

# THE 47TH BOSTON UNIVERSITY CONFERENCE ON LANGUAGE DEVELOPMENT

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## List of Abstracts

Friday Presentations	2
Keynote Address	6
Friday Posters	7
Saturday Presentations	18
Plenary Address	23
Saturday Posters	24
Sunday Presentations	33
Symposium	35

## **FRIDAY, NOVEMBER 4**

### **Individual differences across language domains in heritage language development**

*Vicky Chondrogianni and Evangelia Daskalaki*

Child heritage speakers are bilingual speakers who are exposed to their native minority heritage language (HL) under reduced input conditions and under pressure from the majority societal language (ML). Unlike monolingual speakers, heritage speakers display great variability in their rate of acquisition and the level of HL attainment. As such, HL development offers a unique opportunity to investigate how individual factors contribute to native language acquisition of specific linguistic phenomena in bilingual contexts. In this study, we examined how child-internal factors such as the child's age of exposure to the ML and age at the time of testing, and child-external factors, such as amount of HL use, and the child's generation of immigration modulated the production of vocabulary and subject placement in a group of Greek heritage children residing in New York City and in Canada. We discuss the results in light of accounts of bilingual language development.

### **Linking acoustic variability in everyday input to early word production**

*Federica Bulgarelli and Erika Bergelson*

Talker variability has been shown to shape how learning unfolds in the lab, and similar types of variability have been shown to be available to infants in the real world. Here, we ask whether talker variability also influences age of first production for common nouns, above and beyond influences of frequency and speech register. We measured acoustic properties of highly frequent words from naturalistic recordings, and asked whether variability in the input predicted age of first production from MCDI checklists. We found that variability in mean pitch and duration—which are readily extractable from recordings of infants' daily lives—predict word learning above the expected effects of frequency. Further, we showed that the effects of acoustic variability are not simply redundant with the presence of child-directed-speech. Together, this adds to a growing body of literature showing that talker variability influences word learning both in the lab and in the real world.

### **The agent bias holds in production too: Event descriptions in child Italian**

*Silvia Silleresi, Chiara Dal Farra, Yining Nie, Fabienne Martin, Artemis Alexiadou and Maria Teresa Guasti*

We investigate whether the presence and type of agent/initiator affects child and adult speakers' choice of argument structure. In a design inspired by Rissman et al. (2019) with adult English speakers, child (aged 4;0-6;3) and adult Italian participants described 36 videos, which differed in initiator type: Body-Agent (fully visible human agent), Hand-Agent (only hand of the agent is visible), Inanimate-Causative (e.g. ball, wind), and No-Initiator. We measured the participants' production of active transitive, passive and anticausative structures. Both adults and children produced mostly active transitives in Body-Agent and anticausatives in No-Initiator. For Hand-Agent, adults produced a large proportion of short passives (37%), while children almost never produced passives. Unlike adults, then, children treated the Hand-Agent like the Body-Agent in argument structure, suggesting that they perceive the Hand and the Body as being equally agentive. Inanimate-Causatives, by contrast, were treated as non-agentive by both adults and children, eliciting many anticausatives.

### **Sources of variability in the acquisition of evidentiality by Turkish heritage language children in the United States**

*Aylin Coskun Kunduz and Silvina Montrul*

Aspectual morphology is a vulnerable domain in adult heritage speakers (HS). This paper traces such variability to childhood by examining Turkish evidentials in child Turkish HS in the U.S. and their parents (main input providers). If child HS show variability compared to their parents, then variability may be due to insufficient input. If children are target-like, then potential attrition in later years could be assumed. Finally, if parents are not target-like, then parental input quality could lead to morphological variability in HS. 20 first-generation immigrants, 20 adult and 20 child (aged 7–14) Turkish HS in the U.S. and age-matched monolinguals in Turkey completed a story retelling task and a picture selection task. Results revealed variability in child and adult HS, but not in the parental group, suggesting that the variability in heritage evidentiality is more likely due to insufficient input in early years than to changes in parental input.

### **Children's language ecologies: Understanding day-to-day variability in caregivers' child-directed speech during the COVID-19 pandemic**

*Monica Ellwood-Lowe, Ruthe Foushee and Mahesh Srinivasan*

Research suggests that variability in the child-directed speech (CDS) children receive contributes to their language development. But what explains this variability in CDS? Here, we move beyond cross-caregiver comparisons to explore the sources of variability in CDS within individual families over a series of 20-60 days. Initiated at the beginning of the COVID-19 pandemic, our study captures a period when families experienced rapidly-changing external circumstances. We find dramatic variability in day-to-day CDS, even within a single family and consistent context; this variability is predictable within families based on internal (e.g., mood) and external (e.g., governmental financial assistance) factors. While our results highlight that each family's language ecology is uniquely sensitive to these pressures, some of the factors most consistently related to CDS across families are external (e.g., acute financial changes), pointing to sensitive targets for interventions aiming to support families.

### **Je peux, ou je dois? Faudrait savoir! Acquiring modals' force: Evidence from French**

*Anouk Dieuleveut*

Learning the “force” of modals raises a subset problem for children. Given that necessary entails possible, possibility modals (e.g., ‘can’) are used in contexts where necessity modals (e.g., ‘must’) are also true: what prevents learners from assuming possibility meanings for necessity modals? Existing studies show that, indeed, children struggle with necessity modals. However, studies tend to focus on English, where necessity modals are rarer in the input. By looking at French, this study first shows that frequency alone can’t explain English results: despite being more exposed to necessity modals, French children still display a ‘Necessity Gap’. Second, we discuss how children figure out force, focusing on one logical way to solve subset problems: negation. We show that children need other cues: given irregularities of scope, informative cases are almost absent from their input.

### **Examining the role of markedness in agreement in native and non-native Spanish: A look at coordinate noun phrases**

*Andrew Collins, Robert Fiorentino, José Alemán Bañón and Alison Gabriele*

Second language learners’ errors in gender agreement have been linked to markedness whereby learners may over-rely on the masculine gender, which is thought to be a default in Spanish. Little is known about how L2 learners behave with coordinate noun phrases, a context in which default agreement is expected even for native speakers. For coordinate NPs with nouns of different genders (masculine/feminine), Spanish is argued to allow for both masculine agreement or closest conjunct agreement, where the adjective agrees only with the closest noun. We used a grammaticality judgment task to examine gender agreement with coordinate NPs including both prenominal and postnominal adjectives in Spanish. Native speakers of Spanish showed sensitivity to linear word order by favoring agreement between the prenominal adjective and the closest noun but preferring masculine default agreement for postnominal adjectives. Learners, however, only used markedness for both prenominal and postnominal adjectives by favoring masculine default agreement.

### **Infant-directed communicative acts in a Tzeltal Mayan community**

*Isabella Di Giovanni and Marisa Casillas*

Building a comprehensive picture of infants’ language environment and exploring the role of input variability in language learning necessitates looking at both quantities and content of input. Drawing from quantitative work in development psychology, linguistic speech act theory, and ethnographies of language socialization, we present a mixed-methods study of communicative act types in the infant-directed speech of children learning Tzeltal (Mayan). We explore how socialization practices and ideologies about children as interlocutors shape linguistic and interactional features of the early language environment. Our analysis of the distribution of communicative act types across age shows that the prevalence of different act types changes over the first year, aligning well with prior ethnographic findings.

### **18-month-olds understand the links between declaratives and assertions, and interrogatives and questions**

*Daniel Goodhue, Valentine Hacquard and Jeffrey Lidz*

This study investigates English-acquiring 4-year-olds’ interpretation of ‘too’ to test whether or not they understand the focus-sensitive nature of the particle. Previous studies that tested children’s understanding of the interaction between additive particles and focus failed to account for the anaphoric nature of the presupposition, testing children’s interpretation of the particles in context in which no preceding discourse was provided. This could have led to underestimation of children’s performance. To address the issue, we designed a novel task that tests to see if children can use prosodic information to determine the scope of ‘too’ and use that information to infer the intended presupposition from visual context even when part of the antecedent utterance is covered by white noise. Our results show that while they aren’t at the level of adults, children as a group are able to distinguish subject-focus ‘too’-sentences from object-focus ‘too’-sentences.

### **Bilingual children’s Theory of Mind abilities: The benefits of biliteracy exposure**

*Jacopo Torregrossa, Christiane Bongartz, Sonja Eisenbeiß, Vasileia Skrimpa and Andrea Listanti*

The present study investigates the impact of language-exposure variables on bilingual children’s Theory-of-Mind, distinguishing between language and literacy exposure in and outside school. We tested 116 bilingual children (M: 9;4; 7;5-12) with 3 language-combinations by using an “advanced” ToM-task. They attended bilingual schools differing from each other in the type of biliteracy implemented (e.g., whether instruction was balanced across the two languages or not). The children had different degrees of exposure to their respective minority societal languages. The results show the relevance of literacy-related variables for the development of bilingual children’s ToM in the age range considered: literacy exposure to the societal minority language boosts ToM across all groups. The use of an integrated biliteracy approach in school leads to an advantage in second-order ToM, whereas balanced language use does not seem to be associated with any advantage. The results suggest that bilingual children’s metarepresentational abilities benefit from biliteracy exposure.

### **Is lexical priming impaired in developmental language disorder?**

*Patricia Brooks, Gavkhar Abdurakhmonova, C. Donnan Gravelle, Nicole Zapparrata and Liat Seiger-Gardner*

Developmental language disorder (DLD) is associated with deficits in linguistic processing, which may be attributed to poor predictive processing. We report a cross-modal picture-word interference experiment examining associative priming in children with DLD and typical language development (TLD) (N = 21 per group, M-age = 8.9 years). Though both groups showed priming effects, effects appeared more robust in the TLD group across varying stimulus-onset-asynchrony conditions. We then conducted a meta-analysis of lexical priming effects ( $k = 13$ ;  $m = 42$ ) to assess evidence of priming deficits in DLD in the published literature. The overall effect (Hedges’s  $g$ ) was non-significant,  $g = 0.09$  [95% CI:  $-0.13$ ;  $0.32$ ],  $p = .38$ , and negligible in magnitude. That is, priming effects were comparable in DLD groups and TLD groups. Given evidence of slow naming in DLD, we conclude that lexical priming deficits in DLD, if present, may be masked by more general word-retrieval difficulties.

### **Lexical alternatives and the acquisition of subordinate nouns**

*Anna Papafragou and June Choe*

Word learning is characterized by a bias for “basic”-level meanings like ‘apple’, as opposed to subordinate-level meanings like ‘red apple’. We propose that the crucial task for the acquisition of subordinate nouns is to discover the intended level of informativity assumed within the labelling event. The basic-level is the default level of specificity for any description; but when the less-accessible subordinate-level distinction becomes relevant to the conversation, learners may expect a greater degree of specificity from the interlocutor’s choice of referential expression. In two online experiments, we probed the nature of these pragmatic inferences by testing adults’ generalization of novel words. Results show that the presence of an alternative, especially a labelled alternative, at the subordinate level facilitates subordinate-level conjectures for the target label. Findings cohere with the role of contrast in word learning and highlight the connection between the acquisition of subordinate nouns and the principle of informativeness.

### **Analogical reasoning in 4 to 6 years old monolingual and bilingual children**

*Solène Belogi and Katrin Skoruppa*

Around the age of 5, children increase their abilities for analogical reasoning, which is the capacity to understand relational similarities between situations. This competence underlies non-verbal reasoning but also shares mechanisms with executive functions and language development, especially with the acquisition of syntax. We compared monolingual and bilingual children, aged 46 to 70-months old, on a non-verbal and language-fair analogical reasoning task, via a picture choice paradigm. A regression analysis showed main effects of both age and bilingualism on this task. We will discuss these results in the light of bilingual cognitive and language development. We will also discuss how our task could be an interesting steppingstone for bilingual syntax assessment in clinical contexts.

### **Auditory Processing Disorder targets phonetics, not phonology**

*Arild Hestvik, Thierry Morlet, Kyoko Nagao and Chao Han*

We used the varying standards paradigm in MMN to encourage construction of a phonemic memory trace, compared to a single-token standard which arguably leads to a phonetic memory trace. This allowed us to measure phonetic vs. phonemic processing in children with Auditory Processing Disorder, compared to a control group of typically developing children. The control group exhibited robust MMN in both the varying standards (phonemic memory trace) and single-token standard (phonetic memory trace) conditions. APD children had a clear MMN in the phonemic condition but an attenuated MMN in the phonetic condition. This pinpoints APD as a deficit in real-time phonetic processing with retained long-term memory representations of phonemes. The results may lead to improvement in differential diagnosis of APD vs. DLI, which has been argued to be a phonological impairment.

### **Child learners struggle to differentiate redundant cues**

*Shira Tal and Inbal Arnon*

There is growing evidence showing that redundant morphological cues can benefit language learning. At the same time, they may hinder the ability to learn each of the cues separately (Ibbotson & Tomasello, 2009): if two cues always appear together, children might not differentiate between them or be able to use each cue alone. We test this hypothesis in an artificial language learning study, where child learners are either exposed to two cues (word order and case marking) and tested on only one of them, or exposed to one cue (word order) and tested on two. Results show that children who were trained on two cues but were tested on only one of them, did worse than children who were trained on one cue and were tested on two cues. This supports the hypothesis that while redundant cues can benefit child learners, they can hinder children’s acquisition of each individual cue.

### **Predictive processing of number in bilingual children**

*Jasmijn E. Bosch and Francesca Foppolo*

Listeners use linguistic cues to anticipate upcoming words, but L2 speakers may sometimes be slower and experience cross-linguistic influence from their L1. We know that monolingual children use predictive processing from a young age and can use lexical, and grammatical cues, such as gender or number, but to date very few studies have focused on bilingual children. We used the visual-world eye-tracking paradigm to test L1 and L2 processing of number in 7-8 year old native Italian early L2 learners of English enrolled in a bilingual school. We found evidence for efficient predictive processing both in the L1 and in the L2. Moreover, children with greater vocabulary knowledge in English showed more anticipatory eye movements, suggesting that L2 processing may become more native-like when L2 proficiency increases.

