotem, J. de Jong & N. Meir (Eds.), *Methods for assessing multilingual children: disentangling bilingualism from Language Impairment*. Book Series: Multilingual Matters.

#### **Abstract 2**

#### **Narrative production in monolingual and bilingual children with Specific Language Impairment**

*Tsimpli, Ianthi, University of Reading and Aristotle University of Thessaloniki*

*Peristeri, Eleni, Aristotle University of Thessaloniki*

*Andreou, Maria, Aristotle University of Thessaloniki*

In this study we investigate the narrative abilities of monolingual (moSLI) and bilingual (biSLI) children with Specific Language Impairment (SLI) using the LITMUS\_MAIN instrument [1]. The aims were to investigate a) possible effects of bilingualism on narrative production in SLI children and b) differences in the vulnerability of macro- and micro-structure properties of narratives. Macro-structure measures include mental state terms and story structure (Goal-Attempt-Outcome) while microstructure includes syntactic complexity and narrative length. Telling and retelling modes were tested with all participants.

20 moSLI (age range: 5;2-11;3 yrs.) and 20 biSLI children (age range: 5;1-11;1 yrs.) were matched to typically-developing (TD) monolingual and bilingual children on the basis of age and expressive vocabulary. The validity of SLI diagnosis was based upon the children's language ability which was found to be one standard deviation or lower than age-matched controls [2], and documented delay in major milestones in language development.

According to the micro-structure analyses, both moSLI and biSLI children were found to use significantly fewer function words than the corresponding TD groups irrespective of narrative mode. There were no significant between-group differences observed for content words, narrative length or use of coordination and subordination. On the other hand, the macro-structure analyses revealed that the retelling mode gave rise to improved production in mental state terms and, less so, to structural complexity for the SLI groups only.

Overall, the data from the study show that moSLI and biSLI children experience more difficulties than moTD and biTD children with encoding the micro-structure properties of narratives. The gap is bridged in the retelling mode for the macro-structure properties implying that children with SLI benefitted from priming. The difference between moSLI and biSLI group was non-significant on measures of function words but significant for content words and macrostructure measures with the moSLI group outperforming biSLI.

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[2] Marshall, C. R., Harcourt-Brown, S., Ramus, F. & van der Lely, H. K. J. (2009). The link between prosody and language skills in children with SLI and/or dyslexia. *International Journal of Language and Communication Disorders*, 44 (4), 466-488.

### **Abstract 3**

# **Can nonwords be language-independent? Cross-linguistic evidence from monolingual and bilingual acquisition of French, Lebanese and German**

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*Ferré, Sandrine, University of Tours*

*dos Santos, Christophe, University of Tours*

*Chiat, Shula, City University London*

In nonword repetition tasks (NWR), children with less knowledge of the test language – such as typically developing bilingual children (BiTD) and monolingual children with Specific Language Impairment (MoSLI) – often perform more poorly than typically developing monolingual (MoTD) children. This study examines if the differences were also found if language-independent nonwords were used. We constructed the LITMUS-NWR (Language Impairment Testing in Multilingual Settings-Nonword Repetition, [www.bi-sli.org](http://www.bi-sli.org)) taking particular account of language-specific sound properties and phonological complexity. LITMUS-NWR contains a (quasi-)language-independent (LI) part (30 items) and a language-dependent (LD) part (41 items/French; 36 items/German). The LI part is based on consonants /k,p,f,l,r/ and vowels /a,i,u/ attested for most languages (e.g., /piklafu/); the LD part additionally includes language-specific phonological properties. The items comprise 1-3 syllables, and contain 2-5 consonants.

This study reports cross-linguistic results for the LI part collected in France, Lebanon, and Germany. We expected no differences in the rates of correct repetitions between MoTD and BiTD but significant differences between the TD and SLI groups. In total, 132 children were tested: 21 MoTD (mean age 5;9 years, range 5;2-6;4); 72 BiTD (mean age 6;3 years, range 5;2-8;3); 11 MoSLI (mean age 7;4 years, range 5;5-8;7); and 31 BiSLI (mean age 6;6 years, range 5;3-8;2). All children showed age-appropriate non-verbal IQ and normal hearing abilities.

As expected, the TD groups (MoTD: 25.5/30; 84.9%; BiTD: 26.7/30; 89.1%) outperformed the SLI groups (MoSLI: 17.6/30; 58.8%; BiSLI: 19.0/30; 63.3%). Statistical comparisons (Mann-Whitney-U-Test) confirmed our predictions: There were no differences between the TD groups (MoTD vs. BiTD:  $Z=-.946$ ;  $p=.344$ ), and the TD children performed significantly better than the SLI children (MoTD vs. MoSLI:  $Z=-3.573$ ;  $p=.000$ ; BiTD vs. BiSLI:  $Z=-5.526$ ;  $p=.000$ ). We argue that nonwords can be constructed without disadvantaging bilingual learners and discuss the implications of our account for cross-linguistic research on bilingual children with SLI.

## **Abstract 4**

### **Executive Functions in interaction with bilingualism and SLI**

*Baker, Anne, University of Amsterdam*

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*Iluz-Cohen, Peri, Bar-Ilan University*

*Laloi, Aude, University of Amsterdam & Paris Descartes*

The study of executive functions in multilingual children with SLI may offer an opening into the problem of disentangling the effects of bilingualism and SLI in these children.

Monolingual children with SLI have in some studies been shown to perform worse than typically developing children on some tasks tapping executive functions for example in inhibition and non-verbal working memory [1], suggesting that they have a deficit in some executive functions. On the other hand, recent research on bilinguals has demonstrated that they have enhanced abilities in executive functions tapping inhibition and shifting [2,3]. This is explained as the result of having to monitor two languages at the same time and switching between the two.

In two studies executive functions in bilingual children with SLI were examined in language and non-language oriented tasks. Here the focus will be on the results for inhibition. In one study four groups of children (n=86; aged 5-6 years) were compared: monolingual and bilingual typically developing children and monolingual and bilingual children with SLI on a task testing interference suppression. Only the monolingual children with SLI performed poorly and significantly differently from the remaining groups. Hence, it might be the case that bilingual practice enhances performance, in line with the findings of Bialystok [2], compensating for the effects of SLI. In a different study comparing the same four groups (n=69; aged 7-8 years) on a computerized response inhibition task the children with SLI performed significantly worse than typically developing children. As previously found [3], no bilingualism effect was observed. There was no interaction between SLI and bilingualism.

The findings indicate that inhibition is affected by SLI that only one type (response) can help disentangle the effects of bilingualism and SLI. Bilingualism has a positive effect on interference inhibition.

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[3] Martin-Rhee, M. M., and Bialystok, E. (2008). The development of two types of inhibitory control in monolingual and bilingual children. *Bilingualism: Language and Cognition*, 11, 81–93.

**Abstract 5 (if applicable)**

*First language acquisition*

*Language, general*

## **Dynamic effects in mother infant conversations: Disentangling the relative influence of mother and infant during early vocal interactions**

*Soderstrom, Melanie, University of Manitoba*

### **Symposium abstract:**

*Even with very young infants, vocal interactions between mother and infant are best viewed within the conversational model (Snow, 1977). Mother-infant responsiveness is crucial to early language learning (e.g. Goldstein & Schwade, 2008). Understanding how infants' ability to interact conversationally develops, the relative influence of mother and infant, and the dynamic nature of interactions within a conversation are all important to understanding early language development.*

*The first study examines acoustic influences of mothers' and infants' speech on their interlocutor, finding that mothers' and infants' speech converge more in pitch than durational characteristics. This convergence is immediate, rather than developing gradually over a conversation, and is driven primarily, but not exclusively, by maternal matching. The second study examines a large corpus of caregiver-child interactions and provides evidence in favor of a social feedback loop that drives phonological development. Infant vocalizations were more likely to generate a response from caregiver if they were speech-like, and speech-like utterances were more likely if the preceding utterance had been responded to by the caregiver. The third study examines the development of turn-taking in a longitudinal framework, showing reductions in overlapping speech and shorter response time as infants develop. Furthermore, the study finds these changes to be driven by the infant and not by changes in the mothers' responses to her infant. The final study examines infant vocal responses to different kinds of maternal utterances (questions or declaratives). Counter to expectations, infants did not vocalize more often or for longer duration in response to questions. Rather, greater infant vocalization occurred in response to differences in the pitch dynamics of both*



*questions and declaratives. Together, these studies highlight both the important role that mother-infant dynamic interactions play in early language development, as well as variation in the relative role of mother and infant in driving these dynamics.*

*Snow, C. E. (1977). The development of conversation between mothers and babies. Journal of Child Language, 4, 1-22.*

*Goldstein, M. H., & Schwade, J. A. (2008). Social feedback to infants' babbling facilitates rapid phonological learning. Psychological Science, 19(5), 515-523.*

## **Abstract 1**

### **Prosodic entrainment in mother-child conversation**

*Ko, Eonsuk, SUNY Buffalo*

*Reimchen, Melissa, University of Alberta*

*Seidl, Amanda, Purdue University*

*Cristia, Alejandrina, LSCP, Centre National de la Recherche Scientifique*

*Soderstrom, Melanie, University of Manitoba*

The dynamics of mother-infant interaction play an important role in early language development (e.g. Kuhl & Meltzoff, 1996, Feldstein et al., 1993, Masataka, 1992). Until recently, the time required in manual coding limited the length of speech samples considered, leading to difficulties in finding potentially small but important effects within mother-infant dyads. Current technology allows us to explore these questions using much larger corpora that are tagged semi-automatically, leading to a larger and more naturalistic sample. We examine prosodic entrainment within mother-infant conversational turns focusing on the immediate feedback between mother and child at conversational turns, and the convergence of their speech over a conversational block. We collected a sample of 14 mother-infant dyads, with 3-5 full-day recordings for each dyad (548 hours, about a million audio segments), using LENA (Oller et al., 2010). Infant age ranged from 13-30 months (mean = 23.9 months), 9M/5F. Adult female utterances and target child vocalizations were identified automatically by LENA. A total of 81,138 utterances were analyzed using Praat and R. Pitch measures across conversational turns (Mother-Child and Child-Mother) in each dyad were significantly correlated with each other within a given block of conversation. These effects were greater in Child-Mother turns. A significant correlation was also found in segment duration for Child-Mother turns, but not Mother-Child turns. These results indicate that the mother adapts her speech to the interlocutor more actively than the child. We also

compared the correlation coefficients of the first and the last conversational turn of a given conversational block and found that their mean correlational coefficients are not significantly different from each other, suggesting that infants and mothers do not converge acoustically over the course of a conversation. These results indicate an immediate bi-directional feedback in pitch and an active maternal role in the prosodic entrainment of mother-child speech.

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Oller, D. K., Niyogi, P., S. Gray, J. A. Richards, J. Gilkerson, D. Xu, U. Yapanel, S. F. Warren (2010). Automated Vocal Analysis of Naturalistic Recordings from Children with Autism, Language Delay and Typical Development. *Proceedings of the National Academy of Sciences*, 107, 30, 13354-13359.

## **Abstract 2**

### **A dynamic social feedback loop leading to increased child speech**

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*Richards, Jeffrey A., LENA Research Foundation*

*Gilkerson, Jill, LENA Research Foundation and University of Colorado, Boulder*

*Oller, D. Kimbrough, University of Memphis and Konrad Lorenz Institute for E*

Previous research has demonstrated that caregivers' responses to infants depend on the types of vocalizations the infants produce, with speech-like vocalizations being more likely to receive a vocal response (Gros-Louis et al., 2006), and that adults' contingent responses shape infant vocal behavior during short laboratory experiments (Goldstein et al., 2003). These findings suggest the existence of a social feedback loop, wherein more advanced child vocalizations are more likely to lead to adult responses, and adult responses positively affect future child vocalizations. Small differences across children in elements of this feedback loop could potentially lead to salient differences in speech production down the road (Karmiloff-Smith, 1998).

We analyzed 13,836 hours of longitudinal, day-long, automatically-labeled LENA recordings of 8- to 48-month-old children (106 TD and 77 with ASD). We found that child vocalizations containing speech-related material had a significantly greater chance of receiving an adult

response compared to infant vocalizations that contained only reflexive (e.g., crying) or vegetative sounds. Responding was operationalized as an adult vocalization beginning within 1 s of child vocalization offset. In addition, child vocalizations were more likely to be speech-related when the most recent child speech-related vocalization had received an adult response than when it had not received an adult response. These results support the proposal that there is a dynamic social feedback loop supporting typical speech development.