### **Neighborhood density and word frequency characteristics of late talkers’ spoken vocabularies: A corpus analysis**

*Elizabeth Simmons, Rhea Paul, Alexandra Nelson and Julia Perreault*

This study examines the characteristics of spoken words in typical and late talking toddlers from a corpus of parent questionnaires measuring expressive vocabularies. The MacArthur-Bates Communicative Developmental Inventories (MB-CDIs; Fenson et al., 2007) were extracted from Wordbank (Frank et al., 2016; n=3,629) for these analyses. Participants were divided into three groups 1) a late talker group, 2) a typically developing age-matched group, and 3) a younger, typically developing group matched to the late talkers on expressive language. Neighborhood density and word frequency were calculated for each word produced by each participant. The late talker and younger, language-matched group produced words from denser phonological neighbors compared to the age-matched group. The late talkers’ vocabularies consisted of higher frequency words compared to both control groups. Implications of these findings will be discussed.

## **2-year olds derive mutual exclusivity inferences from contrastive focus**

*Gabor Brody, Roman Feiman and Athulya Aravind*

A long line of experiments have shown that children take novel words to refer to as-yet unnamed objects, an effect dubbed “Mutual Exclusivity” (ME). We propose that ME inferences may be part of the linguistic message itself, encoded by the focus structure of the carrier sentence. We test the prediction that ME inferences arise when the critical NP is focused (indicating the presence of a contrastive alternative), but do not arise if the NP is marked as given (indicating that the content is recoverable from the discourse). In our ME paradigm, we label one of two novel objects with a novel label, and then ask the participant to “point to the toy” where “toy” was either accented to indicate focus or de-accented to indicate givenness. Toddlers (N=41; 2-3yo); assumed the “toy” referred to a novel object when it was marked as focused, but not when it was marked as given.

## **The best of both words: The influence of group membership and performance on children’s lexical choices**

*Thomas St. Pierre, Jida Jaffan, Craig Chambers and Elizabeth Johnson*

We investigated the effect of group membership and group status on 8-year-old children’s labeling of objects in a trivia-type game, examining whether children use labels dispreferred by their community if members of their “team” also use those labels (Exp. 1), and whether the status of children’s group (e.g., poor overall performance in the game) modulates this effect (Exp. 2). In Experiment 1, children were assigned to a team (red/green). During experimental trials—which had multiple possible answers (e.g., ‘blackboard’ or ‘chalkboard’)—children provided an answer after two teammates and two opponents (all pre-recorded) answered. Results show that children were more likely to produce societally-dispreferred labels when their teammates did as well. In Experiment 2 (data collection to be completed this summer), we are investigating whether this effect (following their teammates’ use of dispreferred labels) is modulated by the perceived status of their group (whether they are winning or losing the game).

## **Preschoolers benefit from sentential context when listening to familiar- and unfamiliar-accented speech**

*Naz Deniz Atik, Alexander LaTourrette, Victoria Vizzini and Sandra R. Waxman*

Even for experienced language users, comprehending unfamiliar-accented speech proves to be taxing. Comprehension accuracy and processing efficiency are reduced when listening to speech in an unfamiliar accent. For young children, these costs are even greater. Here, we provide preschoolers with a stringent test to better understand these processing costs. The present study addresses i) preschoolers’ recognition of known words, ii) the effect of sentential context in their recognition of known words and iii) their use of sentential context to infer meanings of novel words when listening to speech in unfamiliar Turkish accent. Our findings suggest that although children’s processing efficiency is reduced when listening to unfamiliar-accented speech as compared to familiar-accented speech, they nonetheless successfully recognize known words spoken in an unfamiliar accent and take advantage of sentential context to identify the referents of both known and novel words.

## **Early comprehension of subject-verb agreement: New evidence from Catalan**

*Anna Gavarró and Alejandra Keidel*

The work of Johnson et al. (2005) on English and Pérez-Leroux (2005) on Spanish showed late comprehension of subject-verb agreement in children aged 4 to 5, who are able nevertheless to produce adult-like verbal agreement. Methodological and cross-linguistic reasons for this performance have been adduced in the literature. Here we present new results from three experiments on Catalan, two sentence-picture matching tasks, administered to 111 Catalan-speaking children, and an experiment in the preferential looking paradigm, administered to 20 children in the age range of 19 to 24 months. The results of the first two experiments, only differing in the use of numeral distractors, showed the impact of method. In the third experiment, the infants’ gazing behaviour indicated comprehension of number agreement even at 19 months. The results of Johnson et al. and Pérez-Leroux appear to be an experimental artifact, and we conclude that subject-verb agreement is an early acquisition.

## **Ducks in the pond: Elementary-school-age children’s perceptions of Standard American English, African American English, and Spanish-accented English on scales of status and solidarity**

*Heather J. Johnson, Wendy Smemoe, Joseph A. Stanley and Alessandro Rosborough*

While literature surrounding children’s language attitudes towards regional variation and foreign accents has blossomed in recent years, most research on children’s attitudes toward ethnic varieties, such as attitudes towards African American English (AAE), are dated. In addition, more recent studies focus on only one variety in locations where the ethnic variety is common. More recent research in this area is needed, especially for children of different ethnic backgrounds, language proficiencies, and exposure to different varieties. This study looks at children in Southeast Idaho and their attitudes towards Standard American English (SAE), AAE (a variety they have little exposure to) and Spanish-accented English (SPE) (a variety they have had extensive exposure to). In addition, the current study examines what factors (children’s age, racial background, language variety exposure, and English language experience) may influence these attitudes. Implications for both language development and language attitude research are discussed.

### **Referential transparency in verb use by Japanese and American caregivers**

*Allison Fitch, Amy Lieberman, Michael Frank and Sudha Arunachalam*

Children acquiring Japanese differ from those acquiring English with regard to the rate at which verbs are learned (Fernald & Morikawa, 1993). One possible explanation is that Japanese caregivers use verbs in referentially transparent contexts, which facilitate the form-meaning link. We examine this hypothesis by assessing differences in verb usage by Japanese (n=27) and American (n=24) caregivers during dyadic play with their infants (5-22 months). We annotated utterances for elements associated with referential transparency (from Trueswell et al., 2016) and compared across groups. Surprisingly, verb-containing utterances were paired with a referent event more often in American input (71%) than Japanese input (39%). Additionally, Japanese mothers labeled more impending actions than American mothers (69% and 51% of labeled actions, respectively), with greater time from the verb to the action onset. This does not support the notion that Japanese mothers present verbs in referentially transparent contexts, as operationalized by current literature.

### **Control in ditransitive vs. transitive structures and the effect of the inflected infinitive**

*Ana Lúcia Santos, Alice Jesus and Silvana Abalada*

The present study considers the difficulty in the acquisition of object control structures in the light of the superficial similarity between these structures and structures under causatives and perception verbs. We argue that before identifying an object control structure, children face the difficulty of determining whether the verb is ditransitive, distinguishing it from a syntactic causative. We show that the distribution of the inflected infinitive in European Portuguese is different under control verbs and causatives / perceives. The results of a comprehension task presenting structures with novel verbs in transitive and ditransitive frames suggest that children can use the inflected infinitive to determine the interpretation of the transitive structure, but do not use it in a target manner in the case of a ditransitive (object control) structure.

### **Qualitative variability in early overhearing experiences**

*Ruthe Foushee and Mahesh Srinivasan*

Inspired by qualitative studies typically limited to child-directed speech, we develop a coding scheme enabling us to characterize the full range of linguistic inputs accessible to a given child, in terms of their relative utility for word-learning. We capitalize on longitudinal video recordings documenting children's language environments in the Providence corpus. We analyze >6000 utterances spanning the first two years of children's lives, when cues to words' meanings are especially critical for language development (e.g., Cartmill et al., 2013). By applying the same qualitative coding scheme to caregiver utterances coded as 'child-directed' versus 'overheard,' we find that while greater referential transparency characterizes the set of utterances spoken to children directly, child-directed and overheard utterances often overlap along learning-relevant dimensions, and shift over time in how well they predict the current focus of children's attention. This coding scheme is currently being applied to naturalistic datasets from developmental contexts across the world.

### **Physical environments that highlight objects' distinct features support word learning**

*Elise Breitfeld and Jenny Saffran*

Young children learn words for objects in rich surrounding environments. What is the role of the physical environment in supporting early word learning? In particular, we investigated whether the physical environment might support word learning by highlighting the distinct features of objects. In an eye-tracking paradigm, 21-24-month-olds learned labels for novel objects in two within-subjects conditions. In the Distinct condition, infants heard two objects labeled and saw them placed through openings in a box that matched their unique shape. In the Non-Distinct condition, infants heard two objects labeled and saw them placed through a single opening that was not unique to the shape of either object. Results from the word learning test show that toddlers learned words better for objects labeled in the Distinct condition than the Non-Distinct condition. This suggests that physical environments that highlight unique features of objects, in this case shape, may be beneficial for word learning.

### **Child learners and the future of future temporal reference**

*Erin Hall and Ana T. Pérez-Leroux*

What is the developmental pathway to grammatical variation? We examine this question in the context of future temporal reference, asking whether children ages 4-12 show the same patterns as adults in their selection of future variants such as will, going+to, modals, and other forms. The results of an elicitation task show that will is the dominant variant in all groups, but younger children produce less will and more modals, going+to, and present tense forms, relative to adults and older children. All age groups are similarly conditioned by the linguistic factors of subject animacy and temporal proximity, but developmental changes were found for sentence type. These findings reflect children's overall sensitivity to the linguistic factors that govern adult distributions, along with gradual refinement in the form-to-context mappings for grammatical morphemes, and support claims that children lead linguistic change.

### **KEYNOTE ADDRESS: How Universal Grammar gives us X-ray vision**

*Jeffrey Lidz*

Much work in language acquisition centers around the role of experience in the acquisition of grammatical knowledge. Many hold that learning a language involves collecting lots of data and then generalizing on the basis of similarity. On such a view, abstract knowledge comes after a process of data collection and statistical compression. The alternative view is one in which abstract knowledge guides the use of input and shapes the form of grammatical knowledge throughout development. The latter view is often criticized for failing to provide a clear link between the abstract structures that characterize grammars and the kinds of experience that could serve to signal them in the environment. In this talk, I take on this challenge, showing that across several domains that the patterns of data that children use to acquire a grammar do not resemble the knowledge responsible for those patterns. Learners use data from form, meaning and function to infer the structural causes of those observable properties. In acquiring a language, statistical information in the environment is used for inference, not representation.

## **FRIDAY, NOVEMBER 4: POSTERS**

### **Group 1: Phonological Development**

#### **Hironori Katsuda and Megha Sundara: Infants' developing sensitivity to vowel phonotactic constraints in English**

We evaluated when English-learning infants acquire vowel phonotactic constraints (i.e., English words cannot end in lax vowels) and start utilizing them to segment words. In the cooperating-cue condition, infants were familiarized with a speech stream where transitional probabilities and phonotactic constraints signaled identical word boundaries. So, statistical words were permissible in English. In the conflicting-cue condition, infants were familiarized with a speech stream where the two cues signaled different word boundaries. Crucially, statistical words were disallowed in English. After the familiarization phase, all infants heard the same four test sequences: two permissible and two that are disallowed in English. At 5-months, infants listened longer to statistical non-words in both conditions indicating that they rely on transitional probabilities not vowel phonotactics. We are now testing 10-month-olds to determine the developmental trajectory of English-learning infants' acquisition of vowel phonotactic constraints.

#### **Margarethe McDonald, Eon-Suk Ko and Margarita Kaushanskaya: Effects of everyday language exposure on L2 phoneme acquisition are not the same in all bilingual environments**

A series of experiments examined how native input and foreign-accented input affected perception and production of second language phoneme contrasts in two different bilingual environments. Spanish-English bilingual children, aged 6-9 years, residing in the US completed an English phoneme production and categorization task. Korean-English bilingual children of the same age residing in South Korea, completed similar tasks. Caregivers in both studies completed a detailed questionnaire about their child's weekly exposure to native and accented speech. Results indicated that the amount of every-day native English exposure, but not Korean accented English exposure, predicted performance on all tasks for the Korean speakers. Neither type of language exposure strongly predicted performance in the Spanish speakers, with the exception of one measure of perception, where more exposure to Spanish-accented English led to lower perceptual accuracy in English. Findings indicate that predictions about phonological acquisition are not highly generalizable to new bilingual populations.

#### **Dehbia (Dalila) Gaoua, Jackson Kellogg and Jupitara Ray: Language-specific infant babbling patterns in Kabyl-Tamazight Berber**

Patterns in infant babbling have been shown to be similar between typologically diverse languages, with a preference for labial and coronal stops and nasals. This raises the question of how early babbling transitions to a language-specific phonology. We explore the link between babbling and phonological development by analyzing an infant acquiring Kabyle, a language noted for its high phonetic complexity. Babbling data was transcribed based on perception from the ages of 0;8 to 1;5. The transcriptions revealed a potential divergence from universal trends, with a preference for velars over labials, and for fricatives over nasals. For place of articulation, the pattern was only observed past age 1;2, indicating some delay in the language-specific effect. These outcomes can be attributed to the complex phoneme inventory of Kabyle. Ambient language effects were thus identified in the babbling of the Kabyle infant due to the phonetic complexity of the language.

#### **Enkeleida Kapia, Josiane Riverin-Coutlée, Conceição Cunha and Jonathan Harrington=: A longitudinal study of contrastive length in Albanian-speaking children**

This longitudinal study examines whether contrastive length changes under the influence of standard Albanian in Gheg-speaking pupils. Gheg features contrastive vowel length; standard Albanian does not. Recently, impressionistic reports have suggested contrastive length disappearing from Gheg under the influence of standard Albanian. Here, we consider data from the same 10 children in 1st, 2nd and 5th grade in order to examine whether their productions of length contrasts change as they progress in school. They participated in a picture-naming task with pictures of words with short and long vowels. Results showed significantly greater durations in long than short vowels, but no difference of durations from one school year to the next. This suggests no attrition of vowel length contrasts in Gheg, which could be related to this feature's involvement in marking morphology. We also observe that fine acoustic features like duration are still gradually defined beyond this age.

### **Group 2: Vocabulary Development**

#### **Justin B. Kueser, Sabrina Horvath and Arielle Borovsky: Two pathways in vocabulary development: Differences in noun and verb semantic structure**

The semantics of nouns and verbs interact in complex ways, posing a difficult developmental learning challenge. In two experiments, we examined semantic relationships among the nouns and verbs known by 18-30-month-old children (N = 3,804), focusing on how lexicosemantic network structures among early-learned nouns and verbs promote later growth in noun and verb vocabularies. Together, the two experiments suggested that nouns' and verbs' semantic interrelationships impacted subsequent word learning. Nouns were acquired if they were semantically related to other nouns or verbs in the vocabulary; both noun and verb semantic structures supported noun learning. In contrast, verbs were acquired if they were semantically related to other nouns and semantically unrelated to other verbs; verb semantic structure was more difficult to develop. These large-scale vocabulary findings clarify experimental work on noun-and-verb-learning challenges and point toward connections between the development of semantics and the development of sentence structure in young children.