Interestingly, we observed differences across groups in the strength of various components of this feedback loop. In lower SES families, adult responding was found to be less contingent on the types of sounds children produced. In ASD we found differences in both child behavior and the contingency of adult responding. Simulations of a simple computational model are consistent with these differences accumulating over many interactions during the first years of life to create meaningful differences in speech development.

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Karmiloff-Smith, A. (1998). Development itself is the key to understanding developmental disorders. *Trends in Cognitive Sciences*, 2(10), 389–398.

### **Abstract 3**

#### **The development of vocal turn-taking in infancy: Examining infant and maternal contributions**

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*Gattis, Merideth, Cardiff University*

*Levinson, Stephen, Max Planck Institute for Psycholinguistics*

To develop into fully competent communicators infants need to learn to take turns in communicative exchanges in a timely fashion. Turn-transition in adult conversation is remarkably precise, with a median close to zero milliseconds and the vast majority of turn transitions are characterized by a minimal-gap-minimal-overlap timing

pattern (Stivers et al., 2009). However, few studies have measured timing of turn-taking in infancy (Ginsburg & Kilbourne, 1988; Rutter & Durkin, 1987).

The aim of the present talk was to assess the development of turn-taking skills during infancy and the role of maternal scaffolding and infants' own contributions in this developmental pattern. To do so we conducted longitudinal observations of mother-infant interactions. The longitudinal data consisted of 10-minute free-play interactions between 12 mothers and their infants at 3-, 4-, 5-, 12- and 18- months

Findings indicate that infants gradually become more competent turn-takers as evidenced by a decrease in turns produced in overlap starting around 5 months and a decrease in onset times. In addition, around the time infants start to produce their first words timing of turns temporarily slows down. Findings furthermore indicate that the decrease in overlapping vocalizations is unlikely to be due to the mother allowing her infant more time to respond: Mothers did not increase the pauses between their turns, nor did they change the number of utterances they produced. It therefore seems likely that infants, from early on, play an active role in vocal turn-taking exchanges with their mothers and in the developmental changes observed in these interactions. In addition, a possible explanation for the slowing down of response times around 12 months could be that when starting to produce their first words infants need more processing time which slows them down. Taken together these findings support the idea that the ability to appropriately time turns in social interaction is realized early in development, before and independent of language.

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Rutter, D. R. & Durkin, K. (1987). Turn-taking in mother-infant interaction: An examination of vocalizations and gaze. *Developmental Psychology*, 23, 54-61

Stivers, T., Enfield, N. J., Brown, P., Englert, C., Hayashi, M., Heinemann, T., Hoymann, G., Rossano, F., De Ruiter, J. P., Yoon, K.-E., & Levinson, S. C. (2009). Universals and cultural variation in turn-taking in conversation. *PNAS*, 106 (26), 10587-10592

#### **Abstract 4**

### **Infant Vocal Responses to Question and Declaratives in Maternal Speech**

*Reimchen, Melissa, University of Alberta*

*Soderstrom, Melanie, University of Manitoba*

Infants are perceptually sensitive to rising pitch over falling pitch (Sullivan & Horowitz, 1983) and discriminate between questions and declaratives in maternal speech, showing an overall preference for question intonation (Soderstrom, Ko, & Nevzorova, 2011). Questions are proposed to play a fundamental role in the acquisition process by soliciting vocalization on the part of the infant (e.g. Snow, 1977). In the current study, we explored whether the use of questions by mothers encouraged greater vocalization by infants. Audio recordings of 36 mother-infant dyads (half the infants were 10 months and half were 14 months) were collected during semi-naturalistic play sessions in a laboratory setting. Mothers were instructed to speak primarily in question form for 10 minutes and in declarative form for 10 minutes. Maternal and infant vocalizations were coded for duration, relative timing, and pitch measures using hand-coding and Praat scripts. The overall proportions of infant vocalizations occurring in the question and declarative contexts were not significantly different. Furthermore, infant vocalizations were equally likely to occur following questions and declaratives at the individual utterance level. These findings suggest that the use of questions per se does not solicit greater vocalization by infants.

However, different patterns were found in infant responses to the pitch contours of questions and declaratives. Infants responded significantly more to questions with rising pitch contours than those with falling pitch contours, but this was not found with declaratives. This difference is not explained by questions with rising pitch having larger pitch contours, as the likelihood of infant vocalization was not predicted by small versus large pitch range of maternal utterances. These findings indicate that infants are sensitive to characteristics that differentiate questions from declaratives aside from pitch contours themselves. We propose that this sensitivity constitutes a crucial component of the development of mother-infant conversational exchanges.

Snow, C. E. (1977). The development of conversation between mothers and babies. *Journal of Child Language*, 4, 1-22.

Soderstrom, M., Ko, E.-S., & Nevzorova, U. (2011). It's a question? Infants attend differently to yes/no questions and declaratives. *Infant Behavior and Development*, 34, 107-110.

Sullivan, J. W., & Horowitz, F. D. (1983). The effects of intonation on infant attention: the role of the rising intonation contour. *Journal of Child Language*, 10, 521–534.

**Abstract 5 (if applicable)**

**Cultural and social factors in child language development**

**Language, general**

## **The potential of talk among peers for children's school-related discursive skills**

*Stude, Juliane, University of Muenster*

### **Symposium abstract:**

*In recent years, developmental studies on language acquisition have broadened their field of interest from dyadic adult-child interaction to forms of multiparty discourse and conversation among children. Despite the agreement on the powerful influence that children can have upon one another, studies demonstrating that interactional structures, inherent especially in peer interaction, offer children unique opportunities to learn about language are still underrepresented.*

*Advocating an interactional and socio-cultural approach, this symposium brings together research on the development of school-related discursive skills (e.g., explanatory and narrative skills, academic language proficiencies). Hypothesizing that the interaction patterns of peer talk provide a rich context for the development of discursive skills, the symposium's aim is to examine if this assumption holds true for (1) children and adolescents from diverse cultural and linguistic backgrounds, and (2) in various communicative contexts.*

*Paper 1 examines preschoolers' naturally occurring peer talk during free play. The findings give insight into how L2 learners make use of various multimodal pragmatic strategies to initiate peer group activities. Paper 2 addresses the effectiveness of a special form of peer learning: peer tutoring. Given the lack of culturally and linguistically diverse teachers, there is often a mismatch between the child and the language support provider in the classroom. The paper evaluates a narrative intervention program that pairs peer tutors and tutees from the same cultural and linguistic backgrounds. Paper 3 examines patterns of peer-talk in cliques of preadolescents from different social backgrounds. Findings demonstrate a sharp contrast in the occurrence, preference and sequential emergence of school-related communicative genres as a function of social backgrounds. Paper 4 deals with adolescents' spontaneous reflections on academic language during group*

*discussions. The results illustrate how students jointly instantiate metalinguistic and discursive skills in this communicative challenging event, and, in particular, build on discursive supports from peers.*

## **Abstract 1**

### **How to start a peer interaction: Multimodal pragmatic strategies in conversational initiations**

*Wagner, Katarina, University of Cologne*

Children with low language skills often have difficulties with the initiation and maintenance of positive peer relations in kindergarten and in subsequent educational settings (e.g. Menting, van Lier, & Koot, 2011). To initiate an activity, the first step is to establish peer relations. Thus, a basic pragmatic ability is foundational for language learning opportunities. In particular, pragmatic skills are especially important for early L2-learners. Although conversational openings are a classical subject of pragmatics (cf. Schegloff, 1968), only a few previous studies have been concerned with early peer interaction (cf. O'Neill, Main & Ziemski, 2009).

Using an ethnographic approach, the current study followed the free play of a preschool class via videorecordings over the time course of one year (about 50 hours total). More than 700 conversational openings were identified and classified according to pragmatic strategies (e.g., question, imitation) taking the multimodality of face-to-face interaction and the (emerging) multilingualism of the L2-learners into account. The verbal initiations were subsequently coded according to content (e.g. person referent, mental states). Verbal and nonverbal modes of interaction such as speech, intonation and gesture as well as their interplay were analyzed on the basis of conversational analysis using EXMARaLDA and GAT 2. The majority of initiations were successful in that children generally tried to cooperate and to adjust their pragmatic strategies to their peers, which shows their strong desire to interact with other children. L2-learners used nonverbal strategies more frequently and decided intentionally when and with whom to use their multilingual resources. Most topics in conversational openings were person-related and references to mental states were frequent, which reveals the developing understanding of the mind by preschoolers. The study illustrates that free play among peers can be a fruitful context for (second) language acquisition as well as for social and cognitive development.

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O'Neill, D. K.; Main, R.M.; Ziemski, R.A. (2009). 'I like Barney': Preschoolers' spontaneous conversational initiations with peers. *First Language*, 29 (4), 401-425.

Schegloff, E. A. (1968). Sequencing in Conversational Openings. *American Anthropologist* 70, 1075-1095.

## **Abstract 2**

### **Peer-Assisted-Learning in Second Language Acquisition**

*Licandro, Ulla, Leibniz University Hanover*

*Lüdtke, Ulrike M., Leibniz University Hannover*

Exposure to peers with strong language skills plays an important role in preschoolers' language acquisition (Justice, Petscher, Schatschneider, & Mashburn, 2011). Peer-Assisted-Learning (PAL) activities, which focuses on the acquisition of knowledge and skills through supportive interactions between peers (Topping, 2005), might be a viable way to support bilingual preschoolers in acquiring selected second language skills. However, very little research exists with this population. Because emerging narrative skills have high importance for communication and learning and are a predictor of later academic achievement (e.g., Hamill, 2004), early intervention programming for bilingual preschoolers should include a focus on narration. The current study was designed to explore the effects of a peer-mediated language intervention on bilingual preschoolers' generation of narratives. Specifically, we were interested to see if changes occurred in measures of narrative microstructure (type-token ratio, mean length of communication unit) and macrostructure (story elements, story structure level, mental state terms) occurred. Participants were eight four-to-five-year-old ( $M=4;2$ ,  $SD=0;6$ ) Turkish-German speaking children from low-SES public preschools who were struggling narrators. They were randomly paired with same-aged peers who were strong narrators, resulting in eight peer tutoring teams. The procedure of the twelve peer tutoring intervention sessions, which were based on wordless storybooks, was designed following McGregor (2000). Narrative pre-, post-, generalization, and maintenance probes were transcribed following the CHAT conventions (Mac Whinney, 2000), coded, and analyzed using CLAN, focusing on narrative micro- and macrostructure. Comparison of pre- and post- intervention productions of unfamiliar stories revealed that the intervention had a significant effect on measures of narrative macrostructure, but not microstructure. The current study extends PAL activities to bilingual preschool-aged children and adds to the knowledge base that supports employing peers as mediators in language intervention designed to enhance selected language skills and to create encouraging language learning environments.



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Justice, L.M.; Petscher, Y.; Schatschneider, C. & Mashburn, A. (2011). Peer effects in preschool classrooms: Is children's language growth associated with their classmates' skills? *Child Development*, 82, 1768-1777.

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Topping, K. J. (2005). Trends in peer learning. *Educational Psychology*, 25 (6), 631-645.

## **Abstract 3**

### **Being cool and being smart? School-related discursive practices in preadolescents' peer-talk**

*Morek, Miriam, TU Dortmund University*

The paper deals with school-related discourse practices (i.e. narrative, argumentative, and explanatory discourse) in free peer-talk of preadolescents (10-12 years old) from privileged vs. non-privileged families. Thereby, it adds to previous studies on the potential of peer-talk for children's discursive development (cf. Aukrust 2004; Zadunaisky-Ehrlich & Blum-Kulka, 2010), which to date have a) not focused on secondary-school aged children for whom issues of identity management among peers start to become increasingly important nor b) taken into account differences due to social class. Drawing on ethnography, conversation analysis, and interactional sociolinguistics, peer-interactions (22 hours) of twelve German cliques (n=53) from different social background were examined with regard to the occurrence and interactive accomplishment of school-related discursive practices. Findings demonstrate sharp contrasts in the cliques' preferences for certain communicative genres as a function of social class and the lack of school-related discursive practices in some groups. Topical resources and genres that transcend the here-and-now (e.g. story-telling) provided good grounds for the emergence of argumentative and explanatory talk in which one of the interactants is required to adopt an expert stance. On the other hand, communicative practices that relied upon informal, contextualized language structures (e.g. verbal dueling) and were focused on local negotiations of group hierarchy appeared to conflict with extended subject-related elaborations as required in academic discourse practices. The study thus shows how individual and group identities are constructed by drawing on a certain repertoire of discursive practices. With reference to discourse socialization, the

findings point to the role peers may play in the interactional (re)production of social inequality: While some children's peer-talk presents a rich arena for practicing and developing school-related discourse skills, other groups foster an orientation to communicative practices that are not valued in school, depriving these children from gaining experience with explanatory and argumentative talk outside school.

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#### **Abstract 4**

### **The Role of Peers in Adolescents' Talk about Academic Language**

*Phillips Galloway, Emily, Harvard University*

*Stude, Juliane, University of Muenster*

*Uccelli, Paola, Harvard University*

Student's academic language skills, as potential contributors to school success, have received more attention in recent years. In contrast, school failure is partly traced back to the gap between teachers' implicit expectations with respect to a specific register that should be used at school on the one hand and the communicative norms to which students orient on the other. This paper addresses the perspective of adolescent and pre-adolescent learners and explores how they become aware of context-specific language use. Learners' metalinguistic reflections on academic language (AL) were collected through group discussions with students in grades 4-8 from two public schools in the Northeastern United States (n=52). Prior to the discussion, participants completed an assessment task in which they were asked to choose between two linguistic options, one less- and one more-academic, to complete a letter written to the school headmaster. In the group discussions they were asked to explain their linguistic choices. Following methods of grounded-theory and conversation analysis, the qualitative coding of the recorded and transcribed discussions addressed three capabilities:

(1) Students' metalinguistic skills to refer to AL

(2) Students' register awareness and motivations for AL use

(3) Students' discursive skills to maintain a multiparty, language-focused discourse.

In their answers, students attended to lexical, morpho-syntactic and discursive features of AL and grasped its socio-symbolic function. Strikingly, when struggling with the task of meta-talk, students relied on metalinguistic terms previously mentioned by peers or gave prompts to support their peers. These activities revealed group discussion to be a communicative event that is highly co-constructive. The results suggest the existence of a potential co-development of metalinguistic skills and AL proficiencies and highlight the acquisitional contribution of peer discourse for both domains. Students' spontaneous metalanguage may provide a helpful starting point to design pedagogical approaches that foster awareness of socially-situated language practices.

**Abstract 5 (if applicable)**

*First language acquisition*

*Syntax*

**Why do children make errors in language acquisition? The role of frequency, semantics, pragmatics, and phonology in a developing network of linguistic representations.**

*Theakston, Anna, University of Manchester, UK*

**Symposium abstract:**

*When acquiring their first language, children make a variety of errors, e.g. argument structure overgeneralisation errors (I disappeared the rabbit), case marking errors (Me do it), and morphological or agreement errors (I finded the rabbit; The rabbits is hungry). Generally, each error type is considered as an independent area of scientific investigation and, consequently, explanations put forward to account for these errors are relatively specific to the observed phenomenon. However, all these errors occur as a consequence of the child's developing linguistic knowledge in interaction with her linguistic environment - the time course for different kinds of errors, and their relative frequency, vary both across children within a language and cross-linguistically.*

*In this symposium, we present four papers, each focussing on a distinct error-type observed in children's early speech. The overarching theme of the talks is to consider errors in the context of a developing, inter-related linguistic system in which knowledge of forms, their frequencies, meanings, and pragmatics all contribute in a probabilistic manner to the likelihood of children making a particular error. In Talk 1, we consider how frequency information interacts with developing knowledge of semantics to determine children's production of un-prefixation errors. In Talk 2, we consider explanations for children's pronoun case errors, examining the distributional characteristics of the input, and the child's developing pragmatic knowledge. In Talk 3, we look at a morphologically rich language, Finnish, to investigate the acquisition of case marking on nouns, to determine the factors that underlie abstraction and errors. Finally, in Talk 4 we*

*consider the influence of a diverse range of phonological, frequency, semantic, and contextual factors on children's past tense errors. Our Discussant will highlight commonalities in explanation across the four error types, and the limitations of current explanations in accounting for a diverse set of naturalistic and experimental data.*

### **Abstract 1**

## **The roles of semantic fit and statistics in children's retreat from overgeneralizations of verbal un-prefixation: a production study**

*Blything, Ryan, University of Manchester, UK*

*Ambridge, Ben, University of Liverpool, UK*

*Lieven, Elena, University of Manchester, UK*

How do children produce novel utterances and constrain this productivity to avoid the production of ungrammatical sentences? For example, children must learn that some verbs can be used with un-prefixation (un-wrap; un-button) whereas others cannot (un-\*squeeze; un-\*bend). A 'semantic' approach holds that verbs which take un- form a fuzzy "semantic cryptotype" of shared meanings (e.g. covering, enclosing, attachment; Whorf, 1956): grammaticality may be determined by the 'fit' between a verb's semantics and this cryptotype. 'Statistical' approaches hold that a verb's grammaticality in un-form is determined by its frequency in other forms (e.g. squeeze/-s/-d/-ing; the 'entrenchment' hypothesis) or by the frequency of synonymous forms (e.g. release/\*un-squeeze; the 'pre-emption' hypothesis).

We used a priming methodology to examine younger children's (3-4; 5-6) constraints on verbal un-prefixation. To elicit production of un-prefixed verbs, test trials were preceded by a prime sentence, which described reversal actions with grammatical un-prefixed verbs (e.g. Marge folded her arms and then she unfolded them). Children then completed target sentences by describing cartoon reversal actions corresponding to (potentially) un-prefixed verbs; half grammatical (e.g. unwrap), half ungrammatical (e.g. \*unsqueeze).

To test semantic fit, adult ratings of the extent to which 48 different verbs denoted Whorf's hypothesised 'cryptotype' were obtained from Li and MacWhinney (1996). Frequency counts of these verbs and their synonyms were obtained to examine entrenchment and pre-emption respectively. Mixed-effects regression models demonstrated that, for each age group, children's production-probability of un-prefixed verb forms was (i) positively related to the extent to which each verb is semantically consistent with Whorf's "semantic cryptotype", and (ii) negatively related to the frequency of a verb's bare form (e.g. squeeze/-s/-d/-ing), and the frequency of synonyms to its un-form (e.g. release/\*un-squeeze). The study is the first to show graded effects of both verb semantics and verb frequency in children as young as 3-4.

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## **Abstract 2**

### **Explanations for children's my-for-I errors: a functional account**

*McKnight, Stacey, University of Manchester, UK*

*Lieven, Elena, University of Manchester, UK*

*Theakston, Anna, University of Manchester, UK*

English-speaking children commonly produce pronoun case errors around 2-4yrs of age (Rispoli, 1994), most often using accusative/objective pronouns (me/her) instead of nominative/subjective pronouns (I/she e.g. 'Me see'). These errors can be partly explained by children hearing complex sentences in the input, 'Let me see' (Kirjavainen et al. 2009). However, genitive-for-nominative, my-for-I-errors ('My make it') are also common. As 'my' is not heard pre-verbally, an alternative explanation is needed. In study 1, corpus analyses of 16 children's data were conducted to investigate whether other distributional aspects of the input can explain these errors. None of the following was related to children's my-error rates: input frequency of 'my'; 'am-I+verb' misinterpreted as hearing 'my+verb'; 'my+noun' with items that can also be verbs; the relative frequency of 'pronoun+verb' vs. 'proper-name+verb' utterances.

In study 2, we investigated the claim that children use 'my' pre-verbally to express high levels of agency and control (Budwig, 1989). Four children's data were coded using prior discourse context to analyse the pragmatic force of each utterance. Each target my-utterance and matched I-utterance was considered in terms of whether the utterance attempted to bring about a change in one of the following: the agent of the action; the action/suggested action; the possessor/owner of an object. Reliability scores were good. A mixed effects model revealed a significant effect of all 3 predictors ( $p < 0.001$ ). Utterances coded in these categories were associated with my-errors more than with I-utterances showing that my-errors mark the specific function of agency and control. The same analysis was conducted on four children who made me-errors and four who produced own-name+verb utterances. Results showed that when children use their own-name or 'me' pre-verbally, these utterances

do not express agency and control. These findings will be discussed in the context of children acquiring an interconnected network of forms, frequencies, and functions.

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### **Abstract 3**

#### **Acquiring noun case marking in Finnish: a naturalistic study**

*Lemetyinen, Henna, University of Manchester, UK*

*Theakston, Anna, University of Manchester, UK*

*Lieven, Elena, University of Manchester, UK*

According to the usage-based approach, morphology acquisition is influenced by the input frequencies of particular lexical items and their use in combination with particular morphemes (Aguado-Orea, 2002; Krajewski, Lieven & Theakston, 2012). A naturalistic study was conducted to investigate noun case marking errors produced by a Finnish child (1;7-1;8), with the aim of explaining them within the usage-based framework. Finnish is a fascinating language for examining noun inflection errors because of its fifteen case markers. Thirty hours of audio-recordings of mother-child interaction were collected at the home of one Finnish family (5hrs/week for 6 weeks). The transcriptions were coded for case, number and errors. First, a productivity analysis controlling for vocabulary knowledge and sample size revealed a significant difference in knowledge of noun inflection between the mother and child ( $W=11785.5$ ,  $p=0.01$ ). Although the child used eleven cases with at least two nouns, her case marking overall was more restricted than her mother's. Next, errors were examined to provide insight into how particular errors have emerged. Although overall error rates were low (child 1.34%, mother 0.16%), 162 errors were observed. The child produced errors in place of ten different case markers, all of which she also used productively - errors of omission (substituting an unmarked nominative form for a marked target form, 83.6%) and errors of commission (providing an incorrect

marked form). Furthermore, the mother made both kinds of error (omissions 77.3%) albeit less frequently. For both speakers, the genitive was the most common target to be erroneously replaced (child 32.1%, mother 31.8% of all target forms), always with the nominative. We discuss these findings in the context of the child's developing network of case marked forms, to consider whether parental input may initially reinforce child errors by making abstraction of a particular case more difficult given variation in the input.

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Krajewski, G., Lieven, E.V.M. & Theakston, A.L. (2012). Productivity of a Polish child's inflectional noun morphology: A naturalistic study. *Language and Cognitive Processes*, 26(4-6), 830-861.

## **Abstract 4**

### **Morphological errors in the production of the English past tense: The contribution of frequency, phonological, semantic and contextual factors.**

*Theakston, Anna, University of Manchester, UK*

*Krajewski, Grzegorz, University of Warsaw, Poland*

*Keeble, Sarah, University of Manchester, UK*

*Woollams, Anna, University of Manchester, UK*

Despite considerable research, debate continues concerning the mechanisms underlying the acquisition and correct use of the English past tense (Bybee & Slobin, 1982; Marcus et al., 1992), especially concerning the very earliest stages of development. English-speaking children make a variety of errors in their early past tense production, producing both errors of omission (unmarked forms, He buy/bring some cake) and commission (e.g. He buyed/boughted/bringed/brung some cake), which offer a window into the underlying mechanisms of acquisition. Although frequency and phonological influences on error production are sometimes reported, the findings have been less than consistent due to a relatively narrow focus in terms of the items used, predictors considered, and tasks employed. In this study, we provide comprehensive evidence concerning the earliest stages of development to determine the relative contribution of a variety of frequency, phonological,



and semantic factors (derived largely from child-directed-speech) on children's past tense productions. 900 children aged between 2;6-5;5 participated. Children completed either a standard wug-task in which they heard a verb modelled in its progressive form and were prompted to produce a past form (300 different verbs), or a video-task in which no prior verb model was provided (162 different verbs). Each child received a subset of verbs. Responses were coded as correct, stem errors, overregularisation errors, and 'other' errors. Principle components analysis was used to establish key predictors, and mixed effects models to determine the relative contribution of each predictor to children's error production over the two tasks. The results show that a complex interaction of factors determines children's inflectional success and error types, which varies as a function of the task context in which the past tense was elicited. These data provide support for models of morphological systems in which linguistic representations exist in an inter-related network of frequency-indexed semantic and phonological information.