**Kennedy Casey and Marisa Casillas: From doggy to dog: Developmental shifts in children's use of register-specific words**

Child-directed language (CDL) features words such as doggy, night-night, and tummy that are rarely used in adult-directed language (ADL). CDL variants are overrepresented in children's early vocabularies but are eventually replaced by ADL equivalents—dog, goodnight, stomach. We leverage spontaneous production data from CHILDES and the Language Development Project corpus to explore when this shift happens, and how it is supported by features of children's linguistic input. Children increasingly produce ADL variants across age, with the average transition point at ~2.5 years. We find differences in the local speech contexts surrounding CDL vs. ADL variants that may provide cues to register association. Linguistic features that differentiate CDL and ADL at the register level (e.g., utterance length, mean pitch) also differentiate the local speech contexts surrounding CDL vs. ADL variants. This investigation highlights that vocabulary development involves more than word accumulation—children's lexicons are deepened and restructured with growing linguistic and social experience.

**Alexandra Carstensen, Minju Kim, Gayoung Kim, Minjin Kang, Caren M. Walker and Youngon Choi: Relational abstraction in early childhood: Three contexts and three trajectories**

Abstract reasoning in early childhood is often described as following a “relational shift,” over which children become less focused on object properties and increasingly sensitive to relations. However, recent work has challenged the generality of this account, showing that children in the US and mainland China follow two distinct trajectories in a relational match-to-sample task between 18 and 48 months (Carstensen et al., 2019). This difference aligns with multiple cultural and linguistic factors implicated in relational reasoning, in which English speakers in the US and Mandarin speakers in China appear at opposite ends of a continuum. In this study, we explore early relational reasoning in a context that represents a cultural middleground with linguistic similarity to the US: Korean-speaking children in South Korea. We find evidence for a third trajectory in early relational reasoning, and corresponding variation in a task measuring children's preferences for object-based or relational responding.

**Petra Cechova, Klara Matiasovitsova, Kamila Homolkova, Jolana Kohoutkova, Jakub Slama and Filip Smolik: The validity of transcript-based measures of child language development in Czech**

We examined the use of MLU and IPSyn in Czech including their validity against test-based measures of vocabulary and grammar comprehension. We developed a Czech version of IPSyn and we compared the scores with MLU in syllables, morphemes, and words in the same transcripts. We used a corpus of 110 children recorded at two time points: 2;6 and around 3;11 years. The different MLU measures correlated closely ( $r's > 0.97$ ). We found strong correlations between MLU in words and IPSyn in both time points (0.88 and 0.77). Regression models showed that both MLU and IPSyn in 2;6 years predict themselves in 3;11 ( $\beta = 0.35$  and  $0.37$ , respectively). For IPSyn, the vocabulary test showed a unique predictive effect above the factors of other predictors ( $\beta = 0.26$ ). Our results confirm that MLU in words and IPSyn are valid measures since they predict themselves in time.

Group 3: Morpho-syntax (Preschool-Age)**Gyu-Ho Shin: I know, but let's wait and see: Korean-speaking children's comprehension of suffixal passive construction in Korean**

This study tests two accounts offering competing explanations for how children proceed from concrete items to abstract representations in developing linguistic knowledge (gradual abstraction; early abstraction), with a focus on suffixal passives in Korean, an understudied language for this topic. Participants (30 three-and-four-year-olds; 23 five-and-six-year-olds; 20 adult controls) joined two picture-selection tasks; Exp2 involved a novel context where the speaker was hungry and was eating food with acoustic masking to obscure case-marking of the stimuli. Results suggest that passive-voice heuristics (Theme-First; NOM-as-Theme; DAT-as-Agent), in competition with active-voice knowledge (Agent-First; agent-NOM; theme-ACC), may increasingly apply to comprehension in a graded manner with age. This is incompatible with the strong version of each account and rather aligns with the moderate version of each account, arguing early emergence, but late mastery, of linguistic knowledge, the maturation of which requires a substantial amount of language usage experience.

**Clariana Vieira and Elaine Grolla: The acquisition path for wh-in-situ questions in Brazilian Portuguese: The role of presuppositional contexts**

In Brazilian Portuguese (BrP) Wh-questions, Wh-phrases can move to the left periphery or remain in-situ. According to spontaneous child data, the Wh-in-situ is the least produced strategy (around 1,7%) and the last one to emerge (after 3;9). We hypothesized that fronted-Wh represents the default question-type, while Wh-in-situ seems to be felicitous only in strongly presuppositional contexts with restrictions that might not be acquired early. We investigated the spontaneous production of 5 children acquiring BrP (1;02.28- 4;11.12 years) and their input to examine the pragmatic aspects of Wh-in-situ. Our results suggest that children, at first, follow the input, producing the most frequent strategy (fronted-Wh). Around 2;03, they start using Wh-in-situ only when they are able to immediately recover the presupposed antecedent. Finally, at 3;09, children are able to reach non-immediate antecedents, indicating that pragmatics play a definite role in explaining the acquisition path of Wh-questions.



**Klára Matiasovitsová, Radek Šimík and Filip Smolík: From correlativization to relativization: A view from Czech L1-acquisition**

We designed a sentence repetition experiment to tap into the acquisition of correlative and relative clauses in Czech. The experiment, in which 30 children (mean age 3;7) took part, revealed that correlatives (lit. ‘where policeman stands, there car waits’) are easier to repeat than the corresponding light-headed relatives (lit. ‘car waits there where policeman stands’) and that this difference in difficulty decreases with children’s grammar competence. Our interpretation of the results is that correlatives are more on a par with conditionals than relative clauses. Conditionals are known to be acquired earlier than relative clauses, which we take to be indicative of their less complex structure and semantics. We argue that the same holds for correlative clauses – they are structurally/semantically simpler than relative clauses and thus easier to repeat, despite their lower frequency in both adult input and children’s output.

**Kathryn Schuler and Daoxin Li: Distributional learning of recursive structures: The role of the structural representation**

Languages differ regarding the syntactic domains of recursive structures, which must be learned from language specific experience. Previous research has shown the recursivity of linear structures can be learned distributionally as structural substitutability from non-recursive data; here we further demonstrate that as predicted by the distributional learning proposal, representation of the syntactic structure is also important for the acquisition of recursive structures. We exposed adult participants to one of two hierarchical artificial languages. Both languages allow A1-B-A2 strings, where A1 and A2 are substitutable. However, we used distributional information to indicate that the head of A1-B-A2 is A2 in one language and B in the other. As predicted, we found although participants from both conditions learned substitutability, participants from the A-head condition were more willing to allow recursion with both attested and unattested words. The results suggest learners can integrate knowledge of the hierarchical syntactic structure to distributionally acquire recursion.

Group 4: Morpho-syntax (Preschool-Age)

**Anupama Reddy and Kamil Deen: Effect of dependent case marking on frame compliance**

We investigate the role of case marking in Marathi (a split ergative language spoken in India: ergative-absolutive voice occurs in the perfective ; nominative-accusative in the imperfect ) on verb- versus frame-compliance (Naigles, 1993). We show that different case markers in the different voices (ergative-absolutive, nominative-accusative) impact frame-compliance differentially within the same language: frame-compliance is sensitive to the ergative case marker in ergative-absolutive voice, but the accusative case marker in nominative-accusative voice. This finding advances our knowledge of how articulated the process of frame-compliance can be for children acquiring less familiar languages like Marathi.

**Maki Kubota, Yuko Matsuoka and Jason Rothman: The acquisition of semantic system of classifiers in Japanese children**

The present study examined comprehension and production of sortal classifiers, using known and novel objects, to investigate how children acquire the semantic knowledge of classifiers. 131 Japanese monolingual children completed a classifier comprehension task and a production task. The comprehension task showed no difference in accuracy between nonce and real objects and even children young as age three performed at ceiling. In the production task, however, the gap in accuracy between real and nonce objects did not close until late childhood. Taken together, our findings show that comprehension precedes production, but unlike what was assumed in the literature, young children do indeed use semantic information to categorize novel objects. This asymmetry-by-modality reflects an accessing issue for production, which is further supported by higher correct production of classifiers for real nouns, given that this context allows children to use both semantic information and form-class cue when counting objects.

**Laurel Perkins and Tim Hunter: Word order acquisition from immature representations: A model for noise-tolerant learning of deterministic grammars**

Children acquire their language’s canonical word order early in infancy, despite immature abilities to identify clause arguments. Prior work proposes that learning requires prosodic or semantic support. We demonstrate that it is possible for learners to learn word order only from strings of imperfectly-identified noun-phrases and verbs. Our modelled learner chooses among grammars that deterministically produce a canonical word order, while also considering probabilistic processes that introduce noise into the data. In simulations on child-directed English and French, the model successfully separated signal from noise in order to identify canonical SVO word order in both languages. We find that successful learning does not require prosodic or semantic cues to sentence structure, but benefits from determinism in the learner’s hypothesis space. This provides an alternative mechanism for regularization in learning, where tendencies to regularize emerge from the learner’s expectation that its data are a noisy realization of a deterministic underlying system.

**Evan Zysman and William Snyder: An acquisitional connection between VP ellipsis and contracted negation**

Verb Phrase Ellipsis (VPE) is more freely available in English than (e.g.) Swedish. Thoms (2012) attributes this to the syntax of auxiliary verbs: in English, Auxes undergo head-to-head movement through INFL, up to T; but in Swedish this movement is more restricted. According to this account, a child acquiring English must determine whether Auxes undergo actual syntactic movement, or simply combine with inflectional features in the morphology; the best available evidence, we believe, comes from negative questions (e.g., “Why can’t you do it?”), where the Aux (can) first combines with negation, and second undergoes T-to-C movement. We examined 12 longitudinal corpora, and as expected, the age when a child began using VPE was strongly correlated with the age of onset for V-to-C movement, and extremely well correlated with the onset of contracted negation. This distinctive pattern provides a novel form of support for movement-based theories.

#### Group 5: Morpho-syntax (School-Age)

##### **Emily Atkinson and Ilana Mermelstein: Can 5-year-olds overcome verb biases in ambiguity resolution? A priming study**

In contrast to priming studies that focus on structures with similar meanings, the current study uses a picture selection task to examine whether a particular interpretation can be primed when a sentence is globally ambiguous (e.g., “The horse chooses the rabbit with the marker”; instrument interpretation: [chooses the rabbit][with the marker], modifier interpretation: chooses [the rabbit with the marker]) and whether that primed interpretation can overcome a verb’s bias to select the modifier interpretation. Children that produced modifier interpretation primes were significantly more likely to select modifier targets than those that produced instrument primes ( $\beta=0.36, p<0.001$ ) with no age differences ( $\beta=0.09, p>0.1$ ). Despite previous examples of bidirectional priming with equi-biased verbs, only those in the modifier priming group differed from the baseline established in a separate control experiment (instrument: $t=-0.67, p=0.5$ ; modifier: $t=-3.28, p<0.01$ ). This suggests that exposure to non-preferred interpretations via priming is not sufficient to overcome underlying verb biases.

##### **Wataru Sugiura: The comprehension of V-initial sentences in child Japanese and its implications**

In Japanese, Hayashibe (1975) observed that the majority of children (around age five) in his study misunderstood Japanese OSV sentences like as SOV. One hypothesis for this poor performance is that (i) Japanese children are under the influence of an NNV strategy (Suzuki (1977), see also Bever (1970)), causing a bias toward interpreting NNV sentences (the Japanese basic sentence pattern) as Agent-Patient-Verb irrespective of case particles; and (ii) Japanese children cannot use case particle cues in NN sequences. To examine these accounts, I conducted an experiment with Japanese children by using Japanese OSV and VNN (VOS/VSO) sentences. The participants showed highly adult-like performance with VOS while they had difficulty with OSV, indicating that Japanese children can use case particles correctly as a cue in VNN sentence comprehension. The results also suggest that children’s sentence comprehension can be negatively influenced by the basic word order in their language’s basic sentence patterns.

##### **Rodica Frimu and Laurent Dekydtspotter: Real-time morphological error detection and grammaticality judgment accuracy in non-native vs. native French**

We examine subject-verb agreement error detection by native and advanced nonnative speakers (NNSs) of French in real time and as end-of-sentence grammaticality judgments. In critical items, a 3rd person singular or plural verb form matched or mismatched the subject in number, creating two types of ungrammaticality. The items were presented in listening or forced-paced reading aloud, delivered by DMDX. After each verb form, a picture related to the meaning of the verb flashed on the screen. The participants classified each picture as  $[\pm\text{human}]$  and provided a grammaticality judgment after each sentence. Picture classification times, as signature of inferential processing, were longer after a singular mismatching verb form across groups and modality. In contrast, the NNSs’ grammaticality judgments were less accurate. NNSs were generally more accurate in reading aloud as opposed to listening. Their accuracy was also affected by the representational memory load induced by the sentence vocabulary.

#### Group 6: Semantics & Pragmatics

##### **Nadine Fitzpatrick and Caroline Floccia: Word associations found in the productive language of 3-year-olds show a stronger priming effect than word associations found in adult associative norms**

In four experiments, we examined the relationships 3-year-olds have between words using a language production, word association (WA) task adapted for at-home and online testing (Experiment 1-3). We then validated these word pairs using an online semantic priming methodology (Experiment 4). A key aim was to investigate whether the WAs 3-year-olds produce are the same as those found in adult associative norms (Moss et al., 1996; Nelson et al., 2004). Overall, the findings from these experiments demonstrate that children share some WAs that adults exhibit in a mature lexical-semantic system, but also have unique WAs (e.g. bed-teddy) which are not captured by adult norms and likely overlooked when selecting experimental stimuli from adult norms. We found semantic priming for WAs from Experiment 1-3, but not for word pairs taken from adult norms. This research presents a resource of child WAs for researchers looking for infant-specific associated word pair stimuli.

##### **Tyler Knowlton, John Trueswell and Anna Papafragou: Non-conservative quantifiers are unlearnable**

All natural language quantifiers have ‘conservative’ meanings: only things named by the noun (phrase) with which the quantifier combines matter for the sentence’s truth-conditions. Accordingly, no language has a ‘non-conservative’ quantifier like “equi” such that “equi frog is green” means “the frogs and the green-things are equivalent” (here, both frogs and green-things matter). This cross-linguistic generalization has been argued to reflect a fundamental property of language. If so, non-conservative quantifiers should be unlearnable. Past work finds that adults and children fail to learn the non-conservative “not only” as a quantifier, but has not found compelling evidence that novel conservative quantifier meanings are learnable under the same conditions. Here, we improve on previous designs by using novel quantifier meanings that are less paraphrasable and don’t involve negation. We find that adults show a considerable advantage for learning a conservative quantifier meaning over a non-conservative one, even when both are explicitly taught.

**Ioana Grosu and Ailís Cournane: More could than would : Children overproduce possibility modals in counterfactual consequents**

This study investigates children's possibility reasoning in counterfactual contexts by analyzing their use of modal verbs in spontaneous production. Counterfactual conditionals differ from non-counterfactual conditionals in part due to the closest possible world constraint: counterfactual reasoning involves selecting from only the worlds which are most similar to the actual world. In prior experimental studies, children have difficulty applying this constraint. The present study considers the link between preschool children's ability to apply the constraint, and the presence of possibility modals. Children overproduce possibility modals relative to adults in counterfactual contexts, but not in non-counterfactual contexts. This indicates that children may maintain more open possibilities than adults, which is consistent with previous experimental results, and provides a link between production of modal verbs and counterfactual reasoning and language.

**Christiana Christodoulou and Ianthi Maria Tsimpli: Language development across three varieties of American English**

This study examines the language abilities of 46 Southern African American English-, 139 Southern English- and 35 Mainstream American English-speaking children in North Mississippi, from various socio-economic backgrounds. Using the Diagnostic Evaluation of Language Variation Norm-Referenced assessment test we analysed the participants' performance in four key linguistic domains: syntax, semantics, pragmatics, and phonology. Further, developmental curves, tracing the groups' performance across different ages, for each linguistic domain, were constructed. Results revealed a strikingly parallel performance across the three groups in all linguistic domains. Sub-categorization of groups by age presented by the developmental trajectories evidenced a remarkably similar performance across the three groups in all four linguistic domains, with minor exceptions noted with pragmatics and phonology. This offers support that the groups acquire language at parallel chronological ages and that results do not vary based on the specific variety spoken by the child.

Group 7: Semantics & Pragmatics

**Caitlin H. Illingworth, Jee Won Diane Kang, Haley Gibbs, Kathryn Davidson and Roman Feiman: Negative polarity or negative concord? Some children think 'any' means 'no'**

While past studies have shown that children master the licensing conditions of 'any' by age three (Tieu, 2013), it remains possible they do not possess the correct semantics for 'any'. Under negation, 'any' appears semantically identical to a negative quantifier in a negative concord construction. To investigate whether children think 'any' means negation, we tested 106 children (2;0-6;11) and 20 adults in two comprehension tasks with 'any' in a grammatical context with a free choice use, and an ungrammatical context. In a grammatical context, compared to adults, children more often treated 'any' as 'no'. In an ungrammatical context, most 3-5-year-olds treated 'any' as meaning 'no'; adults never did. Moreover, children's behavior on both tasks was correlated. These results suggest a subpopulation of children systematically misanalyzed 'any' as meaning 'no', suggesting that children may rely extensively on (confusing) distributional information to learn what 'any' means.

**Sarah Hye-yeon Lee, Yue Ji and Anna Papafragou: Conceptual and linguistic factors affecting entity construal**

Adults and children draw a conceptual distinction between the ontological categories of objects and substances. What criteria does the conceptual system use to make this distinction, and how do these conceptual criteria interact with count/mass syntactic information during word learning? Although objects are often encoded in count nouns and substances in mass nouns (e.g. in English), the mapping between count/mass syntax and the object/substance division is imperfect. We build on the proposal that non-arbitrariness of structure is a crucial distinguishing feature of objecthood (as opposed to substancehood). Overall, our results throw light on how learners construe spatial entities (objects/substances), and further acquire labels for such entities. Specifically, objects and substances differ in terms of their representational structure; learners capitalize on such non-linguistic information and integrate it with linguistic (count/mass) context to construe and label previously unseen entities.

**Antoine Cochard, Hamida Demirdache and Angeliek van Hout: Probing OR vs. NOT-OR in French children: Semantic or pragmatic immaturity?**

Previous studies have shown that children give non-adult-like interpretation of OR across positive ("inclusive" and "conjunctive" readings; Tieu et al. 2017, Singh et al. 2017, a.o.) and negative sentences ("neither" readings, REF et al. YEAR a.o.). However, another strand in the literature also showed that some of these non-adult behaviors disappear with the right methodological adjustments (Skordos 2021, Jing 2008, a.o.). The aim of the study was to see if pragmatic felicitousness leads to adult-like interpretation for OR and NOT-OR alike. We ran a Truth-Value judgment task in prediction mode that tested OR and NOT OR within the same children. Results showed that, despite methodological improvements, there are still non-adult readings, in particular conjunctive readings in OR. We will discuss various ways how the different patterns can be explained in a uniform way, specifically children giving conjunctive readings for OR and neither readings for NOT-OR.

**Yu'an Yang, Naomi Feldman, Valentine Hacquard and Jeffrey Lidz: A little pragmatics goes a long way: Modeling the learning of clause type categories**

Languages tend to have three major clause types (declaratives, interrogatives, imperatives), dedicated to three main speech acts (assertions, questions, commands). However, languages take different forms for these clause types and have to be learned. Previous experimental results suggest that by 18 months old, children seem to have figured these out. To gain this ability, children need to identify the right categories of clauses (the “clustering problem”) and figure out what speech act they are canonically used for (the “labeling problem”). This study investigates the extent to which learners need to rely on pragmatic information (i.e., the speech act), to solve not just labeling, but the clustering problem. We examine the role of pragmatics computationally with two Bayesian models. We find that a learner must have access to some pragmatic information to find the right clause types but this learner can succeed with very limited access to pragmatic information.

Group 8: Adult Language Learning

**Theres Grüter, Jieun Kim, Hitoshi Nishizawa, Jue Wang, Raed Alzahrani, Yu-Tzu Chang, Hoan Nguyen, Michaela Nuesser, Akari Ohba, Sachiko Roos and Mayuko Yusa: L2 proficiency modulates attention to the mouth during speech processing: An extended replication of Birulés et al. (2020)**

Being able to see a talker’s mouth provides access to audiovisual speech cues that can support language processing and development. Birulés et al. (2020) found attention to talkers’ mouths was greater among adult L2 than L1 listeners, but (surprisingly) not modulated by L2 proficiency. We present findings from an extended replication of Birulés et al. (2020, Exp2). Results partially replicate the observation of greater attention to the mouth among L2 listeners. Unlike the original study, we found L2 listeners’ looks to the mouth correlated with proficiency and (marginally) post-listening comprehension-test performance, suggesting that listeners for whom speech processing is more challenging are more likely to seek out audiovisual speech cues. More generally, these findings indicate changing attention to audiovisual speech characterizes not just early L1 but also adult L2 development. They also indicate less proficient speakers may be differentially impacted by the absence of audiovisual speech cues (e.g., face masks).

**Tatiana Luchkina, Tania Ionin and Maria Goldshtein: Sentence focus identification by adult English L2 learners of Russian**

This study compares adult Russian native speakers (n=35) and adult L1 English L2 Russian learners (n=28) on their ability to locate the main phrasal prominence in canonical SVO and non-canonical OVS Russian sentences preceded by questions which placed the sentence subject or the sentence object in focus. The sentence-final word in the answer sentence was always nuclear pitch accented, resulting in an equal number of prosodically felicitous and prosodically infelicitous dialogues.

Both participant groups demonstrated near-ceiling accuracy in the Silent Reading Task (questions were presented auditorily, while answers – in writing), revealing that L2ers successfully integrated word order with the context. In the Listening Task completed next, all participants were more accurate at locating the accented word when it was in focus. The item felicity effect was significantly larger for L2ers, attesting to the greater importance of context cues, rather than prosodic cues, during focus identification in L2 Russian.

**Lauren Covey and Anastasiia Mikheeva: Cognate effects during speech production in Russian-English-German trilinguals**

This study examines crosslinguistic activation during word recognition in a picture naming experiment conducted via Zoom. Many previous studies have reported cognate facilitation effects, which are taken as evidence for parallel lexical activation (e.g., Costa et al., 2005), although most of this work has examined bilinguals with relatively few studies focusing on the processing of cognates in trilinguals. The current study builds on Poarch and Van Hell (2014) in a partial replication, extend to a new population of 20 L1 Russian-L2 English-L3 German participants living in Russian-speaking countries at time of testing. Naming accuracy was found to be higher for L2-English than L3-German, with a cognate facilitation effect observed in both languages. However, no latency differences emerged across conditions in either the L2 or L3. Interestingly, L3 proficiency significantly modulated L3 naming, such that learners with better German proficiency showed significantly shorter naming latencies for cognates over non-cognates.

Group 9: Multilingualism

**Ioli Baroncini and Jacopo Torregrossa: Cross-linguistic influence as motivated by the combined role of structure and language activation using within- and across-languages priming experiments**

This contribution investigates whether cross-linguistic influence in bilingual language production can be accounted for in terms of activation of a syntactic structure. We consider a structure which is available in only one of a bilingual’s two languages, i.e., VSO word-order. VSO is available in Greek in broad-focus sentences, but not in Italian. We tested 36 Greek-Italian simultaneous/early-sequential bilingual children. We conducted within-language (Italian-to-Italian and Greek-to-Greek) and across-languages (Greek-to-Italian) priming experiments. We employed picture-description tasks with VSO- and SVO-primers. The results show that i) ungrammatical VSO-structures can be primed in Italian; ii) the activation of Greek leads to an increase of VSOs in Italian, also following SVO-primers; and iii) the greatest increase of VSOs in Italian is observed after VSO-primers in Greek. The results suggest an account of cross-linguistic influence in terms of activation not only of a syntactic structure, but also of a language in a bilingual’s processing system.

**Felix Kpogo, Alex Kohut and Charles Chang: Minimizing complexity while maintaining the grammar: The case of diminutives in heritage Twi**

Twi and English can both express diminutive meaning using a morphological strategy (diminutive suffix) or a syntactic strategy (adjectival construction) but differ with respect to native speaker (NS) preferences—morphological in Twi, syntactic in English. For English-dominant heritage speakers (HSs), moreover, each strategy in Twi is associated with different complexities: morphophonological, discourse-pragmatic, and/or syntactic. We provide evidence from elicited production that Twi HSs use the two strategies differently than NSs in the US, in a manner that minimizes complexity: whereas NSs rely on the morphological strategy, HSs rely on the incrementally less complex syntactic strategy, producing adjectives post-nominally in accordance with Twi syntax. Crucially, however, most HSs use the morphological strategy at least part of the time. Thus, we conclude that HSs' reliance on the syntactic strategy does not reflect a loss of the morphological strategy, but rather complexity minimization as well as cross-linguistic influence at the level of preferences.

**Alisa Baron and Katrina Connell: The effect of cumulative English exposure on grammatical gender in Spanish in school-age children**

This study investigated grammatical gender processing in school-age Spanish-speaking children using a visual world paradigm with a 4-picture display where the target noun was heard with a gendered article that was in a context where all distractors were the same gender as the target noun, all distractors were a different gender than the target noun, or all distractors were the opposite gender than the target noun but the included an incorrect article (ungrammatical). We investigated 50 children who were exposed to Spanish since infancy and began learning English at various ages. A preliminary linear mixed-effects model on the fixations during the target noun reveals that children with lower cumulative English exposure (CEE) displayed higher proportions of fixations to target in the different gender condition compared to the others. Children were using the gender cue to facilitate processing. Higher CEE may reduce a child's sensitivity to grammatical gender in first-language Spanish.

Group 10: Sign Language / Deafness

**Madeline Quam and Marie Coppola: Are measures of nonverbal reasoning truly nonlinguistic? Evidence from deaf, hard-of-hearing and typically hearing children**

Nonverbal IQ tests, designed to assess nonlinguistic reasoning abilities, are commonly used as control variables; however, recent evidence suggests that language skills may affect performance on nonverbal reasoning tasks. Here, we investigated which aspects of language (timing of first exposure, vocabulary knowledge) may influence nonverbal reasoning in the context of deaf and hard-of-hearing children's highly variable language experiences. We found that the timing of access to language (Early-Language, from birth, versus Later-Language, sometime after birth) and vocabulary knowledge significantly predicted children's nonverbal reasoning. When examining timing groups separately, the Early-Language children's nonverbal reasoning was not predicted by any language variable, reflecting expected typical development. However, the Later-Language children's vocabulary knowledge and language modality predicted their nonverbal reasoning. Researchers should be mindful of using nonverbal tasks to match participants, especially those whose language experiences vary. These results invite reconsideration of theories postulating a clear division between language and other cognitive domains.

**Ronice de Quadros, Marilyn Mafra Klamt, Pamela Perniss and Diane Lillo-Martin: Visual cohesion in Coda bimodal bilingual productions**

This study investigates visual cohesion in narratives produced by bimodal bilinguals in four language contexts: (i) Libras (Brazilian Sign Language); (ii) BP (Brazilian Portuguese); (iii) blending Libras and BP with Libras primary; (iv) blending Libras and BP with Portuguese primary. We compare our results with those by Perniss and Özyürek (2015) with monolingual DGS (German Sign Language) and spoken German, having used the same materials and methods they employed. Results find the use of overt nominals exclusively in introduction contexts, with a greater use of overt marking in reintroduction than in maintenance contexts. The Brazilian data show a greater use of overt marking in maintenance contexts than either the DGS signers or the German co-speech gesture. This may be an effect of the bilingual status of the Brazilian participants. Unlike the German study, spatial marking was frequently observed in all contexts, including BP only, also a bimodal effect.

**Rachel Miles, Marla Hatrak and Rachel Mayberry: How many arguments can homesigners handle when they learn ASL?**

Many individuals born deaf have limited access to language until late childhood and beyond. We analyzed the productions of 11 former homesigners who had used ASL for many years to determine whether they would use consistent argument ordering patterns in their ASL descriptions of pictured events. It is known that they acquire vocabulary and produce two- and three-word combinations that tend toward basic word order. However, after years of experience, these unique L1 learners show limited comprehension of basic and complex sentence structures. We found that despite years of ASL experience, they produced responses with one argument for each verb across conditions. While they produced two arguments per action for some transitive events, they did not converge on a single ordering of those arguments. Together with previous studies, the present results suggest that impoverished language experience in childhood impedes the acquisition of sentence structure in both comprehension and production.