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#### **Abstract 5 (if applicable)**

#### **Discussant**

*Rowland, Caroline, University of Liverpool, UK*

N/A

*New methods in child language research*

*Language, general*

## **Big data in infant language acquisition – Chances and Challenges**

*Tsuji, Sho, Radboud University Nijmegen & IMPRS for  
Language Sciences*

### **Symposium abstract:**

*This symposium showcases the new possibilities of “Big Data” in gaining insights into the study of infant language acquisition. Recent technological advances allow researchers to collect, consolidate, and analyze data related to infant language on a scale several orders of magnitude larger than before. In addition, more fine-grained and complex measures can be integrated, for instance dense audiovisual material or multiple measures of cognitive and linguistic development. This symposium convenes researchers who all leverage these new possibilities, but differ in their conceptual questions and research methods. By summarizing their diverse key conceptual and methodological findings, presenters in this symposium will highlight both the unique discoveries gained from working with large datasets, and the most salient weaknesses of these empirical approaches.*

*The first talk utilizes a comprehensive audio-video documentation of one child’s first three years of life in order to focus on the preconditions of first word production, recording a total of around 10,000 hours. Zooming out of the individual child, the second talk assesses language development, maternal speech and interaction in 125 7-month-olds over 5 time-points in their first 2 years of life in order to track and investigate early predictors of later language development. The third talk includes data from over 1,000 children, whose cognition, language perception and use, in addition to other environmental variables, was assessed at multiple ages, from 5 months up to adolescence. Finally, the fourth talk illustrates the usefulness of pooling over individual studies and meta-analyzing published data, for instance over 5,000 infants who participated in experiments on wordform*

*recognition. Results bear both on conceptual discovery and on the key questions of transparent science and replicability.*

*Integrating results in each of these massive, multivariate approaches will help listeners gain both a more detailed and holistic view of early language acquisition.*

## **Abstract 1**

### **Harnessing big data in a naturalistic study of one child's early word learning**

*Roy, Brandon C., MIT and Stanford University*

*Frank, Michael C., Stanford University*

*Roy, Deb, MIT*

Children learn their first words in a relatively short period of time, typically exhibiting rapid vocabulary growth in their second year of life. This development is supported by the interaction of powerful learning mechanisms and the rich, flowing experiences of everyday life.

While learning mechanisms have often been studied in a laboratory setting, characterizing the child's learning environment requires naturalistic observation. In this project, we leverage the power of "big data" in our study of one child's early word learning. Using a custom audio-video recording system embedded in the child's home, we collected a comprehensive record of the child's first three years of life, consisting of more than 200,000 hours of audio and video and millions of transcribed words of child and caregiver speech.

We organize our research around the concept of a "word birth," the point when a child's prior experience with a word allows him to produce the word himself. Our primary finding is that while word frequency in the child's input is predictive of word births (with more frequent words produced earlier), the spatial distribution of word use in the child's home is at least as strong a predictor. Words used in more focused contexts, such as specific spatial locations, tend to be learned earlier. Regression models incorporating multiple variables reveal that contextual factors add complementary information to previously studied predictors, including frequency, word length (phonemes), and normed imageability while contributing the most predictive power to the overall model.

Large, multimodal datasets make it possible to study the rich, natural context of early language development, but they also require tools for data collection, management, annotation and analysis. We will discuss the mechanics of data collection and annotation, our methods for extracting variables of interest, and our findings linking these variables to early word learning.

## **Abstract 2**

### **Big Data: Challenges of conducting longitudinal studies**

*Newman, Rochelle, University of Maryland*

*Ratner, Nan, University of Maryland*

*Rowe, Meredith, University of Maryland*

Longitudinal work brings with it new opportunities, but also new challenges. One of these challenges has to do with keeping track of, and making sense of, potentially large amounts of data from the various participants. We have been testing a cohort of 125 mother-child dyads at 5 points in time, ranging from the child's age of 7 months to 2 years; our goal was to explore whether early infant perceptual skills, and maternal input, could (in combination) predict later language development. We hypothesized that children who were better able to segment speech into individual words, and whose parents produced clearer input, would have more advanced language outcomes at age 2 years. At each time point, children participate in an experimental laboratory study, parents complete several vocabulary and developmental questionnaires, and parent and child take part in a joint play session, which generates a variety of measures of their language usage, including structural measures (such as MLU for both parent and child, and type/token ratios) and acoustic measures (vowel space, VOT), and many others. At the final visit, children also complete a wide array of standardized assessments of vocabulary and language. Although each visit generates a discrete set of data points, the number of participants and the number of visits combine to create a large array of data for addressing the study's questions, and an even larger array of possible combinations for future data exploration. We will discuss not only our own results, which indicate relationships between early skills/input and later outcomes, but also some of the challenges and opportunities available in making use of such datasets, including strategies for data transcription and reduction, and how the use of certain analyses (e.g., growth modeling) make missing data points less problematic.

## **Abstract 3**

### **Language Stability from Infancy to Adolescence: Contributions from Two Large, Prospective, Longitudinal Studies**

*Bornstein, Marc H., NICHD*

*Putnick, Diane L., NICHD*

*Hahn, Chun-Shin, NICHD*

*Eryigit-Madzwamuse, Suna, University of Warwick*

*Suwalsky, Joan T. D., NICHD*

*Wolke, Dieter, University of Warwick*

Using two large, prospective, longitudinal studies, we explored stability of individual differences in child language from infancy through adolescence. Study 1 (N=324) collected multiple age-appropriate multi-source measures of child language at 20 months and 4, 10, and 14 years. Large stability emerged between each time point. The standardized indirect effect from 20-month to 14-year language was .46,  $p < .001$ .

Study 2 (N=749) collected multiple age-appropriate multi-source measures of child language at 5 and 20 months and 4, 6, and 8 years in children who varied in birth status:  $n=205$  very preterm (25 to 31 weeks gestation),  $n=276$  moderate to late preterm (32 to 36 weeks gestation), and  $n=268$  full term (37 to 41 weeks gestation). Small-to-medium stability emerged between 5 and 20 months and large stability between all later time points. The standardized indirect effect from 5-month to 8-year language was .13,  $p < .001$ , and from 20-month to 8-year language was .55,  $p < .001$ . Stability was stronger for the very preterm sample than moderately preterm or full term samples from 5 to 20 months and from 20 months to 4 years.

In both studies, multiple measures of language from different sources loaded on single latent variables representing “core language ability,” stability in core language ability was equivalent for girls and boys, and stability was stronger between later time points (after age 4) than earlier time points (5-20 months and 20 months–4 years), recommending early intervention to improve lagging language.

“Big data” sets include both large Ns, providing adequate statistical power, and multivariate multisource data that cross many domains of language and allow determination of latent variables with their several advantages of increased precision of estimates, accounting for measurement error, etc. However, big data sets also require more complex analytic techniques and integration of multiple perspectives.

#### **Abstract 4**

### **More than the sum of the parts: Community-augmented databases**

*Bergmann, Christina, Radboud University Nijmegen & IMPRS for Language Sciences*

*Tsuji, Sho, Radboud University Nijmegen & IMPRS for Language Sciences*

*Cristia, Alejandrina, LSCP-CNRS*

There is no bigger data than all previous data combined - provided they are combined in a useful manner. This can be achieved through comprehensive databases where publicly available studies have been coded in a meta-analyzable format, and which are open to continual contributions from authors. Such databases shed light on several important questions. First, we can more easily determine which results are replicable, and spot the weak points in the literature. Second, we can identify the factors that account for most of the variance in the behavior of interest across studies, which might reflect the importance those factors play in actual language acquisition and/or the way language is captured by our methods. Finally, when results vary, it may be difficult to determine why without the systematic assessment of data from multiple studies. Public repositories constitute a key step towards ensuring replicability and they facilitate transparent science.

In this talk, we illustrate this approach with two examples. The first database addresses perceptual narrowing in vowels, with results from 100 behavioral and neuroimaging studies ran on approximately 3,000 infants. The second one focuses on recognition of words natural speech; over 5,000 infants have participated in 218 behavioral studies. Analyses of standardized effect sizes in each dataset revealed that method (e.g., headturn preference versus central fixation) accounts for much (if not most) of the structured variance, suggesting that extra caution is needed when interpreting infants' success and failure patterns in different paradigms. Additionally, each dataset confirmed some widespread assumptions (e.g., native vowel discrimination increases with age,  $p < .05$ ; words at sentence edges are better recognized,  $p < .05$ ), and challenged others (non-native vowel discrimination decreases with age; switch from familiarity to novelty preferences with age). These examples illustrate the unique holistic perspective allowed by repository databases.

**Abstract 5 (if applicable)**

**Cognition and language development**

**Language, general**

## **Promoting narrative and other language skills**

*Veneziano, Edy, University Paris Descartes-CNRS*

### **Symposium abstract:**

*There is a substantial body of research showing that children who are good storytellers are better in language, in inferential abilities, have better literacy skills and greater school achievements (e.g., Cooper et al., 1992; Dobson, 2005; Snow et al., 1998). It is thus important to understand the conditions leading children to develop and/or to better use the competences required to produce good stories.*

*The papers of this symposium focus on activities and specific interventions likely to promote narrative abilities or, alternatively, use narrative-based interventions to promote other language skills and discuss the processes involved in the different kinds of narrative-promoting activities focused upon.*

*The first paper presents results of a study of 41 low-income African American preschoolers aged 3 to 5 yrs showing that parent-child reading significantly predicts the length of narratives.*

*The second paper combines analyses of spontaneous interaction of three monolingual, Dutch-speaking children followed between the ages of 1;9 and 3;9 with experimental data obtained at age 7;0 and shows that displaced talk at the earlier ages relates to later narrative abilities.*

*The third paper shows that a story-based conversation focusing on the causes of the story events lead children to improve the inferential and evaluative content of their narratives. It also changes the linguistic expression of their stories, that become more “packed” and contain more complex structures and explicit markers of causality and temporality.*

*Finally, the fourth paper shows that story-based conversations carried out in the nursery school by trained educators improves 2-3 years old socio-emotional understanding and their reference to psychological states.*

## *References*

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*Dobson, S. (2005). Narrative competence and the enhancement of literacy. Some theoretical reflections. International Journal of Media, Technology and Lifelong Learning, 1 (2), 1-14.*

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## **Abstract 1**

### **Predicting Oral Narratives in African American Children**

*Proctor, Adele, University of Illinois*

The purpose of this study was to determine if home literacy practices would predict oral narrative abilities of African American (AA) preschoolers. A long held belief in the U.S. is that reduced resources in the home negatively impact the preparation of AA children's later reading abilities. The home social environment has often been discussed as a cause for the reading achievement gap between AA children and their White counterparts. All of the 3 to 5 year old children (N=41) were enrolled in preschool, included 24 girls and 17 boys and all were screened to ensure typical development. Parents identified the race of the children and their socioeconomic backgrounds.

The North American edition of the Renfrew Bus Story (BUS), a narrative recall task, was administered to each child. The BUS was scored for sentence length and for story information (Info) which examines the correspondence between information produced by the children relative to the information in the original story. Parents completed a 21 item Home Literacy Practices Questionnaire.

Investigation of the relationship between the home literacy environment and narrative skills revealed that children's reading frequency and time was significantly correlated with the BUS Length scores. Regression analyses were conducted using the three principal component scores of the home literacy practice questionnaire as predictors and Info scores and Length scores as dependent variables. Three principal components explained 13.4% of variances in BUS Length scores. Factor 2 alone, parent-child reading time and child reading frequency and time, explained the largest portion of variances, 12.4%, in BUS Length scores. When Info scores were used as the dependent variable, none of the factors were significant predictors of the BUS Info scores. Predictors such as home literacy resources, parent-child



interaction, and parent literacy beliefs contributed little to the narrative development among these AA children.

## **Abstract 2**

### **The effect of early child-initiating behaviour on later narrative skills**

*de Blauw, Akke, University of Amsterdam*

*Baker, Anne, University of Amsterdam*

*Rispens, Judith, University of Amsterdam*

The research to date on precursors of later narrative ability has indicated at least three important factors. Firstly, early interaction at home that involves talking about the non-present (Ninio & Snow 1996). Secondly, the ability to use linguistic temporal markers as discourse means (Uccelli 2009) and thirdly, parental elaborative style in past event talk. A high elaborative parent is a strong predictor of child's later story comprehension (Fivush et al. 2006). However, the role of the child as an initiator and a participant of a conversation involving past event talk has not been studied with respect to later narrative ability.

The role of children's initiative in temporality development and participation in past event talk are the focus of the current study. We addressed this question using a longitudinal design combining analyses of spontaneous interaction at ages 1;9 to 3;9 with experimental data at age 7;0. The language acquisition of three monolingual, Dutch-speaking children, two non-identical twin sisters and one boy, in two middle class families was followed from birth to age 7;0.

Results show that, at age 7;0, all three children performed well on two narrative ability tests, but clear individual differences were found in the tasks, as well as in general language level and in the use of narratives in spontaneous speech. Child-initiation in early parent-child interaction appears to contribute to narrative abilities at age 7;0.

This study suggests that child-initiating behaviour in early parent-child interaction should be considered, next to parental input, an important factor in later narrative skills.

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### **Abstract 3**

## **Promoting children's narrative skills through a short conversational intervention**

*Veneziano, Edy, University Paris Descartes-CNRS*

*Hudelot, Christian, University of Nice Sophia-Antipolis-CNRS*

*Nir, Bracha, University of Haifa*

Earlier studies using imaged wordless stories show that by 4-5 years children can produce descriptive narratives but have difficulties in explaining and evaluating events (e.g., Aksu-Koç & Tekdemir, 2004; Bamberg & Damrad-Frye, 1991; Berman & Slobin, 1994). Can a short conversation focusing on the causes of events improve the linguistic and evaluative aspects of children's narratives?

This paper relates results of a study carried out on 104 French-speaking children, aged 5:6 to 8:8 years, attending kindergarten, 1st and 2nd grades in a public school of Paris (38 children in each class group).

All children were presented with the "Stone Story" composed of five pictures depicting a misunderstanding between two characters. All children were requested to tell what they understood of the story (first narrative). Then, children in the intervention group (84) participated in a conversation with the experimenter who focused the child's attention on the reasons of the story key events. Instead, children in the control group (30) played a memory game with the story pictures and similar cards. Then, all children were asked to narrate once again the story (second narrative). One week later, children told a third narrative of the same story (to test the stability of the eventual gains) as well as a new story analogous to the stone story (to test whether the gains were generalizables).

Results show that, relative to their first narrative, children in the conversation group significantly improved the overall coherence and mind-oriented causal plot of their second narrative. They also changed the linguistic expression, that became more "packed" and contained more complex structures and explicit markers of causality

and temporality. Instead, children in the control group didn't present any significant changes. Improvements appeared stable and generalizable.

The discussion will focus on the significance of the conversational intervention in promoting children's narrative skills and on the nature of the progress obtained.

#### References

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#### **Abstract 4**

### **The impact of story-based conversations on nursery-school children's psychological lexicon**

*Grazzani, Ilaria, Università degli Studi di Milano-Bicocca*

*Agliati, Alessia, Università degli Studi di Milano-Bicocca*

*Ornaghi, Veronica, Università degli Studi di Milano-Bicocca*

Plenty of research conducted on children's development of social cognition has shown that mother-child conversation on inner states improves children's understanding of "the mind" and their use of psychological lexicon (Hughes, 2011). However, few studies have been carried out in the nursery school using specific intervention procedures.

The present study examines the effect of a conversational intervention designed to promote 2-to 3 years old children's socio-emotional abilities in general, and their use of mental-state talk, in particular, with a specific attention to emotional language.

One hundred toddlers (mean age =28 months) took part in the study. An intervention and a control group of 50 children each were constituted controlling for gender, age and results on pre-test measures. Pre- and post-test tasks consisted in a standardized language test (Caselli

et al., 2002), a measure of psychological lexicon and a test of emotional competence (Denham, 1986). Moreover, each participant was videotaped during playtime for one hour before and after the intervention. Children in the experimental condition were divided in small groups, and for 3 months were daily read brief illustrated “emotional” stories by trained teachers. Then they were involved in conversations about the expression, causes and regulation of emotions of the story characters. In contrast, the control group played freely after they listened to the stories.

Preliminary results of a multivariate analysis of variance revealed significant Time×Group interaction. In fact, at post-test the intervention group performed significantly better than the control group in the spontaneous production of psychological lexicon in general ( $F=4.61$ ;  $p=.03$ ), in the emotional language in particular ( $F=3.8$ ,  $p=.05$ ), as well as in the measures of emotional competence ( $F=5.01$ ;  $p=.01$ ).

The discussion will focus on the importance of conversational intervention procedures carried out by trained educators for promoting the development of toddlers’ socio-emotional and language competences.

#### References

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#### **Abstract 5 (if applicable)**

#### **Discussant**

*Nicolopoulou, Ageliki, Lehigh University*

*Sign language acquisition and gestures*

*Semantics and lexicon*

## **The Role of Iconicity in Language Development across Language Modalities and Typologies**

*Vigliocco, Gabriella, University College London*

*Ozyurek, Asli, Radboud University Nijmegen*

### **Symposium abstract:**

*Traditionally, research on the role of iconic gestures in early spoken language acquisition and the role of iconicity in sign language acquisition has been kept separate. However, researchers in both fields have been addressing the role iconicity plays in language development. It is the case that iconicity in the two language modalities has clear and important differences; iconic gestures are not embedded within the linguistic form, whereas in sign language, iconicity is part of the linguistic form. However in both language modalities iconicity exploits the imagistic potential of manual articulators. The symposium aims to explore the interdependence between the imagistic sensory-motor content of iconic gestures/signs and language development by bringing together gesture and sign language researchers.*

*The first two papers describe an inherent link between emergence of iconic gestures and (action) verbs in early spoken language development. The first paper presents evidence that iconic gestures are not precursors of verb learning in English, rather they increase when verb usage also increases. The second paper shows that Turkish-speaking children use iconic gestures earlier than their English-speaking peers, due to the early emergence of verb-only utterances, rather than simply due to the caregivers' input. The last two papers look at use of iconicity in sign language development. The third paper presents longitudinal data from deaf children learning American Sign Language and shows differences in number of signs used with perceptual vs. motor iconicity over development. Finally, the last paper*

*provides evidence that deaf and hearing children learning British Sign Language are sensitive to iconicity in the input looking longer to pictures of referents that highlight iconic properties than those that do not. Thus, the symposium papers, spanning four different languages, highlight the importance of taking iconicity into account in studying language development, bringing together spoken and signed languages.*

### **Abstract 1**

## **What iconic gestures can tell us about English-speaking children's early verbs**

*Özçalışkan, Şeyda, Georgia State University*

*Gentner, Dedre, Northwestern University*

*Goldin-Meadow, Susan, University of Chicago*

Children produce a deictic gesture for a particular object (point at dog) approximately three months before they produce the verbal label for that object ("dog") (Iverson & Goldin-Meadow, 2005). Gesture thus paves the way for children's early nouns. We ask here whether the same pattern—gesture preceding and predicting speech—holds for iconic gestures (that is, do gestures that depict actions precede and predict early verbs?) The existing evidence suggests two equally plausible, but contradictory possibilities: (1) If gesture is an instrument, or even just a harbinger, of new verb meanings, then we would expect children's first iconic gestures that convey actions to precede the first verbs they produce conveying similar meanings. (2) If verb semantics are such that simple iconic gestures conveying actions are not likely to be helpful in bootstrapping verb meanings, then we would expect children's first verbs to precede, or to co-occur with, the first iconic gestures they produce conveying similar meanings. To explore the role that iconic gestures play in the emergence of early verbs, we observed spontaneous speech and gestures produced by 40 children learning English (22 girls, 18 boys) from age 14 to 34 months. Children produced their first iconic gestures 6 months later than they produced their first verbs. Thus, unlike the onset of deictic gestures, the onset of iconic gestures conveying action meanings followed, rather than preceded, children's first verbs. However, iconic gestures increased in frequency at the same time as verbs did and, at that time, began to convey meanings not yet expressed in speech. Our findings suggest that children can use gesture to expand their repertoire of action meanings, but only after they have begun to acquire the verb system underlying their language.

### **Abstract 2**

## **Influence of verb typology on the emergence of iconic gestures: Evidence from Turkish-speaking children and caregivers**

*Tasci, Suleyman, Koç University, Istanbul*

*Furman, Reyhan University of Alberta*

*Ozyurek, Asli, Radboud University Nijmegen*

*Küntay, Aylin, Koç University and Utrecht University*

Hearing children's ability to produce and comprehend iconic gestures is considered to emerge later than that of deictic gestures, mostly studied in English-speaking children (e.g. Özçaliskan & Goldin-Meadow, 2011). Caregivers' gestures around this period have been also shown to be deictic rather than iconic. However, recent research has shown that

typological properties of a language can facilitate the emergence of iconic gestures expressed by Turkish-speaking children. We ask whether iconic gestures (specifically depicting actions) are as prevalent in child-directed speech of Turkish-speaking caregivers in naturalistic settings of 12- to 36-month-old children. In Turkish, verbs are acquired at a similar pace with nouns and often used by children with omitted arguments (Aksu-Koç & Slobin, 1986; Furman et al, 2013). In contrast, English obligatorily expresses verbal arguments and children begin word learning with nouns.

We analyzed spontaneous and caused motion constructions in a 14-hour sample of recordings of five children and their caregivers from the Koç University Longitudinal Development Database (Ural, et al., 2009). Unlike children, who used mostly verb-only utterances and produced both iconic and deictic gestures equally, adults produce less verb-only utterances and their gestures were predominantly deictic. Children used iconic and deictic supplementing gestures more often than their caregivers. Caregivers' deictics disambiguated and reinforced the nominal arguments. Findings suggest that the prevalence of iconic gestures of Turkish-speaking children is not driven directly from the input but from the accompanying (spoken) language produced by children. Considering the higher amount of verb-only utterances in children than adults, verb-only sentences might influence production of iconic gestures of action and motion (i.e., saying kaldırdı '(she) lifted (it) up' referring to mother lifting the toy up and producing a lift up gesture). These findings corroborate the claim that verbs play a role in the emergence of iconic gestures, probably benefiting early language development through supplementation of omitted verbal arguments.

### References

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Özçaliskan, S. & Goldin-Meadow, S. (2011). Is there an iconic gesture spurt at 26 months. Integrating gestures: The interdisciplinary nature of gesture. Amsterdam, NL: John Benjamins

### **Abstract 3**

## **Revisiting the question of iconicity and acquisition**

*Kuntze, Marlon, Gallaudet University*

*Stone, Adam, Gallaudet University*

The question of the role iconicity plays in ASL acquisition is far from settled. Early sign language research suggested that children's acquisition of sign language is minimally influenced by iconicity. However, the growing interest of gestures in human communication spurred by the work of individuals like Kendon and McNeill has led to a revival of the interest in gestures and iconicity in ASL. Schick (2006) suggested that there is a strong iconic motivation behind the way location, movement, or handshape may be represented in classifier construction and in the ways some verbs are modulated. However, iconic motivation is not all or none, thus, a more nuanced approach to examining the role of iconicity in language acquisition is needed. The work by Tolar, Lederberg, Gokhale and Tomasello (2008) suggest that the effect of iconicity may be greater for iconic signs that depict actions compared to those that depict perceptual features. Spontaneous language uttered by a cohort of five children in naturalistic contexts during two different developmental periods was examined to compare the percentages of iconic signs at ages 4 and 6. Our initial finding is that the percentage of iconic signs decreases over time. However, when coding signs in a more fine-grained manner we found that while signs with perception-based iconicity decreased, this was not the case for signs with action-based iconicity. Moreover, more transparent signs decreased while more opaque signs (still iconic) did not. These results indicate a need to take into account fine-grained classifications of iconicity in lexical signs.

#### References:

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Tolar, T., Lederberg, A., Gokhale, S., & Tomasello, M. (2008). The development of the ability to recognize the meaning of iconic signs. *Journal of Deaf Studies and Deaf Education*, 13(2), 225-40.

#### **Abstract 4**

### **Children's sensitivity to iconic sign-to-world mappings: an eye-tracking study of British Sign Language**

*Thompson, Robin, University College London and Birmingham University*

*Morgan, Gary, City University London*

*England, Rachel, City University London*

*Vigliocco, Gabriella, University College London*

The visual/gestural modality of signed languages allows meaningful form/meaning mappings (iconicity) across numerous basic concepts. Such iconicity may play a role in vocabulary learning by making properties of referents imagistically available in the linguistic form (Perniss, Thompson, Vigliocco, 2010). Recent research has shown a role for sign iconicity in language processing, however, results concerning sign language development are mixed (but see Thompson, Vinson, Woll, Vigliocco, 2012). In the current study, we ask whether children learning British Sign Language (BSL) are sensitive to iconic mappings: a prerequisite for iconicity to facilitate vocabulary learning. Deaf and hearing children from deaf and hearing parents using sign language (N=32; M age= 48 months old, range 25-79 months old) were presented with videos of iconic BSL signs while their eye-gaze was tracked. Each sign video (N= 42) was presented concurrently with a picture on either side (e.g., BSL sign bird and 2 pictures of a bird). In one picture, the iconic property of the sign was made salient (a picture of a bird, beak well in view) while in the second the iconic property was not made salient (a picture of a bird flying). Results show that children across the board look longer at the salient picture compared to the non-salient picture. Moreover, the effect is present for both deaf and hearing children. Interestingly, our preliminary analyses show a larger effect in younger children (under 45 months) who look at the salient picture an average of 150ms more compared to the older children. Overall, the data provide evidence that iconicity plays a role in sign-language acquisition and supports the claim that iconicity serves to bridge the gap between linguistic form and human experience.