**Laura Horton and James Waller: The function of eye gaze in narrative from a local family sign language**

In this study we ask whether a child signer (9;5) uses gaze for different functions in an elicited signed narrative. The signer in the study is from Guatemala and uses a local family sign language. The narrative consisted of 614 signs and was coded for sign type, gaze target, and deictic target. We analyze the distribution of gaze target for different sign types. For deictic signs, the signer most often looked at the book. Her gaze target tended to match the deictic target, serving a referential function. For constructed action signs, she most often looked at the “middle space” target, reinforcing that her gaze was not directed towards anything co-present. Our results indicate that a child signer who uses a local family sign language is sensitive to the grammatical and pragmatic significance of eye gaze and that different gaze targets are associated with different types of signs.

**Group 11: Language Input****Ailís Cournane, Anouk Dieuleveut and Valentine Hacquard: Assessing how the linguistic input affects children’s mastery of modals**

How do children map can to possibility meanings, and have-to to necessity? Necessity entails possibility, so situations where necessity modals are used are also compatible with possibility interpretations. Previous studies suggest that this “subset problem” may lead children to treat necessity modals like possibility modals. This study examines the extent to which individual children’s mastery of necessity modals like have-to can be predicted by features of their input, by comparing across input-child pairs. We find that while mere quantity of exposure does not significantly impact children’s mastery, both exposure to negated occurrences (a proposed way to logically solve subset problems), and exposure to modal talk in general, do.

**Jessica E. Kosie and Casey Lew-Williams: Infant-Directed Communication: Caregivers’ use of overlapping speech and non-speech signals in everyday communication with infants**

While infant-directed speech (IDS) has received primary focus in much research on infants’ natural interactions with caregivers, everyday interactions involve more than speech alone. Our goal is to augment research on IDS by investigating “infant-directed communication” (IDC): the suite of communicative signals from caregivers to infants including speech, action, gesture, emotion, and touch. We found that: (1) more than half of the speech that infants heard overlapped with other non-speech dimensions of IDC,  $p < .001$ , (2) caregivers’ use of overlapping multimodal cues increased in response to infant vocalizations ( $p < .02$ ) and gestures ( $p < .001$ ), and (3) caregivers used more non-speech dimensions of IDC when interacting with infants who had smaller vocabularies ( $p = .003$ ). Overall, our investigation of IDC provides insights into the true richness of infants’ everyday communicative interactions and enhances understanding of relations between caregiver input and learning.

**Asana Okocha, Nicole Burke and Casey Lew-Williams: Social network characteristics predict vocabulary size among infants in the United States**

Young children learn language from their caregivers, family members, and friends. However, with few exceptions, contemporary developmental science has investigated and interpreted findings about language input and language learning through the lens of the primary caregiver and the nuclear family, rather than the infants’ broader communities (e.g., Pan, Rowe, Singer, & Snow, 2005). In the United States, non-nuclear family structures are becoming increasingly common (Cross, 2018), and many Americans rely on extended kin and fictive kin for childcare (Jones, 2011). Interpreting children’s relationships through the lens of kinship networks can potentially allow for more nuanced depictions of children’s social interactions and their language experiences. We draw upon methods used by researchers studying social networks to assess infants’ network composition. Results showed a significant positive relationship between vocabulary size and quantity of strong ties. These findings suggest that distributed models of childrearing are likely an influential factor in early language growth.

**Yiran Chen and Kathryn Schuler: Variable ne-omission in French children’s input and production**

Standard French expresses clausal negation through adding “ne” before the verb and a negator “pas” after (e.g. Je ne sais pas.). However, realization of “ne” is variable and rare in speech. Therefore, how children acquire the ne-omission variable provides an intriguing case, especially when we consider children’s tendency to regularize to the statistically dominant form. We examined the use of “ne” in negative sentences by 14 monolingual French-learning children (age range: 0;11-8;01) and their caregivers from the CHILDES database. Results showed that children initially consistently did not produce “ne” in negative sentences until enough evidence accumulated. Children whose caregivers were more frequent users of “ne” produced “ne” earlier and more frequently. Importantly, as soon as children started to produce “ne”, they followed the linguistic constraint on ne-omission. This study contributes convincing evidence to children’s early sociolinguistic competence and highlights the importance of positive evidence in the acquisition of linguistic variation.

**Shannon Dailey and Erika Bergelson: Predicting children’s language skills at 4;6 from earlier input & language skills**

Prior work finds that both early language input (Bornstein, et al., 2020) and early language skills (Fish & Pinkerman, 2003) are predictive of childhood language skills. Here we ask if using measures of both input and early skills can improve our predictions of children’s language skills. We measured language input in infancy and early language skills in a longitudinal sample of 44 English-learning American children and ran a set of linear models predicting children’s core language skill (CELF-P2) at age 4;6. We find weak evidence that measures of infants’ home language input predict their later language skills in preschool. Strikingly, we found that parent-reported productive vocabulary at 1;6 predicted  $>1/3$  of the variability in children’s language scores three years later. While children’s language input may be important, children’s language skills at age 1;6 may accurately (and more easily) predict language skills in preschool.

## Group 12: Interaction

### **Olivier Rüst, Marco Baroni and Sabine Stoll: Getting creative: A Neural Network approach to predicting child utterances in 12 typologically diverse languages**

How do children go from partially productive speech formulas to fully productive language? Research until now has focused on a very narrow definition of such formulas, lacks cross-linguistic support and has never investigated how adults use such formulas in comparison (Hartmann et al., 2021; McCauley & Christiansen, 2019). We introduce a novel, generalized method to investigate this phenomenon, based on the idea of predictability of new utterances based on previously used and heard ones. We train neural language models (LSTMs) on longitudinal subsets of our corpora on 12 typologically extremely different languages, to evaluate predictability of subsequent utterances. We show that there is a similar learning trajectory for all children albeit coming from a linguistically extremely diverse background.

### **Lila Gleitman and Charles Yang: Two-year olds' referential determiners in discourse**

Using nearly 2,000 discourse snippets in mother-child interactions, we show that two-year-old children use determiners as markers of definiteness and specificity flexibly and accurately across context.

### **Liudmyla Feurstein, Reinhard Furrer and Sabine Stoll: Turn-taking predicts vocabulary acquisition at age 18 months: A large-scale study of daylong recordings**

We provide support for the claim that turn-taking is more significant for children's vocabulary acquisition than CDS. Further, we show that the probably crucial underlying factor in turn-taking is the child's involvement in the interactions.

Results of our study reveal that the number of turn units initiated by the child as opposed to an adult interaction partner grows considerably, from 24% at 6 mo to 53% at 12 mo to 63.4% at 18 mo.

This research suggests that neither the amount of CDS nor turn-taking alone are the main drivers of language development but a complex interplay of all these factors. Detailed investigation of turn occurrences is the prerequisite for understanding the underlying drivers of early language acquisition.

## Group 13: Language & Cognition

### **Erin Campbell, Molly Cooke, Derek Houston and Erika Bergelson: Acquisition of perceptual words by young children with congenital sensory impairments**

While all children learn perceptual words (i.e. those lacking concrete, perceptible referents like "think" or "nice"), children born blind or Deaf/Hard-of-Hearing (DHH) also learn words that are wholly or partially less perceptible to them than others (e.g. "blue" or "noisy", respectively). We collected MCDI vocabulary reports and compared the rates of early word production for visual, auditory, and perceptual words in the vocabularies of children with and without congenital sensory impairment learning spoken English. While blind and DHH children produced substantial numbers of words that were uniquely imperceptible to them, when controlling for age and word-level properties, we find that children in all sensory groups were less likely to produce words they could not experience through the senses.

### **Francesca Foppolo and Flavia Adani: Lexicalized scales in Italian-German bilingual children**

Children's difficulty with pragmatic inferences that ensue from lexical scales like <some, all> (Scalar Implicatures, SIs) is lively debated. Results of bilingual children are mixed. We tested bilingual German-Italian pre-school children raised in Germany in families with at least one Italian parent. We found an advantage of bilingual children in the derivation of SIs compared to existing results of monolingual children, in contrast with other published studies reporting on bilingual children. Furthermore, the performance on SI was more accurate for children with a higher expressive vocabulary. We interpret our findings within a lexicalist approach to SIs, and we will discuss the bilingual advantage observed in our group by considering children's linguistic profile, also in comparison to the bilinguals tested in previous research.

### **Dana Michelle Chan, Alexander LaTourrette and Sandra R. Waxman: How early does object naming influence object representations?**

How an object is named is instrumental to how infants represent it. When a set of objects are labeled with the same name (Consistent Name (CN) condition), 12-month-olds represent them as category members, abstracting over distinctions among them. But if each object is labeled with its own distinct name (Distinct Name (DN) condition), infants represent them as unique individuals (LaTourrette & Waxman, 2020). That is, infants in the DN, but not the CN, condition encoded the objects with enough specificity to discriminate them from other category members. Here, we ask: how early do infants establish this tight coupling between naming and representation? Whereas 12-month-olds in the DN condition were more likely than those in the CN condition to represent objects as individuals, this effect was not seen in 7-month-olds. Thus, our findings do not support the availability of the link between naming and representation in younger infants.

**Kathleen Oppenheimer, Jan Edwards and Yi Ting Huang: Individual differences in linguistic knowledge affect sentence comprehension strategies in 5-year-olds**

During spoken-language comprehension, children rapidly predict grammatical roles with early-arriving cues but fail to revise mispredictions that conflict with late-arriving information. While the kindergarten-path effect is found across a wide range of linguistic phenomena, it remains less clear why developmental parsing shows this effect and whether linguistic knowledge plays a role. In this study, five-year-old children participated in standardized language assessments and acted out responses to globally ambiguous sentences such as “cut the cupcake with the candle.” We found a quadratic relationship between scores on the language assessments and the proportion of instrument responses on the verb bias task. Children with low language knowledge were less sensitive to verb bias and made more plausible/modifier responses. As language knowledge increased, children relied more heavily on the verb bias and produced more implausible/instrument responses. As language knowledge continued increasing, children revised their predictions and produced more plausible/modifier responses.

Group 14: Neuroimaging

**Caroline Nallet, Janet F. Werker, Iris Berent and Judit Gervain: The neonate brain’s sensitivity to repetition-based structure: Specific to speech?**

Newborns are able to extract and learn repetition-based regularities from the speech input, i.e. they show greater brain activation in the bilateral temporal and left inferior frontal regions to trisyllabic pseudowords of the form AAB than to random ABC sequences. Is this sensitivity specific to speech? We tested whether newborns are sensitive to repetition-based regularities when those are implemented with musical tones, using functional Near-Infrared Spectroscopy. Our findings show that newborns’ ability to discriminate AAB from ABC sequences is not specific to speech – it also extends to musical tones. However, we show that the neural response is markedly different between the two types of stimuli. First, we observed a strong overall habituation pattern over time, whereas for speech an increase was present over the time course of the study. Second and relatedly, the repetition regularity gave rise to an inverted hemodynamic response, while it was canonical for speech.

**Irene de la Cruz-Pavía and Judit Gervain: Six-month-old infants’ abilities to represent sequences of different syllables in speech**

In order to acquire grammar, infants need to extract regularities from the linguistic input. From birth, infants can detect certain structural regularities in speech, notably repetitions (e.g. ABB: mubaba). By contrast, neural activation to random syllable sequences (e.g. ABC: mubage) is very weak (Gervain et al. 2008, PNAS). Using NIRS and an alternating/non-alternating design, we examine whether 6-month-old French-learning infants discriminate the ABB and ABC sequences. As infants begin to learn their first word forms at this age, we hypothesize that the ability to represent sequences of different syllables might become important for them. Analysis of 24 participants reveals discrimination in right frontal regions. Additional analysis of only non-alternating blocks revealed equally strong neural activation to the blocks containing only ABB or only ABC tokens. These results provide thus the earliest evidence that young infants explicitly represent difference in speech.

**Laurent Dekydtspotter, Kate Miller, Michael Iverson and Yanyu Xiong: Gamma activity in the processing of intermediate gaps in native and nonnative French**

Language neuroprocessing requires fast  $\gamma$ -activity in structure building and interpretation, with  $\beta$ -activity managing processing and low frequencies supporting representational maintenance and contextual integration (Murphy, 2021). Nonnative-neuroprocessing of bi-clausal filler-gap dependencies through the clause edge in French seems characterized by greater  $\beta$ -activity in nonnative (NNSs) than native (NSs) speakers reflecting lexical specifications of wh-fillers (Dekydtspotter, Miller, Iverson, et al., 2021). More  $\beta$ -power for selected noun-complements over non-selected NP-modifiers and for gender-specified over gender-unspecified pronouns in anaphora processing arose in clause-edge event-related spectral perturbations (ERSPs) in NNSs. We hypothesized that nonnative ERSPs would also reflect costs for retrieving and holding nonnative-language specifications in  $\gamma$ -activity in complex syntactic construction. Indeed, in NSs and NNSs alike,  $\gamma$ -activity enabled structural construction (300ms) and interpretation (400ms) at the subordinator marking the embedded clause. Additionally,  $\gamma$ -power differences between groups supported the hypothesis that nonnative neuroprocessing involves surmounting higher activation thresholds for nonnative elements in structural construction.



#### Group 15: Atypical Populations

##### **Nicole Zapparrata, Patricia Brooks, Teresa Ober and David Rindskopf: Phenotypic overlap in developmental language disorder and autism spectrum disorder: A comparative meta-analysis of processing speed**

The generalized slowing hypothesis was proposed as an explanation of processing speed differences among individuals with developmental language disorder (DLD). This study asks whether slower response/reaction times (RTs) are evident to a comparable extent in autism spectrum disorder (ASD). We conducted a systematic review and meta-analysis using estimates extracted from simple RT, choice RT, and baseline/congruent conditions of interference control tasks requiring nonverbal, motor responses. Across studies involving individuals with DLD or ASD, there was evidence of slower processing when compared to age-matched neurotypical control groups, overall  $g = .37$  [95% CI = .27; .48],  $p < .001$ . A meta-regression with diagnosis entered as a moderator (0=DLD; 1=ASD) on the combined dataset ( $k=67$ ,  $m=137$ ) indicated that diagnosis did not moderate effect size estimates for clinical-neurotypical comparisons. Slower processing thus appears to reflect phenotypical overlap between DLD and ASD, providing implications for screening and diagnosis of communicative disorders.

##### **Alexandra Perovic, Vikki Janke and Ken Wexler: A cross-syndrome comparison of raising: Insights from comprehension of raised and unraised sentences in children with SLI and children with Williams syndrome**

Complex grammatical constructions that are acquired late in TD may be particularly vulnerable in children with language delay, such as SLI or Williams Syndrome (WS). We tested raising constructions (where the thematic subject of the embedded non-finite clause is pronounced in the subject position of the main clause) as these develop later in TD. Using a picture-selection task with raised and unraised constructions containing 'seem', and embedded sentences with 'think', we tested twenty 6-16 year-olds with SLI, nineteen 8-16 year-olds with WS (matched on age and grammar comprehension) and twenty TD 5-8-year-olds (matched on grammar comprehension). All three groups showed severe difficulties interpreting the raised constructions only. The SLI group performed worse than TD controls, but no differently to WS. That children with SLI and WS perform on a par with TD children of equivalent general linguistic abilities suggests the difficulty for the clinical groups is grammatical rather than conceptual.

##### **Eleni Peristeri, Margreet Vogelzang, Ianthi Maria Tsimpli and Stephanie Durrleman: Theory of Mind development in monolingual and bilingual children with Autism Spectrum Disorder over time: Relations with language, executive functions and IQ**

This longitudinal study investigates the effects of linguistic and cognitive abilities on first- and second-order Theory of Mind (ToM) in monolingual and bilingual children with Autism Spectrum Disorder (ASD) at three timepoints, specifically at age 6, 9 and 12. Forty-two children participated: 21 bilingual children with ASD (ASDbi), and 21 monolingual children with ASD (ASDmono). First- and second-order ToM were measured through two stories, expressive vocabulary through a standardized test, executive functions (EF) through a 2-back updating task, and Performance IQ (PIQ) through the Wechsler Intelligence Scales for Children. The results reveal positive relationships between vocabulary and PIQ, and trajectories of second-order ToM for ASDbi children, most noticeably at 9 and 12 years. Though ASDbi children showed higher EF across all timepoints, this did not boost their ToM. The findings suggest that bilingual children capitalize on certain cognitive (PIQ) and linguistic (vocabulary) resources to yield beneficial effects on ToM development.

##### **Mélanie C. van Barreveld, Jeannette Schaeffer and Annette Scheper: short sentence repetition task to identify children with DLD**

This study reports on a new, short Dutch sentence repetition (SR) task to distinguish children with developmental language disorder (DLD) from typically developing (TD) children. The study was twofold: we first shortened the LITMUS-SR-NL-30 (De Jong, Blom & van Dijk, 2021) to a version with 16 sentences, following Schoeny (2019). We then piloted this new LITMUS-SR-NL-16 and the LITMUS-SR-NL-30 among a group of typically developing children ( $n=24$ ) and a group of children with developmental language disorder ( $n=24$ ). We show that the short LITMUS-SR-NL-16 has the same discriminatory power as its longer predecessor and therefore lends itself well as a future diagnostic tool for DLD.

## **SATURDAY, NOVEMBER 5**

### **Not all touch is the same: A case study of a DeafBlind child interacting with a DeafBlind adult**

*Deanna Gagne, Hayley Broadway, Marjorie Bates and Jessica Ennis*

Protactile (PT) is a new, fully tactile language emerging among DeafBlind adults. To date, DeafBlind children have had little to no opportunities to learn Protactile. We present a case study of a DeafBlind adult-child dyad that met regularly over several months. Over a one month period we find that (1) the child learned to understand and produce rapid taps, indicating a call for attention or to express positive affirmation (e.g., “yes”), (2) the child increased his acceptance and initiation of contact with the adult, and (3) there is a likely pattern of child-directed labeling in the adult productions. While future directions should expand beyond a case study, we show that PT may be a successful language option for DeafBlind children, especially if learned directly from DeafBlind adults.

### **It is daxy to learn adjectives, and learning adjectives is daxy for everyone: Syntactic frames support the acquisition of adjective meaning**

*Megan Gotowski and Kristen Syrett*

We present a modified human simulation paradigm experiment demonstrating that word learners recruit syntactic frames to deduce adjective meaning. Previous work investigating syntactic bootstrapping in adjective learning has inadvertently conflated semantics and syntax by integrating the meaning of co-occurring words. We disentangle semantics from syntax, while targeting a subtype of adjectives: subjective adjectives. Participants viewed a scripted video dialogue featuring novel adjectives, nouns, and verbs. Within each trial, a target adjective appeared across four frames, representing a distinct distributional signature of subjective adjective meaning. Participants learned either one adjective or five in a session. They guessed the meaning of the adjective and provided a confidence rating, either incrementally or after the entire frameset. Participants reliably recruited syntactic frames to narrow the hypothesis space of adjective meaning, as reflected in both their word guesses and the percentage of ‘frame-compliant’ guesses. They were significantly more accurate and more confident when guessing incrementally.

### **Helpful regardless of acceptability: Resumption eases comprehension of difficult-to-process relative clauses in the L2 English of L1-Korean and L1-Mandarin speakers**

*Fred Zenker and Bonnie D. Schwartz*

L2 studies show that production of relative clauses (RCs) regularly contains resumptive pronouns (RPs), but almost none examines RP processing in RCs during real-time sentence comprehension. This study investigates whether such RPs constitute licit Interlanguage-English representation (e.g., Hylltenstam, 1984) and/or a subconscious facilitation strategy. An acceptability judgment task (AJT) and a self-paced reading task probe, respectively, the acceptability and processing of gaps vs. RPs in three (increasingly difficult) direct object RC (ORC) environments (short-distance, long-distance, WH-island). Ninety English native speakers (ENSs), 69 L1-Korean L2ers of English (KLEs), and 76 L1-Mandarin L2ers of English (MLEs) completed both tasks and an English proficiency C-test; L2ers also completed closely-translated AJTs in their L1. Reading-time data and comprehension-question accuracy data indicate that RPs ease ORC comprehension under processing strain despite low AJT ratings for resumption in all languages; these results suggest English ORC resumption is an ungrammatical processing strategy for ENSs and (most) KLEs/MLEs.

### **Deaf children’s gaze shift during natural interaction in ASL supports efficient referential attention**

*Michael Higgins, Allison Fitch and Amy Lieberman*

To perceive language, deaf children look in the right place (i.e. an interaction partner) at the right time (i.e. when language input occurs). We investigated how attentional skills develop in deaf children learning ASL.

For 16 deaf children, we counted gaze shifts during a play session and examined performance in an eye-tracking task. The number of gaze shifts correlated with age ( $r = 0.63$ ,  $p = 0.001$ ). Attention allocation in the eye-tracking task increased with age ( $r = .47$ ,  $p = .03$ ), and was mediated by children’s frequency of gaze shift during natural interaction ( $r = .62$ ,  $p = .001$  ;  $b$ :  $r = .59$ ,  $p = .016$ ).

Results support previous findings that deaf children’s ability to shift gaze develops over the first years of life. Further, children’s ability to shift gaze through interaction with an adult interlocutor contributes to children’s ability to allocate attention when perceiving signed input.

### **Synergies in early syntactic and semantic acquisition: 11-month-olds can build syntactic expectations about novel nouns**

*Mireille Babineau, Anne-Caroline Fiévet and Anne Christophe*

In two preregistered experiments, we investigated whether presenting familiar nouns along with novel words could help infants build syntactic expectations. Using a habituation paradigm, French-learning 11-month-olds ( $N=55$ ) were presented with phrases containing two novel words (dase, nuve) and four known words preceded by two determiners (des “some”, ton “your”). In the test phase, the novel words were preceded by a determiner in the congruent trials (un “a”), and by a pronoun in the incongruent trials (tu “you”). Infants first watched a video showing a woman playing with common objects. In Experiment 1, only familiar words were used, while in Experiment 2, the meaning of the two novel nouns was also taught. Infants only succeeded to build syntactic expectations for the novel nouns in Experiment 2, with longer looking times for the incongruent than the congruent trials. Hence, semantic information, together with distributional information, helped 11-month-olds to build syntactic expectations.

### **Priming agreement morphology in English as a second language**

*Chae Eun Lee*

Agreement morphology causes persistent difficulties for second language learners (L2ers). The best methods for increasing the consistent production of such morphemes in L2ers remain unclear. The current study tests whether priming can increase the production of English third-person singular -s in adult L2-English learners (N = 20), whose first language, Korean, lacks subject-verb number agreement morphology. Following Bock (1986), a picture description task was used to elicit English third-person singular -s. Participants were asked to create a sentence using the given verb and the habitual adverb to describe the picture. The baseline phase measured the base rate of -s production. A week later, they completed a priming treatment and a posttest. Results showed that the L2ers produced significantly more -s in the treatment phase than in the baseline phase ( $p < .05$ ). This indicates that priming is effective in increasing the -s production in L2ers at least in the short term.

### **A piece of the puzzle: Semantic neighborhood density, iconicity, and frequency are important contributors to sign language acquisition**

*Lauren Berger, Jennie Pyers, Amy Lieberman and Naomi Caselli*

In spoken languages, children more readily learn words that are semantically related to many other words (those in “semantically dense” neighborhoods) than words that are semantically distinctive. Iconicity is a salient property of many signs, and may shape the ASL lexicon in ways that affect L1 vocabulary acquisition. We used newly available semantic association data alongside parent reports of children’s productive ASL vocabularies. We found that 1) children learn ASL signs in dense semantic neighborhoods more readily than those in sparse neighborhoods, 2) semantic neighborhood density (SND) is weakly related to iconicity and sign frequency, and 3) SND and iconicity independently contribute to vocabulary acquisition. The semantic properties of children’s early sign vocabularies are similar to early spoken vocabularies, despite the prevalence of iconicity in ASL. We also show that effects of iconicity on early L1 vocabulary acquisition cannot simply be attributed to the semantic structure of the lexicon.

### **Differentiating universal quantifiers by differentiating their domains**

*Victor Gomes, Tyler Knowlton, Anna Papafragou and John Trueswell*

“Each” is more individualistic than the other universal quantifiers “every” and “all”. We propose that the cognitive system deployed to represent the domain of quantification plays a role in helping learners acquire this difference. Namely, circumstances that facilitate individuation of the domain lead learners to the individualistic meaning of “each”. Experiment 1 finds that parents use “each”, but not “every”/“all”, in situations that independently trigger representing the things quantified over as object-files (situations in which the domain consists of small numbers of physically present items). Experiment 2 shows that these cues, in conjunction with linguistic information, help naïve adults guess when “each” was used in naturalistic parent-child interactions. These results suggest that perceptual cues to represent the domain of quantification with the object-file system are present in child-directed speech and are in-principle usable by observers. Accordingly, learners may use these cues to differentiate “each” from the other universals.

### **L2 acquisition of scope of negation and conjunction in Mandarin Chinese**

*Yunchuan Chen, Shivam Mani and Caimiao Liu*

For sentences like ‘the elephant did not eat the carrot and the pepper,’ negation and conjunction may interact in two ways (Szabolsci, 2002): the elephant did not eat the carrot AND/OR did not eat the pepper. The two interpretations are not equally accessible in different languages: negation has scope over conjunction (Not (A and B)) in English (e.g. Gruter et al., 2010) whereas conjunction has scope over negation ((Not A) and (Not B)) in Chinese. Note that the Chinese interpretation entails the English interpretation in logic. This study conducted a picture-matching truth value experiment to investigate whether L1 English L2 Chinese learners can acquire the knowledge that Chinese is more restrictive than English regarding the interpretation of negation and conjunction sentences. The data shows that such acquisition is possible but difficult. We also found that a high Chinese proficiency may not guarantee such acquisition.

### **Eye-gaze as a window into word level variability in toddlers**

*Haley Weaver and Jenny Saffran*

Individual differences in early vocabulary have lasting impacts on later language development. We investigated variability in toddlers’ understanding of a small set of familiar words using an eye-gaze paradigm with multiple trials and exemplars for each word and compared this word recognition data to caregiver report of vocabulary. We found that on average, when collapsed across items, caregiver report of the number of target words toddlers said predicted word recognition accuracy on an eye-gaze measure. However, we found variability in the alignment between eye-gaze data and caregiver report when we examined word comprehension at the item-level for an individual child. Some toddlers recognized very few words, and their caregiver’s report overestimated their comprehension abilities. Others recognized all of the target words, and their parent’s report accurately reflected these abilities. Quantifying individual differences at the word-level provide new insights into the variability in early language.

### **Phonological variation in child-directed speech is modulated by lexical frequency**

*Eon-Suk Ko and Jongho Jun*

This study investigates the hypothesis that child-directed speech (CDS) contains a higher proportion of canonical pronunciation than adult-directed speech (ADS) with focus on Korean noun stem-final obstruent variation. The accommodation hypothesis of CDS might predict a higher ratio of canonical forms in CDS than their variants. Another factor influencing phonological variation, though largely overlooked in CDS research, is lexical frequency, which would predict a greater proportion of canonical forms in high frequency words in morpho-phonological phenomena. We conduct three experiments comparing the proportion of the canonical vs. variant forms to test the accommodation hypothesis of CDS. Our results indicate that CDS provides children with a higher ratio of canonical forms, which is mediated by the use of high frequency word items in CDS. Our study thus highlights the importance of considering the usage factors (and morpho-phonological phenomena in investigating the function and nature of CDS.

### **Resolution of backward and forward anaphora in Chinese**

*Lucy Zhao, Maria Teresa Guasti, Shijia Yang and Francesca Foppolo*

This study investigates Mandarin-speaking adults' and children's resolution of the overt pronoun subjects (ta 'he/she') and null subjects in forward and backward anaphora configurations. While null subjects allow coreference to the subject antecedent in both anaphora configurations, overt subjects do so only in the forward configuration. Results from a picture selection task showed that unlike adults and children aged 8-10, children aged 4-6 did not differentiate between the null element and ta in either forward or backward anaphora. The younger children allowed subject antecedent at a much lower rate in both anaphora configurations. The older children did not yet show adult-like interpretations, which contrasts with the results for overt subjects. This raises a question as to whether null and overt subjects are acquired in tandem at age 6-8. We explore a possible explanation in the nature of the null subject as a null anaphor.