#### References

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Thompson, R.L., Vinson, D.P., Woll, B., Vigliocco, G. (2012). The road to language learning is iconic: evidence from British Sign Language. *Psychological Science*. 23(12): 1443 –1448.

**Abstract 5 (if applicable)**

*Other (please, specify) Language problems and socio-emotional comorbidities*

*Language, general*

## **Understanding interactivity, causality and developmental trajectories of language and socio-emotional development: Evidence from population and specialist longitudinal cohort studies**

*James Law, University of Newcastle*

### **Symposium abstract:**

*There is a growing acceptance that Language Impairments (LI) in children are rarely 'specific'; rather they often co-occur with other developmental difficulties. Findings from cross-sectional studies have repeatedly found increased prevalence of socio-emotional difficulties in children with LI and of LI in children referred to mental health services. Furthermore, the association between these domains holds at the population level. However, the underlying nature of this relationship remains poorly understood. It is unclear whether one impairment causes or exacerbates the other; whether these relationships are stable over the trajectory of development; or whether impairments and associations emerge or ameliorate over time.*

*Such issues can only be definitively understood using longitudinal designs which collect concurrent data on both domains at multiple data points. This symposium presents data from four such studies, examining transactional relationships between language and socio-emotional skills within populations with particular contextual and biological risks (1, 2) and within representative populations (3, 4). Presentation (1) investigates trajectories of development of language and socio-emotional adjustment in the context of social disadvantage (N=180, 3-7 years); (2) explores their concurrent and longitudinal relationship in a population cohort including children with ADHD (N=391, 6-10 years); (3) examines the timing and trajectories of associations between language and socio-emotional difficulties, in a population-representative language cohort (N=1910, 8 months to 7 years); and (4) the direction of causality between vocabulary and social skill development in a*

*nationally representative longitudinal cohort of Australian Children (N>3000, children 4-8 years).*

*Gaining a greater understanding of these issues would benefit both theory and practice. For theory, understanding interactivity, causality and emergence would allow for greater specification of models of the role of language development in broader developmental processes. For practice, findings could inform more effective targeting of intervention resources, both in terms of focus and timing, to improve children's long-term outcomes.*

### **Abstract 1**

## **Exploring the developmental trajectories of vocabulary and social-emotional adjustment in children living with social disadvantage**

*Cristina McKean, Newcastle University, United Kingdom*

*Debra Page, Newcastle University, United Kingdom*

*Kathy Wesolowski, North Tyneside Local Authority, United Kingdom*

*Gill Close, North Tyneside Local Authority, United Kingdom*

*Deborah James, Northumbria University, United Kingdom*

*Rob Henderson, Newcastle University, United Kingdom*

**Objective:** Children living with social disadvantage are more likely to have difficulties with vocabulary development and socio-emotional adjustment than their peers. In order to develop interventions it is essential to understand the nature of their development over childhood. This study explored the nature of the longitudinal trajectories of development of vocabulary and socio-emotional adjustment in children living with social disadvantage between 3 and 7 years, to consider whether this group of children demonstrate stable, increasing or declining trajectories in these skills.

**Method:** Prospective longitudinal data was collected from 180 children in 3 schools in an area of social disadvantage. Sixty children each from Nursery (3-4 years), Reception (4-5 years) and Year 1 (5-6 years) classes were assessed on 3 occasions over 18 months using the British Picture Vocabulary Scales-3, and the Child Behaviour Checklist). The data was analysed using longitudinal multi-level modelling.

**Results:** Vocabulary scores were significantly below average. The best fit for the data was an 'intercept only' model demonstrating stable trajectories of development, such that children with good vocabulary knowledge tended to stay high and those with low, to stay low. Year 1 cohort vocabulary results were significantly lower than younger cohorts ( $t = -3.30, p < .01$ ).

Socio-emotional adjustment scores (CBCL) were significantly better than average. An 'intercept only' model was the best fit suggesting stable trajectories. There was a small increase in socio-emotional difficulties in Year 1 ( $t = 2.03, p < .04$ ), although scores remained significantly better than the national average.

Conclusions: The stability of the vocabulary trajectory suggests that it may be possible to identify children living with social disadvantage who might benefit from early vocabulary interventions. Socio-emotional difficulties, however, may not emerge in this group until mid-late childhood. Further longitudinal studies are required to fully understand the emergence of such difficulties.

## **Abstract 2**

### **Prevalence of language problems in children with ADHD and non-ADHD controls and associations with academic and social functioning**

*Emma Sciberras, Murdoch Childrens Research Institute, Australia; The Royal Children's Hospital, Australia*

*Katy Mueller, Murdoch Childrens Research Institute*

*Daryl Efron, Murdoch Childrens Research Institute, Australia; The Royal Children's Hospital, Aus*

Objective: A number of small clinical studies suggest that individuals with Attention-Deficit/Hyperactivity Disorder (ADHD) may be at risk for language impairment.<sup>1</sup> However, the impact of language ability on academic and social functioning for children with ADHD is, as yet, unknown. We examined how language problems impact social and academic functioning for these children.

Method: Children (6-8 years) were recruited through 43 primary schools in Melbourne, Victoria (179 ADHD; 212 non-ADHD controls).<sup>2</sup> A two-stage process was used to screen for ADHD (parent and teacher Conners' 3 ADHD index) and assess diagnostic status (Diagnostic Interview Schedule for Children - IV). Language and academic functioning were assessed using the CELF 4 screener and the Wide Range Achievement Test 4 WRAT 4. Parent- and teacher-reported social functioning was measured using the Strengths and Difficulties Questionnaire (SDQ) and the Social Skills Improvement System (SSIS). Parents and teachers completed questionnaires 18 months later to assess academic and social functioning. Regression analyses controlled for child age and gender, comorbid mental health problems, socio-demographic factors (e.g., parent educational attainment), and parent mental health.

Results: Children with ADHD were more likely to screen positive for language problems than their peers (40% vs 17%; adjusted odds ratio: 2.8; 95% CI 1.5, 5.1;  $p < 0.001$ ). In cross-sectional analyses, children with ADHD and language problems had poorer word reading (effect size=0.7), maths computation (effect size=0.8), and teacher-rated academic

competence (effect size=0.7), compared to children with ADHD without language problems. Cross-sectionally, there was little evidence that language problems were associated with poorer social functioning. Longitudinal data will examine how language problems influence academic and social problems over time.

Conclusions: Language problems are common in children with ADHD and associated with poorer academic functioning. Future research should examine whether treating language problems in children with ADHD has flow on benefits to academic functioning.

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Sciberras E, Efron D, Schilpzand EJ, et al. The Children's Attention Project: a community-based longitudinal study of children with ADHD and non-ADHD controls. *BMC Psychiatry*. Jan 2013;13.

### **Abstract 3**

## **The social, emotional and behavioural well-being of children with language problems: the first 7 years of life**

*Laura Conway, Murdoch Childrens Research Institute, Australia; The University of Melbourne, Australia*

*Angela Pezic, Murdoch Childrens Research Institute, Australia*

*Sheena Reilly, Murdoch Childrens Research Institute, Australia; The Royal Children's Hospit*

Objective: Children with language problems experience high rates of social, emotional and behavioural difficulties that persist into adulthood.<sup>1,2</sup> However, given the paucity of studies that have measured these constructs concurrently and longitudinally, little is known about how early in development these associations become apparent. This study examines the relationship between social, emotional and behavioural well-being and language development over time within a unique sample that has measured these constructs concurrently from early in life.

Methods: Data are reported from the Early Language in Victoria Study (ELVS), a community-based longitudinal study of language development. 1910 infants were recruited at 8 months, and at wave 8 were 7 years of age. Children's vocabulary and language development (Macarthur-Bates Communicative Development Inventories;

Children's Communication Checklist 2; Clinical Evaluation of Language Fundamentals (CELF) Preschool-2; CELF 4), and social, emotional and behavioural development (Short Temperament Scale for Children; Strengths and Difficulties Questionnaire) were measured at each wave.

Results: At age 7, children with language impairment, defined as language scores <1.25SD below the mean on the CELF-4, had significantly more emotional (effect size [ES]: 0.2), conduct (ES: 0.3) and peer problems (ES: 0.2), and higher hyperactivity/inattention symptoms (ES: 0.5). We then mapped the reciprocal relationship between social, emotional and behavioural development and vocabulary/language across 8 waves of data collection using latent class analysis. We report: 1) when language and social, emotional and behavioural difficulties first emerge; 2) how likely difficulties are to be resolved or maintained; and 3) whether associations between these constructs reflect common developmental processes or causal relationships.

Conclusions: This is the first reported study to document the emergence and development of social, emotional and behavioural difficulties for children with language difficulties. These data provide insight into the usefulness of early intervention strategies for children at risk of higher comorbidity and ultimately greater societal/family burden.

References:

Conti-Ramsden G, Botting N. Emotional health in adolescents with and without a history of specific language impairment (SLI). *J Child Psychol Psychiatr* first reported study to document the emergence and development of social, emotional and behavioural difficulties for children with language difficulties. These data provide insight into the usefulness of early intervention strategies for children at risk of higher comorbidity and ultimately greater 2008;49(5):516-525.

Beitchman JH, et al. Fourteen-year follow-up of speech/language-impaired and control children: Psychiatric outcome. *J Am Acad Child*

#### **Abstract 4**

### **Bidirectional relationship between child language development and social skills across early childhood: Influences on later socio-emotional outcomes**

*Elizabeth Westrupp, Parenting Research Centre, Australia; Murdoch Childrens Research Institute, Australia*

*Fiona Mensah, Murdoch Childrens Research Institute, Australia; The Royal Children's Hospital, Australia*

*Jan Nicholson, Parenting Research Centre, Au*

**Objective:** Many studies have identified comorbidity between child language problems and social difficulties, though few have assessed causality; it therefore remains unclear whether language problems cause social difficulties, or vice versa. The current study aims to more precisely document the nature and direction of the relationship between children's development of vocabulary skills and social development (prosocial skills and peer difficulties) across early childhood, and the influence of each on later emotional and behavioural outcomes.

**Method:** We used cross-lagged path analysis with three waves of nationally representative survey data from the Longitudinal Study of Australian children, for two cohorts of children (N>3000 each), aged 4-5, 6-7 and 8-9 years at each wave. Vocabulary was assessed using the Peabody Picture Vocabulary Test (PPVT) and social development was assessed using the Prosocial Skills and Peer Problems subscales of the Strengths and Difficulties Questionnaire. Two models tested the bidirectional relationship between (a) vocabulary and pro-social skills and (b) vocabulary and peer problems.

**Results:** We found evidence for bidirectional effects. In the first model, vocabulary skills at age 4-5 years predicted peer problems at age 6-7 years, while peer problems at age 4-5 predicted vocabulary skills at age 6-7. Similarly, in the second model, vocabulary skills at age 4-5 years predicted prosocial skills at age 6-7 years, and vice versa. In both models these effects were no longer evident between ages 6-7 and 8-9 years. Future analysis will examine how these bidirectional effects relate to later socio-emotional and outcomes.

**Conclusions:** Our findings suggest that there are bidirectional effects between language and social development, which are stronger when children are younger and reduce over time. These results provide support for early intervention and highlight the need for dual-assessment of language and social development for children presenting to early childhood services.