### **Adapting infant looking time paradigms for the web**

*Shengqi Zhong, Daoxin Li and Kathryn Schuler*

The head-turn preference procedure (HPP: Nelson et al., 1995) has been an important method to the study of language acquisition in infants, but remained restricted to the lab due to the highly controlled lab settings it requires. In the present study, we provide the first demonstration that HPP can be adapted successfully for web data collection. To illustrate, we conducted an online replication of Shi, Cutler, Werker and Cruickshank's (2006) Experiment 1, which employed the central-fixation adaptation of HPP to determine whether functors like 'the' facilitate the extraction of novel nouns in 11 month olds. We leveraged the Lookit platform (<https://lookit.mit.edu/>) to recruit and run this experiment online. Our results indicate new opportunities for infant studies during the pandemic and in the future.

### **Verb morphology is syntagmatically and paradigmatically simpler in contingent than in non-contingent CDS**

*Morgane Jourdain and Sabine Stoll*

Little is known about how children acquire languages with highly complex morphology. We hypothesize that contingent child-directed speech (CDS) might support the acquisition of morphology. Here we aim to determine whether the morphology of contingent compared to non-contingent CDS is simpler. For this we analyze data from a longitudinal study of a polysynthetic Sino-Tibetan language (Nepal). The verbal morphology of Chintang is highly complex with more than 4800 forms per verb). We analyzed 44,183 verb forms produced by adults from the longitudinal Chintang corpus. Using syntagmatic, i.e., number of morphemes, and paradigmatic complexity, i.e., number of forms per verb, we find that from age 0;6 to age 4;4, contingent CDS is consistently simpler than ADS, while non-contingent CDS is not. We propose that this simplification in contingent CDS provides children with direct input that is more manageable for them, helping children acquire languages with complex morphology.

### **Locality effects in the acquisition of nominal ellipsis in L1 Italian**

*Caterina Tasinato and Emanuela Sanfelici*

This study investigates the comprehension of nominal (NP) ellipsis in 3-to 5-year-old Italian-speaking children and adults, asking what the role of locality is in the acquisition of NP ellipsis. We tested two structures differing in the position of the antecedent: discourse ellipsis vs. coordination ellipsis. Results from a picture supported TVJT show that, in interpreting NP ellipsis, Italian preschool children are sensitive to locality. Children overall recovered the meaning of the elided NP in coordination but not in discourse ellipsis, thereby diverging from adults. Moreover, in coordination 3-years-old children differed from the target-like interpretation exhibited by older children. This finding suggests that NP ellipsis in coordination is acquired earlier than in discourse. Children's difficulty to comprehend discourse NP ellipsis may be accounted for in terms of intervention (Rizzi 2004) or in terms of discourse integration abilities (Berman 2009).

### **The role of facial cues on infant word learning**

*Monica Barbir, Mei Kono, Yuka Tatsumi, Samuel Recht, Yu Fujimura, Reiko Mazuka and Sho Tsuji*

Faces communicate a rich source of perceptual and social cues to language. Yet, the importance of facial cues on word learning has been hard to investigate, because these cues are so ubiquitous that removing them also removes social felicity. Here, we use common clothing accessories to overcome this problem. We presented infants and toddlers with videos in which a woman introduces two novel nouns and corresponding objects while wearing a mask (mouth cues absent), sunglasses (eye cues absent), or hat (facial cues present). Our results reveal that, even in rich socially felicitous environments, facial cues, both eyes and mouth, are important for word learning. They also suggest that there are developmental periods during which facial cues play a larger role in word learning, notably in the second and third years of life. Our study provides practical insights into the potential impact of pandemic mask wearing on children's language acquisition.

### **Verb dominance in Korean revisited: Verbal and nonverbal characteristics of maternal input to Korean toddlers**

*Minju Kim, Gayoung Kim, Solyeon Jeon and Youngon Choi*

Do verbal and nonverbal characteristics of naturalistic Korean caregiver input support the verb bias in Korean? From 30-minute home video recordings of 44 mother-child dyads (14- to 20-month-olds), we obtained the token frequency of nouns and verbs by their subcategories. With short muted vignettes with a beep sound replacing the target word, 200 adults guessed what the word might be using only the visual/social context. Korean mothers produced verbs twice as frequently as object nouns. Adults correctly inferred the meaning of the target word 42.6% of the time, with higher accuracy for verbs than for nouns ( $p = .001$ ). Individual differences in the total number of nouns and verbs in input positively predicted the total inferential accuracy ( $p = .04$ ), Korean caregiver input may provide both linguistic and extralinguistic support for verb learning early on, and we aim to further investigate this with our full dataset ( $n=72$ ) with M-B CDI-K data.

### **Use of null-arguments in wh-questions: The view from Malayalam and Telugu**

*Kazuko Yatsushiro, Aureore Gonzalez, Varsha Eturi, Chiara Dal Farra, Johannes Hein, Gayathri G. Krishnan, Vijayanthi Sarma, Silvia Silleresi, Maria Teresa Guasti and Uli Sauerland*

This study investigates the production of wh-questions by children speaking two Dravidian languages, Malayalam and Telugu. Previous studies on the acquisition of wh-questions have detected some asymmetries, both in production and in comprehension: (i) subject wh-questions are acquired earlier than object wh-questions, (ii) who-questions are easier than which N-questions (Friedmann et al. 2009; Guasti et al. 2012; Sauerland et al. 2016). Most of those studies have focused on the comprehension and production of wh-questions in well-studied languages like English, Italian, and German, however. We observed a novel subject-object asymmetry in two Dravidian languages. Null arguments are used more frequently in subject position of the object wh-questions than in the object position of the subject wh-questions. This surprising finding from two under-studied languages sheds new light on the cross-linguistic status of the subject/object asymmetry.

### **Less-is-more: A developmental fMRI study on auditory statistical learning**

*Anqi Hu, Katherine Trice, Yi-Lun Weng and Zhenghan Qi*

In this fMRI study, we compare the engagement of linguistic-specific (LN) and domain-general attention networks in statistical learning (SL) between children and adults to examine two competing accounts. The less-is-more account predicts greater learning-induced changes in the LN in children. The age-invariant account predicts similar learning-induced changes between children and adults. Participants completed two auditory SL tasks in the scanner – a linguistic syllable SL task intermixed with random tone sequences and a non-linguistic tone SL task intermixed with random syllable sequences. Adults showed greater overall engagements in both networks across both tasks. Children's LN showed a greater degree of learning-induced plasticity only for linguistic SL. Greater attention network engagement during the task was associated with greater learning-induced malleability in LN for both, supporting an interplay between domain-general and domain-specific learning mechanisms underlying SL. Together, these results provide the initial neural evidence supporting the less-is-more account of language acquisition.

### **What predicts comprehension of temporal conjunctions in bilingual children? Age of onset, length of exposure, or something else?**

*Christos Makrodimitris, Petra Schulz and Ianthi-Maria Tsimpli*

Our study investigates the role of LoE and AoO in bilingual children's comprehension of sentences containing the conjunctions "after" and "before", a phenomenon mastered very late (after age 7) cross-linguistically. Following the Timing Hypothesis, we expected LoE to be a better predictor of performance than AoO. Fifty-five typically developing children with L1-Greek and L2-German (Age: 6;0–12;9 yrs.) performed a sentence-picture matching task in German and in Greek, with order counterbalanced. The results were first analysed with two separate GLLMs for AoO and LoE. As expected, LoE, but not AoO, showed a main effect. An additional model including LoE, Age, short-term memory, German grammar skills, and accuracy in the Greek after/before-task, revealed main effects of accuracy in the Greek after/before-task and of German grammar skills, but not of LoE. Our findings support the Timing Hypothesis, but suggest that 'LoE' may not adequately account for the performance of bilingual children.

### **Infants bootstrap grammatical categories from morphological suffixes**

*Megha Sundara*

It has been proposed that infants use information about grammatical categories to acquire morphology. We provide experimental evidence against this claim. In two experiments with over 100 infants we show that English-learning infants distinguish homophonous 3rd singular -s and plural -s by 8-months; by 14-months, they group nonce words suffixed with 3rd singular -s, but not plural -s, with nonce verbs suffixed with -ing. Thus, not only do English-learning infants discover suffixes early (Kim & Sundara, 2021), they use morphological suffixes themselves to discover English noun and verb categories. We will discuss the implications of our findings for phonological, semantic and distributional proposals for establishing grammatical categories in infancy.

### **Conversation disruptions in early childhood longitudinally predict receptive language development**

*Amy Carolus, Margaret A. Sheridan, Liliana J. Lengua, Kate A. McLaughlin and Rachel Romeo*

Qualitative measures of language input are potent predictors of a child's language development. In particular, more frequent experience with adult-child conversational turn-taking is associated with stronger language development. However, little is understood about how disruptions to temporal contingency in turn-taking (i.e., interruptions and overlapping speech) that may impede its benefits relate to language development. In this analysis of 275 mother-child dyads, contrary to hypotheses, more conversational disruptions as a proportion of total utterances during a 7-minute free play at age 3 significantly predicted higher language ability 9 months later, as measured by the NEPSY-II, controlling for sex, age, and socioeconomic status. This relationship remained significant even after additionally controlling for T1 language ability, indicating that disruptions predicted language increases. Ongoing analyses seek to further classify types of temporal conversation disruptions, such as cooperative interruptions or back-channeling, to investigate how they may facilitate language development in certain circumstances.

### **The effect of language switching on bilingual children's novel word learning**

*Rachel Ka-Ying Tsui, Jessica Kosie, Laia Fibla Reixachs, Casey Lew-Williams and Krista Byers-Heinlein*

Children growing up in bilingual environments are often exposed to mixed-language utterances in their language input. Patterns of language switching also vary where caregivers switch between their languages in different ways. Some bilingual children hear their languages in long blocks of a single language (a 'one-language-at-a-time' strategy), while others hear more frequent switching (an 'immediate-translation' strategy). Our study explored whether the two different switching patterns imposed different demands on bilingual children's learning of novel nouns in their two languages. Using an online tablet task, data were collected asynchronously from 36-to-60-month-old bilinguals from French-English bilingual families in Montreal, Canada (N = 31) and Spanish-English bilingual families in New Jersey, USA (N = 20). Mixed-effects logistic regression analyses on proportion of accuracy revealed strong evidence of learning, with no differences across communities or conditions. Our findings highlight that different patterns of bilingual interaction provide equal learning opportunities for bilingual toddlers' vocabulary development.

### **Intervention effects in Mandarin-speaking children's comprehension of passives**

*Minqi Liu, Victoria Mateu and Nina Hyams*

In Mandarin, an external argument is structurally absent in Short Passives but it intervenes in the dependency between the surface subject and its gap in Long Passives. Therefore, the Intervention Hypothesis (Friedmann et al. 2009) predicts that Mandarin LongPass should be harder for children to comprehend and this Intervention Effect should decrease when the grammatical features of the two arguments in LongPass are distinct.

These predictions are borne out in our experiments. Exp1 tested a grammatical feature (Number) by manipulating the plural vs. general classifiers in Mandarin DPs. Data from 80 monolingual Mandarin-speaking 3- to 6-year-olds showed that LongPass are harder than ShortPass and a mismatch in Number improves children's comprehension of LongPass.

The same children did not show this match/mismatch difference with LongPass in Exp2 where the arguments/classifiers mismatched only in inherent lexical properties but not Number, supporting grammatical accounts to Intervention such as featural Relativized Minimality (Rizzi 1990).

### **Contrast, sufficiency, and the acquisition of morphological marking**

*Sarah Payne*

Much work on morphological acquisition has examined how children learn to map morphological features to phonological form. But how do children learn which features are marked in their language to begin with? We propose that the child's early segmentation of inflectional morphology allows them to make use of collisions: a single stem appearing in multiple inflected forms (e.g. walk-walked). Once the child learns which features distinguish individual collisions (e.g.  $\pm$ PAST distinguishes walk-walked), we propose that they employ the Tolerance/Sufficiency Principle to determine whether there is sufficient evidence for marking of these features across the paradigm. We demonstrate that a computational implementation of such a learner matches well with developmental findings regarding vocabulary size and order of acquisition for the well-studied problem of English verbs, as well as agglutative Spanish verbs and templatic Hebrew verbs.

### **Translation equivalents in bimodal-bilingual deaf children's ASL and spoken English vocabularies**

*Elana Pontecorvo, Amy Lieberman, Jennie Pyers and Naomi Caselli*

Children learning two or more languages often have to map multiple phonological forms onto the same concept, learning translationally equivalent words (e.g., “dog” and “perro”). Contrary to early predictions that children's early vocabularies in each language may tend to be non-overlapping, translation equivalents have been found to be present and sometimes overrepresented. In this study, we found that translation equivalents are overrepresented in the early vocabularies of bimodal-bilingual children, deaf children who are learning both ASL and spoken English. This indicates that the preference for translation equivalents is not necessarily motivated by phonological similarity across languages.

### **Does grammatical number scaffold the acquisition of number words?**

*Anna Shusterman, Abigail Seevak, Petra Mišmaš, Franc Lanko Marušič, Rok Žaucer and Madeline Pelz*

Can children use syntactic information, like grammatical number, to facilitate the meanings of number words? While English only differentiates between singular and plural, other languages, like Central Slovenian, have distinct grammatical markers for referring to quantities of one, two, and more than two. The current study tested the claim that morphology scaffolds number-word learning by assessing whether young children acquire dual marking before the number word “two” and reanalyzing data from Give-a-Number and Give-a-Set tasks. We find that most children did not learn number morphology before the corresponding number word, complicating claims that number morphology could scaffold number word learning. Furthermore, we did not replicate the finding that children acquiring a dual-marked language learn “two” relatively early. Finally, we demonstrate heterogeneous clusters in the acquisition of number morphology, suggesting mechanisms inconsistent with the scaffolding hypothesis.

### **Person reference via pronouns or verbs has different effects on false belief performance: Longitudinal study from Czech toddlers**

*Anna Chromá and Filip Smolík*

Personal pronouns are probably related to grammatical as well as social development, but the relation to false-belief understanding – a milestone in social-cognitive development – has not been examined. We tested whether the mastery of personal pronouns and similarly functioning inflected verb forms predicted the success in false belief tasks. Sixty-one Czech children participated in a two-wave (29 and 43 months) study investigating social-cognitive and linguistic development, including false-belief understanding, and elicited and spontaneous production of pronouns and verb inflections. Regression analyses revealed a number of significant unique effects of person reference above and beyond the effects of general language skills. Both the elicited and spontaneous pronoun data show effects of second-person mastery, while the spontaneous verb-person data show effects of first-person forms. This confirms that pronouns and person-inflected verbs in 2-year-olds are related to subsequent development of social cognition.