### **Abstract 5 (if applicable)**

### **Discussant**

*Nicola Botting, City University of London, United Kingdom*



*Cognition and language development*

*Language, general*

## **Differential Patterns of Communication of Children with Peers vs. Adults**

*Kempe, Vera, University of Abertay Dundee & Patricia J. Brooks, City University of New York*

### **Symposium abstract:**

*The role of adult-child interaction in language development has been extensively researched. Adults scaffold the communicative process and adapt their language to young children's limited processing capacities in a number of ways. For example, caregivers tend to reduce the length and pace of their utterances, respond to infant bids for attention, initiate joint attention, request clarification when the child is unclear and elaborate on their child's first contributions to discourse. Consequently, adult-child interaction is considered the central driving force of language development.*

*However, children generally also spend considerable time in the company of peers (Dunn, 2004) who can serve as communication partners and provide language input of their own, albeit in limited ways. Despite some interest in studying peer interaction several decades ago (e.g. Bakeman & Adamson, 1984), the topic has received considerably less attention in recent language acquisition research. This symposium gathers together recent findings on the characteristics of same-age peer interaction and how it differs from interaction with adults, to gain a more refined understanding of the role of peer interaction in language development and language transmission. The contributions consider peer interactions from the ages of 7 months to 4-5 years, and suggest the following picture: While very young children seem to prefer interactions with adults rather than with peers (Brooks et al.), presumably because adults are seen as expert interlocutors that are worthy of bids for joint attention (Ninio), the communicative competence acquired through scaffolded interactions with adults subsequently gets adopted into peer interaction (Köymen et al.). Still, children's referential communication with peers remains suboptimal during the preschool years, which constrains the possible role of*

*children in language transmission (Kempe et al.). These results will be discussed in terms of children's ability to appraise an interlocutor's perceived competence and to adapt their own communicative efforts accordingly.*

*References:*

*Bakeman, R. & Adamson, L. B. (1984). Coordinating attention to people and objects in mother-infant and peer-infant interaction. Child Development, 55, 1278-1289. doi: 10.2307/1129997.*

*Dunn, J. (2004). Children's friendships: The beginning of intimacy. Oxford: Blackwell.*

**Abstract 1**

**Natural Pedagogy in Twin Infants' Early Communicative Acts**

*Patricia J. Brooks, City University of New York*

*Naomi Aldrich, City University of New York*

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

*Sonia Ragir, City University of New York*

Twins develop in a unique social environment that differs from singletons: As infants they spend most of their waking hours together, and thus have countless opportunities to interact with a same-age peer as well as with their caregivers. In these familial contexts, twins may exercise choice and control over their communicative partners, which allows researchers to investigate the development of social and communicative skills as a function of these choices. Our study investigated the development of engagement states (dyadic, supported, onlooking, joint attention), deictic gestures (showing, pointing), and imitation (vocal, instrumental) in 7- to 25-month-old twins. Twin dyads (N=21 pairs) participated in ten-minute, semi-structured play sessions involving age appropriate toys. For the first half of the session, the mother was seated in a chair and asked to complete paperwork, while allowing her children to play uninterruptedly with each other. For the second half of the session, the mother was seated on the floor with her children, and was instructed to play naturally with them. Twins engaged more with their mothers than with their siblings irrespective of her position, and they selectively showed her objects and imitated her speech and object use. When the mother was otherwise engaged, the twins tended to play separately, watch each other's toy play, or were unengaged. Twins were more likely to imitate each other's instrumental actions when the mother was on the chair, yet did so relatively infrequently. Twins' preference for engaging with their mother rather than their sibling and their selective imitation of her vocalizations and instrumental actions support one of the claims of natural pedagogy (Csibra

& Gergely, 2006, 2009)—that toddlers choose to interact with expert rather than novice modelers in the acquisition of conventional, communicative, and instrumental behavior.

References:

Csibra, G., & Gergely, G. (2006). Social learning and social cognition: The case for pedagogy. In Y. Munakata, & M.H. Johnson (Eds.), *Processes of change in brain and cognitive development. Attention and performance, XXI* (pp. 249-274). Oxford, UK: Oxford University Press.

Csibra, G., & Gergely, G. (2009). Natural pedagogy. *Trends in Cognitive Sciences*, 13 (4), 148-153. doi: 10.1016/j.tics.2009.01.005

## **Abstract 2**

### **Lack of Workable Interactive Formats for Dyads of Very Young Peers**

*Anat Ninio, The Hebrew University of Jerusalem*

It has been well established since Parten (1932) that before they are 3;0-3;6, children typically do not engage with peers in focused interaction, although they do so in dyadic situations with adults. Children over 3;6 do engage peers in interaction but mostly in talk discussing nonpresent topics (Garvey & Hogan, 1973). Such talk is a late achievement, rarely observed before 3;0. With parents, very young children interact around the here-and-now. We hypothesize that very young peers do not attempt to establish joint attention to an object present in the environment. This effectively leaves them without a basis for engagement. To test this hypothesis we compared three speech corpora from the CHILDES archive for the presence and relative frequency of attention directives. To establish a baseline, we counted how often parents focus young children's attention to present objects. To ensure fair age comparison, only verbs occurring in single-word utterances were considered. In a sample of 391 English-speaking parents, 88% generated attention-directing imperatives, mostly look, see and watch. Next, we checked 15 children engaging in dyadic peer-interaction, 2;10-3;7. Only 4 (26%) produced single-word attention-directing imperatives. To check if young children produce such directives in dyadic interaction with their parents, we analyzed the spontaneous speech of 268 children, 1;2-3;3. A large number, 166 (62%) addressed such directives to parents. It appears that interaction with peers in young children does not involve joint attention to a shared environmental focus although it does with parents. The reason may be pragmatic: At this age, shared attention in parent-child dyads is a means to get information or help, not a way to play. It may seem pointless for a child to establish shared attention with a peer who cannot follow up with information or help. Without a workable interactive format, young children abstain altogether from focused interaction with peers.

## References

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## **Abstract 3**

### **Giving Reasons for Joint Decisions in Peer Interactions**

*Bahar Köymen, Max Planck Institute for Evolutionary Anthropology*

*Lena Rosenbaum, Max Planck Institute for Evolutionary Anthropology*

*Michael Tomasello, Max Planck Institute for Evolutionary Anthropology*

For successful communication, speakers design their speech according to the common ground (the mutual knowledge, and assumptions) that they share with their interlocutors (Clark, 1996). This study investigates how preschool children appealed to cultural common ground as warrants – the general assumption or knowledge shared by the members of a social group (Toulmin, 1958) – to arrive at joint decisions with peers. Children were observed to produce richer arguments in peer-to-peer interactions than adult-child interactions (Piaget, 1932). Twelve pairs of 3- and twelve pairs of 5-year-olds were presented with items to build a zoo together. The items were of two kinds: 1) conventional items which one would expect in a zoo such as toy animals, cages, etc.; 2) unconventional items which one would not expect in a zoo such as a washing machine, a piano. Children made various proposals about where to place these items in a zoo and the type of reasons they provided for each proposal was coded for whether they made the warrant explicit or not. The results suggested that while discussing conventional items, both 3- and 5-year-olds provided reasons, which relied on implicit unstated warrants so they assumed their partner already shared this knowledge. For instance, to justify the proposal of placing the polar bear on ice, a child pointed to the evidence that “There is ice”, which was based on the implicit warrant that polar bears live on ice. While discussing unconventional items, they introduced the warrant explicitly to build cultural common ground with their peers. Five-year olds generally made the warrant explicit more than 3-year olds regardless of the conventionality of the item. Thus, by age 3, children show some awareness of cultural common ground that they share with their interlocutors and 5-

year-olds appealed to explicit warrants in general because they evaluated proposals in depth.

#### References:

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#### **Abstract 4**

### **Under-Developed Referential Communication Ability Makes Language Transmission Between Young Children Unlikely**

*Vera Kempe, University of Abertay Dundee*

*Audrey Thompson, University of Abertay Dundee*

*Alison Gibson, University of Abertay Dundee*

*Margaret Jamieson, University of Abertay Dundee*

Iterated language learning has been used to experimentally study language evolution. Studies with adults showed that the process of transmission renders artificial languages progressively more learnable and more structured in terms of mapping elements of form onto elements of meaning (Kirby, Cornish & Smith, 2008). However, natural language transmission does not happen between adults but from adults to children. To test the role of child learners in language transmission the present study compared iterated language learning between chains of children and chains of adults. Within each chain, five generations of interacting dyads transmitted eight novel labels for geometrical figures. To prevent under-specification (e.g. increasingly undifferentiated use of single labels for multiple meanings), each dyad engaged in a labelling game, which forced learners to use the new labels expressively during referential communication. Labels used during this game then served as input for the next dyad in the chain.

As expected, in adults languages became progressively more learnable (measured as the edit-distance between input and output labels for the same meanings) and more compositional (measured as the chance likelihood of form-meaning mappings). In 4-year-old children, languages also became simpler and, thus, more learnable but compositional structure failed to emerge. To test whether this failure can be attributed to pre-schoolers' inability to

establish referentiality in peer interactions (see Krauss & Glucksberg, 1969), a follow-up study now directly compares children's referential capabilities when addressing peers vs. adults. Preliminary results show that even when using familiar rather than novel words children need prompting and feedback from adults to avoid under-specified and uninformative expressions, confirming the importance of adult feedback in the development of children's referential communication skills (Matthews, Lieven & Tomasello, 2007). Apparently, the emergence of compositional structure during language transmission relies on referential use of language, which, for children, requires scaffolding by adults.

#### References:

Kirby, S., Cornish, H. & Smith, K. (2008). Cumulative cultural evolution in the laboratory: An experimental approach to the origins of structure in human language. *Proceedings of the National Academy of Sciences of the United States of America*, 105, 10681–10686. doi: 10.1073/pnas.0707835105.

Matthews, D., Lieven, E. & Tomasello, M. (2007) How toddlers and pre-schoolers learn to uniquely identify referents for others: A training study. *Child Development*. 78, 1744-1759. doi:10.1111/j.1467-8624.2007.01098.x.

#### **Abstract 5 (if applicable)**

#### **Discussant**

*Danielle Matthews, University of Sheffield*

*Other (please, specify) randomised controlled trials*

*Language, general*

## **Change no Change: what can we learn about the fundamental nature of language development from population-based randomised controlled trials?**

*Reilly, Sheena, Murdoch Childrens Research Institute*

### **Symposium abstract:**

*The prevalence and long-term consequences of language delay make it an important public health issue. While health professionals and researchers alike would agree that appropriate and effective population-based interventions could make a major contribution to society, questions remain around how to achieve this.*

*The first session will utilise findings from two community-based Australian trials to address the fluidity and natural resolution of language, highlighting that the natural history of language development needs to be understood if we are to address language delay at a population level. Session two focuses on mutability and what we have learned from the growing pool of international trials examining treatments for childhood speech and language delay and the aspects of oral language that are most amenable to change via intervention. The third session will explore future directions for research and clinical practice in light of methodological barriers and outcomes from trials such as those presented in the first two sessions.*

*Screening for language delay will always be counter indicated unless there are adequate trials of sufficient quality to demonstrate population screening leads to improved outcomes.*

### **Abstract 1**

## **Fluidity**

*Levickis, Penny, Murdoch Childrens Research Institute*

What are the differing pathways children's early language trajectories may follow, and what are the implications for population-focused interventions? This session illustrates what we have learned about the natural history of early language development, and why this matters to planning language interventions.

We consolidate learnings from two Australian trials that have employed a range of different population approaches at different ages, but share a common goal of preventing ongoing early childhood language problems. In two different randomised trials, we have tested:

a) a selective prevention approach, whereby a low-intensity parent-toddler language promotion program was delivered to toddlers identified as slow-to-talk (falling at or below the 20th percentile on a parent-reported vocabulary checklist) on screening in universal services

b) a more targeted approach involving the systematic ascertainment of language delay at age 4 years followed by a standardized yet flexible one-on-one 18 session intervention delivered by non-specialist staff in the family home.

Results from the first trial revealed null findings, with the intervention group virtually identical to the control group on all language measures at ages 2 and 3 years. The second trial reported improvement in the intervention group for phonological skills when compared to the control group at both 5 and 6 year of age. However, as with the first trial, null findings were reported for the primary outcomes of receptive and expressive language. In both trials the control group showed improvement in both language domains to within a third of a standard deviation of the population mean. Findings highlight the fluidity and high levels of natural resolution of language delay throughout early childhood.

Only by understanding what may be achievable over and above natural history and resolution can we truly determine the impact of intervention, whether clinical or community-based.

## **Abstract 2**

### **Mutability**

*Law, James, Newcastle University*



Measuring change in intervention studies presupposes that we understand how much change there is in the normal population. Characteristically this is captured through the inclusion of control groups but it presupposes that the performance of the control group (the noise against which the signal of the intervention study must be detected) is being accurately measured. This assumption is difficult to make given that most intervention studies are relatively small with broad confidence intervals. By contrast control groups from large studies AND the output of population studies almost certainly provides a more reliable estimate of change in the population as a whole. And one would reasonably assume that this change would vary for different aspects of language development.

There has been rapid growth in the number of trials examining treatments for child speech and language delays. The numbers of trials included in the recently updated Cochrane review increased from 25 studies included in meta-analysis in 2003 to 54 studies in 2011. This session uses the latest evidence base of interventions for language delay to address the question, what would you expect to be able to change? While there is promising evidence for improving deficits in expressive vocabulary, phonological skills and syntax, benefits to receptive language remains a problem. This session also highlights that while most trials focus on the impact of intervention on language ability (e.g., expressive vocabulary and syntax), it is important to consider non-linguistic factors. Less attention has been paid to broader social outcomes, such as the benefit of intervention to activity limitation and participation restriction, even though these are of major importance to a child's development and success.

A strong evidence base is required to inform clinical practice and future trials of both the linguistic and non-linguistic factors most amenable to change for children with language delay.

### **Abstract 3**

#### **New Directions**

*Reilly, Sheena, Murdoch Childrens Research Institute*

While evidence suggests intervention can improve language delay, methodological barriers must be addressed if these improvements are to translate to population benefit. Population-based identification and prevention of language delay remains elusive, calling into question the value of screening at one point in time for language delay.

It has become increasingly clear that we can't fulfill screening program criteria for language delay given the increasing evidence from population studies for fluidity in

the evolution of language delay/impairment. In this session we address two issues. First we ask what can be learnt from other domains? In cardiac disease and psychiatry an approach called clinical staging has been adopted. Clinical staging defines the progression of a disease/disorder at a particular point but also where an individual sits along the continuum of the disease/disorder. This framework acknowledges the sometimes-pervasive nature of language delay and also the need to understand the broad social, biological and risk and protective factors that influence progression, outcomes and response to intervention. In the second part of the presentation we question whether we are measuring the right outcomes and if not, ask what should we be measuring in future trials?

The high prevalence and societal burden of persistent language delay makes the continued pursuit of effective prevention and intervention imperative.

#### **Abstract 4**

**Please see below**

*Levickis, Penny, Murdoch Childrens Research Institute*

The First Abstract contains two parts as it outlines findings from two trials, but findings are used to illustrate the overarching concept of fluidity and natural resolution. Therefore we have submitted the overview abstract, plus three abstracts for this symposium.

#### **Abstract 5 (if applicable)**

*First language acquisition*

*Syntax*

## **The Acquisition of complement clauses in Portuguese and its Broader Implications**

*Rothman, Jason, University of Reading*

### **Symposium abstract:**

*This workshop endeavours to bring together research on the acquisition of complement clauses across a wide range of interrelated properties in Portuguese. Despite compelling reasons to the contrary, the acquisition of complement clauses is relatively understudied using Portuguese as a means to investigate their development. The results of the present studies clearly apply and will make explicit reference to the acquisition of complement clauses more generally, however, we submit that Portuguese is especially interesting to examine for a series of reasons. First, Portuguese is an understudied and underrepresented language used in acquisition sciences despite being the 5th most widely spoken language. Second, bringing together Brazilian and European Portuguese is especially illuminating, as this seminar does, considering the important relevant language-specific differences that delineate these two dialects. Third, Portuguese exemplifies typologically rare structures relating to embedded clauses, for example, the existence of inflected and personal infinitives.*

*As a combined unit the papers have motivated cross-over between their properties and argumentation. This allows for a more comprehensive understanding of the acquisition of complement clauses in a way that equals much more as a whole than the individual papers could individually. To ensure the relevance for a bigger picture understanding, treatments are complementary across the papers, yet vary in methodology, properties and even subject type and age. The papers cover the licensing of indicative/subjunctive in embedded clauses as well as developmental stages of infinitival and finite complementation using naturalistic production, elicited production and other empirical measures.*

*Separately, each paper gives a reasonable account to explain the facts and together they highlight the complexity inherent to the acquisition of complementation.*

*Time is evenly divided across all papers, inclusive of a 10 minute introduction by the organiser to set the stage of the connections to be drawn and purpose of the seminar as described herein.*

## **Abstract 1**

### **Mood selection in early complement clauses**

*Jesus, Alice, Universidade de Lisboa / CLUL*

This paper addresses the acquisition of the subjunctive and indicative moods by monolingual children acquiring European Portuguese. This study departs from the consideration of three hypotheses that have been made in the literature in order to explain the distribution of mood in different languages: (i) the selection of indicative/subjunctive is conditioned by the realis/irrealis opposition (cf., e.g., Grevisse 1969); (ii) the selection of one or another mood is dependent on whether the context is veridical or non veridical (cf. Giannakidou 1999); (iii) the selection of mood is dependent on the attitude expressed towards the relevant proposition (cf. Villalta, 2008). The first proposal seems to explain the data of Russian, the second one accounts for Greek and other Balkan languages, while the third accounts for the data of Portuguese and other Romance languages. If these different accounts hold for different languages, we can assume that these are options of UG and that the child's task is to determine which one is relevant for the language he is acquiring.

An elicited production task was applied to four groups of children (ages ranging from 4 to 9). The results allow us to observe whether the subjunctive is preferably selected with verbs whose complement clause does not describe reality (as predicted by hypothesis (i)), whether the subjunctive is selected by non veridical verbs (as predicted by hypothesis (ii)), or whether the child has already reached the adult grammar and selects the subjunctive for the complement clauses of the verbs that do not express a positive epistemic attitude. The preliminary results show that, at earlier stages, children may be sensitive to the realis/irrealis opposition, since they produce some subjunctive forms with matrix fictional verbs, like *sonhar* (to dream), which is not a possibility in the target grammar.

## **Abstract 2**

## **Acquisition of mood in Heritage Portuguese**

*Flores, Chistina, Universidade do Minho / CEHUM*

*Santos, Ana Lúcia, Universidade de Lisboa*

*Jesus, Alice, Universidade de Lisboa*

*Marques, Rui, Universidade de Lisboa*

The quantity and type of language input to which bilingual children are exposed appear to be a significant variable in the process of bilingual language acquisition (Unsworth, 2013). Actually, studies focusing on bilingual children who have reduced access to one of their languages argue that they develop a weaker language, which may present a different pattern of acquisition (Schlyter, 1993). One type of bilingual speakers who have unbalanced bilingual input are heritage speakers (HSs). HSs are second (or third) generation migrants who have reduced contact with their language of origin (their heritage language) and attain a high degree of fluency in their L2 (the socially-dominant language), which actually becomes their dominant language. It has been argued that HSs' language proficiency differs from native speakers' competence because of this limited input (Montrul, 2008; Polinsky, 2008; Rothman 2007), even though divergent explanations for this competence mismatch has been put forward (see discussion in Pascual y Cabo & Rothman, 2012).

The present study aims at analyzing the acquisition of verbal mood in heritage European Portuguese (EP). An elicited production task (based on Jesus, in prep.) was applied to a group of 20 heritage speakers of EP, living in Germany, in order to elicit the production of the indicative/subjunctive mood in complement clauses. The participants differ in age (7 to 14 years) and amount of exposure to EP (Portuguese vs. German as dominant home language). Preliminary results show that heritage EP children take longer to acquire the subjunctive mood than their monolingual counterparts (by the age of 7/8 they still do not master it). Older heritage children manage to produce subjunctives in complement clauses, a fact suggesting that they need more exposure accumulated over time (i.e. a longer period of positive evidence) in order to reach ultimate attainment (as suggested by Unsworth, 2013).

### **Abstract 3**

## **Infinitival and finite complement clauses in Brazilian Portuguese**

*Lopes, Ruth, UniCAMP/CNPq*

Children start out with infinitive embedded clauses. Explanations either argue that they are structurally less complex than finite ones or liken it to limited cognitive capacity to interpret the latter. This paper summarizes available data from the literature to argue that initially the structure grows with the child, but that in the final stages, the interpretation of semantically complex processes will also depend on the child's cognitive development (Givón, 2001).

Although brief, there is a stage in Brazilian Portuguese (BP) with nominal forms of verbs without the use of auxiliaries as in *Babalu papando* (Horse eating, R. 1;9) (Kato, 1994). Then, the child grows into a second stage including auxiliaries. A natural expansion of such contexts to modals and “modal-like” verbs, basically control ones - *querer* (want) and *conseguir* (manage) - is observed. Once auxiliaries are produced, it is clear that the T head is operational in the grammar. Why is it then that finite embedded clauses are not attested yet? We will argue that it has to do with the C domain, since in the above stage children also produce ECM constructions with perception verbs (Freire, 2013).

Considering ECM verbs do not select a C, the problem lies within the temporal C and the fact that it will install an event which will have to be independently computed wrt the main clause. Rodrigues (2010) has shown that to be the case with perception verbs in BP and Freire (2013) has confirmed that and also shown that the same scenario is found for causative verbs. The author applied a comprehension task to 96 children (4 to 9-years-old), testing finite clauses with perception verbs (Did Eeyore hear that Pooh played the drums?), and showed that children perform rather poorly up to their 8th birthday, displaying only 25,5% of adult responses.

#### **Abstract 4**

### **Notes on the acquisition of infinitival constructions in European Portuguese**

*Soares-Jesel, Carla, Université Paris-Diderot*

We examine the acquisition of different infinitival constructions by 3 monolingual children (1;2–4;6; 18884 utterances). The first infinitival constructions to emerge (and the most frequent) are those presenting semi-auxiliaries (from 1;5). Complement infinitival clauses, which emerge before finite complements, are attested from 1;10 but until 3;5 they correspond exclusively to complements selected by the control verb *querer* (to want'). Embedded complements selected by causative verbs, only attested from 3;5, are rare.

Children start producing infinitives that are VP extended domains before producing embedded infinitives.

We argue that embedding entails dependence relations that involve a higher degree of structural complexity. Moreover, we will argue that the late emergence of infinitival complements introduced by complementizers suggests that subordinators that involve CP are more complex. Furthermore, embedded infinitival complements emerge earlier than purpose adjuncts and this does not confirm that non-selected subordinators are less complex. The first purpose clauses are not embedded clauses although embedded purpose clauses are frequent in the input. We will suggest that children produce root-purpose clauses before being able to produce subordinate purpose clauses (from 2;7), which corroborates the idea that embedding is a source of complexity. The first embedded purpose clauses are IPs. Children only produce CP purpose clauses from 3;3 which suggests once more that the categorical nature of the embedded clause has to be taken into account to characterize syntactic complexity. Although frequency in the input contributes to explain the developmental path of infinitival constructions, it is not the only relevant aspect.

### **Abstract 5 (if applicable)**

## **Object control and ECM-type verbs in European Portuguese: elicited and spontaneous production**

*Santos, Ana Lúcia, Universidade de Lisboa*

*Gonçalves, Anabela Universidade de Lisboa*

*Hyams, Nina, UCLA*

This paper explores the acquisition of object control (OC) and the different complement structures selected by ECM-type verbs, based on spontaneous and elicited production data. The spontaneous production corpus includes data from 3 children (1;6-3;11, 1;6-3;10, 1;5-2;9, MLUw 1.2-3.8, 27586 utterances). In the elicited production experiment we tested 3-6 year-olds (n= 58) in a sentence completion task in which the child listens to a story also acted out with props, and is asked to help the puppet complete his descriptions of the story. We tested: perception verbs (ver 'see'), causatives (mandar 'make', deixar 'let'), subject control verbs (querer 'want', conseguir 'be able to'), and object control verbs (ensinar a 'teach', proibir de 'forbid'). In all cases, the lower subject is plural, making visible the contrast between inflected and uninflected infinitives. Verbs were selected from the set occurring in the spontaneous corpus (both in child and child directed speech).

The results suggest that children's default analysis of OC verbs is that these verbs select a single internal argument, until they have sufficient evidence for multi-valent analysis. This is the "Single Argument Selection Hypothesis" (SASH). This default analysis results in ungrammatical production of bare inflected infinitives in this context.

Additionally, we explore children's production preferences among the non-finite complements of ECM-type verbs. Inflected infinitives are the most frequent complement of causative verbs; the prepositional infinitival construction (PIC, Raposo 1989) and finite clauses taking indicative are the most frequent complements of perception verbs. Conversely, unambiguous ECM structures are rare. This is compatible with the hypothesis that children initially eschew RtoO and assume that propositional complements to ECM-type verbs are "functionally complete", viz. constitute a domain in which all grammatical functions compatible with a head are realized. (See the analysis of the acquisition of want by Landau & Thornton, 2011 for a similar idea).