### **Children's code-switching changes from 2;6 to 3;6 years to maximize their power of expression**

*Michelle K. Tulloch and Erika Hoff*

Spanish-English bilingual children's use of code-switching was investigated longitudinally from 2;6 years to 3;6 years from recorded sessions of Spanish-designated and English-designated interactions with a bilingual caregiver. Between 2;6 and 3;6 years, children became more English dominant, and their rate of code-switching to English increased while their rate of code-switching to Spanish decreased. The strongest influence on bilingual children's frequency of code-switching was their relative proficiency in their two languages over and above proficiency in the matrix, or instructed, language. These results suggest that lexical gaps are defined by the speaker with reference to the language in which their skills maximize their power of expression.

### **Belief reports facilitate long-distance binding in child Japanese**

*Akari Ohba and Kamil Deen*

Children are known to have difficulty with long-distance (LD) interpretations for reflexives such as Japanese *zibun* ‘self’ (Orita et al., 2021). Children are also known to interpret ‘think’ differently from adults (DeVilliers & Pyers, 2002, a.o.): they report “John thinks dogs quack” as false because dogs don't actually quack. Lewis et al. (2017) show children can correctly interpret ‘think’ when the belief-report meaning of ‘think’ is salient.

We investigate whether the difficulty with ‘*zibun*’ is an artefact of using *omou* ‘think’ as the matrix verb. ‘*Zibun*’ is often logophoric and takes a LD antecedent whose speech/thought is reported. If children struggle with the belief-report function of ‘*omou*,’ they may not consider the matrix subject a licit antecedent. We highlight the belief-report function of ‘*omou*’ and show that Japanese children can indeed access LD interpretations for ‘*zibun*,’ concluding that children's difficulty with ‘*zibun*’ may derive from the well-documented difficulty with the verb ‘think.’

### **PLENARY ADDRESS: Autism illuminates language: Acquisition, development, use**

*Letitia Naigles*

Children on the autism spectrum engage in social interactions with lower frequency and in different patterns compared with children who are developing typically. This variation in social engagement has afforded many explorations of the significance of social interaction as a mechanism in language acquisition, development, and use. The Longitudinal Study of Early Language is a 20+-years-long multi-domain exploration of the language of children on the autism spectrum, including their comprehension via Intermodal Preferential Looking, their production via naturalistic interactions, and their performance in numerous psycholinguistic and clinical assessments. In this talk I will highlight how comprehension findings demonstrating early acquisition of grammatical constructions, combined with wide heterogeneity in language production by these same children, indicate how social engagement plays a targeted rather than universal role in early language. Moreover, investigations of lexical semantics reveal challenges but also promote reconsideration of the definitions of social strengths and weaknesses in both autistic and non-autistic individuals.

## **SATURDAY, NOVEMBER 5: POSTERS**

### **Group 1: Phonological Development**

#### **Clara Levelt: Prompted revisions in two-year-olds' speech disclose hidden knowledge of onset clusters**

Young children can be prompted to revise an utterance by an unspecific prompt like “hm?” or “what?”. In a game-like setting this technique is re-introduced with two-year-olds who name pictures on cards that they collect to put on a game-board. The pictures elicit words that start with an onset cluster which are often reduced to singleton consonants by two-year-olds. We compared 236 pairs of initial productions and prompted repeated productions from 20 Dutch two-year-olds and studied the changes that were triggered by the prompt. Results show that (1) the technique works very well with these young speakers and triggers repeats in most cases, (2) changes involve segmental improvements in most cases, and (3) the technique can help to disentangle word-form encoding errors from errors resulting from the stored segmental representation.

#### **Martin Ho Kwan Ip, Alex de Carvalho and John Trueswell: “Now LUCY is klexxing”: How prosodic focus guides word learning and alternative processing**

An important skill that language learners need to develop is the ability to accurately select among referential alternatives: knowing what a speaker is referring to should help determine the meaning of a novel word uttered by that speaker. At the sentence level, prosodic focus can be helpful for referent identification because of its relation to information structure: e.g., hearing “Now LUCY is klexxing!” likely refers to a novel person doing an action already under discussion. But how prosodic focus maps onto information structure is complex: e.g., “Now Lucy is KLEXXING!” likely refers to a novel action performed by a person already under discussion. Here, we show for the first time that just like adults, three-year-olds have the ability to use prosody in this very way to identify referents. We also examined how prosody influenced children’s recall of alternatives during a later memory test.

#### **Rongna A, Naoto Yamane and Reiko Mazuka: Not all /r/ and /l/ are difficult to discriminate for Japanese infants: Japanese infants’ discrimination of Mongolian /r/ and /l/**

Japanese speakers are well known to have difficulties in discriminating English /r-l/ both in adults and infants. The aim of this study is to examine the developmental change of Japanese infants’ discrimination of the /r-l/ contrast in another Asian language: Mongolian. A pair of Mongolian non-words, /rang/ and /lang/, was selected as the minimal pair contrasting initial consonants. Infants were tested with the visual habituation-dishabituation paradigm. Thirty-three 5-month-old and twenty-six 9-month-old Japanese infants participated in this study. The results showed that 5-month-old Japanese infants did not show signs of discrimination ( $p = 0.129$ ), however, 9-month-old Japanese infants showed a significant longer looking times to the switch trial compared to the same trial ( $p = 0.025$ ). This shows that Japanese infants’ ability to discriminate Mongolian /r-l/ contrast improved between the two age groups despite the fact that infants had no prior exposure to /r-l/ contrasts in Mongolian.

### **Group 2: Word Learning & Vocabulary**

#### **Belen Lopez Assef, Margarethe McDonald, Amélie Bernard and Tania Zamuner: Memory advantage for produced words in children aged 5- and 6-years old: Retention after one-week?**

Studies on the role of speech production on memorization have shown memory benefits from production compared to other actions, labelled “production effect” (P.E). While with adults this benefit persists after delays; no studies have investigated if it remains beyond immediate testing with children. Our pre-registered study investigated this by looking at the effect at immediate versus 1-week-delayed testing. Children 5-to-6-year-olds were trained on familiar words in two conditions: Say (say word aloud) and Listen (hear a pre-recorded sound file). Children completed a free-recall task immediately after training and 1-week later. Results showed that the P.E surfaced at immediate testing, but this advantage disappeared after a delay. Results are consistent with claims that developmental factors interact with the P.E: it is possible that less developed cognitive abilities have difficulty maintaining distinctive representations, and thus obstruct the effect, resulting in similar performance for both conditions after a delay, opposite to adult studies.

#### **Alexander LaTourrette, Charles Yang and John Trueswell: Just keep guessing: Semantic similarity does not guide cross-situational word-learning from caregivers’ ambiguous utterances**

Infants’ earliest words are learned by observation, but these word-learning opportunities are often ambiguous. It is critical, then, whether children treat their incorrect guesses as red herrings, or use them as stepping-stones to the target meaning. In support of the “stepping-stone” account, recent work using the Human Simulation Paradigm, in which adults guess word meanings from muted videos of caregiver-child interactions, found that even adults’ incorrect guesses are semantically similar to the target word (Johnson et al., 2020). Here, we replicate this semantic similarity effect in another HSP dataset. However, this effect is not associated with successful word-learning: guesses similar to the target do not increase accuracy on subsequent exposures (Study 1). Converging experimental evidence indicates even high-similarity guesses have little influence on cross-situational word-learning (Study 2). These results suggest when prior guesses are not supported, learners prioritize the current context—treating prior guesses more as red herrings than stepping-stones.



**Georgia Loukatou, Alvin Wei Ming Tan, Mika Braginsky, Jessica Mankewitz and Michael Frank: Typological variation in predicting early word learning across languages**

How does early language learning vary across languages with different structures? Cross-linguistic variation could be detectable in the order of acquisition for words, with morphological cues being predictive of which words are learned earlier or later in morphologically complex languages. We tested this hypothesis in 11 languages, using the age-of-acquisition prediction framework to include morphosyntactic features as predictors (Braginsky et al., 2019). We fit regression models predicting the age of acquisition of words from Communicative Development Inventories (Frank et al., 2017). We included predictors previously shown to have an effect and several proxies for morphosyntactic complexity. We replicated previous effects, and words with more different types were produced slightly later. Cross-validation showed that the data were sufficient to produce informative predictions. We found little support for the idea that morphosyntactic features were more specifically predictive for morphologically-complex languages. The factors influencing order of lexical acquisition were relatively consistent across languages.

**Haifa Alroqi, Ludovica Serratrice and Thea Cameron-Faulkner: The association between screen media use and language development**

This study investigates the influence of the quantity, content, and context of screen media use on the language development of Arabic-speaking children aged 1 to 3 years. Surveys and weekly event-based diaries were employed to track children's screen use patterns. Language skills were assessed using JISH Arabic Communicative Development Inventory (JACDI). Findings indicate that the most significant predictor of expressive and receptive vocabulary in 12- to 16-month-olds was screen media context (as measured by the frequency of interactive joint media engagements). In older children (17- to 36-month-olds), more screen time (as measured by the amount of time spent using screens, the prevalence of background TV at home, and the onset age of screen use) had the highest negative impact on expressive vocabulary and mean length of utterance. These findings support health recommendations on the positive effects of co-viewing media with children and the negative effects of excessive screen time.

Group 3: Word Learning & Vocabulary

**Frank Staniszewski, Rachel Stacey and Athulya Aravind: Overly strong interpretations of modal verbs in child language**

Children have been shown to behave in systematically non-adult ways with modal verbs (can, must), often using and accepting weaker possibility modals in necessity contexts. This has been traditionally taken to show children being "purely logical": they fail to compute scalar implicatures (SIs) and so take the weaker sentence as compatible with stronger interpretations. We argue instead that children sometimes interpret possibility modals not only as compatible with necessity interpretations (i.e. purely logical), but as virtually identical to necessity interpretations (i.e. strengthened in a non-adult-like manner). We observe a pattern of children's non-adult judgments that cannot be explained as mere failures to generate SIs. We argue instead that children compute different SIs from adults, leading to over-strengthening. This view gains support from the fact that non-adult-like interpretations occur predictably in SI-environments (e.g. weak items strengthen in affirmative sentences, but not under negation where logical strength relations are reversed).

**Kamil Deen and Akari Ohba: Syntactic bootstrapping over socio-observational cues: A case from empathy**

Syntactic Bootstrapping (using syntax to learn verbs) is one possible route that children take to learn the semantics of verbs (especially mental state verbs). We investigate the acquisition of a class of verbs in Japanese referred to as empathy verbs, which encode speaker's empathy: which discourse referent the speaker mentally places themselves closest to. Empathy verbs pose the same learnability problems that mental verbs do in that speaker's empathy is invisible to learners. We conducted a novel-verb experiment to investigate what cues children use to learn this invisible property of empathy verbs, and show that children rely more on grammatical properties associated with empathy (argument positions where first person pronouns occur) than other more observable properties (physical proximity to the speaker, social grouping, etc.), providing novel evidence for the Syntactic Bootstrapping hypothesis (Gleitman, 1990).

**Lijun Chen and Stephanie Durrleman: Mandarin aspect production in children with autism spectrum disorder plus language impairment**

Mandarin-speaking children with ASD show difficulties in aspect production, however work to date has only explored perfective markers. This study investigated the production of both perfective (-le/-guo) and imperfective markers (zai/-zhe) in Mandarin-speaking children: 16 with ASD (mean age: 5;6; with normal intelligence but impaired language) and 16 age-matched typically-developing (TDA) peers (mean age: 5;5). Participants completed a syntactic-priming picture-description task. Results show: (i) Children with ASD performed comparably to TDA children in producing the pre-verbal zai-, while they produced fewer post-verbal -le, -zhe and -guo than their TDA peers. (ii) Despite being primed with activity verbs, children with ASD tended to combine -le with achievement verbs. (iii) Children with ASD produced imperfective aspect more than perfective aspect. (iv) After controlling for general language abilities, the ASD and TDA groups performed similarly for all markers except -guo. These findings are reminiscent of reports on aspect production by children with DLD.

#### Group 4: Morpho-syntax

##### **Anamaria Bentea, Ur Shlonsky and Stephanie Durrleman: Towards a hierarchy of featural mismatch effects in the acquisition of A'-dependencies: A comprehension study with French children**

This study investigated the role of pronominal interveners in the acquisition of relative clauses in French with the aim to determine (i) whether intervention effects can be alleviated by mismatches in Person and Number and (ii) whether there is a hierarchical impact of these features. We assessed comprehension of ORs with 3rd person pronoun subjects (elle/elles) mismatching only in Number with the head and ORs with 1st person pronoun subjects (je/nous) mismatching in both Number and Person, using a character selection task. Fifty-four children (4;2yo-5;9yo) participated in the study. The results show that (i) grammatical features impact OR comprehension and that these are relevant for the computation of locality despite the absence of a lexical N on the intervener and (ii) suggest that Person has a larger impact than Number in locality computations. This indicates a hierarchy for the effects of features on A'-dependency comprehension, in which Person > Number.

##### **Hristo Kyuchukov, Adina Camelia Bleotu and Tom Roeper: Roma children are sensitive to the Recursive Set Subset Ordering Principle for adjectives**

This is the first investigation of adjective recursion in Romani, an Indic language of the Indo-European family. We tested 20 (Bulgarian contact) Roma 6-7-year-olds on the comprehension of recursive structures involving multiple adjectives specifying one single semantic dimension (Size). Our evidence shows that they give an adult interpretation to recursive adjectives in tikne bare lulugia 'small big flowers' 87.5% of the time ('the small subset of flowers out of the big set of flowers'). The few errors often involved order reversal (small big= big small). We argue that the adult-like performance on recursive adjectives is due to a UG syntax-semantics Interface principle, the Recursive Set Subset Ordering Constraint (RSSO), which provides an automatic set-subset interpretation ([subset [set]]) to a syntactic hierarchy ([ADJ2 [ ADJ1 NOUN]): the syntactically higher adjective defines the subset, the lower adjective defines the set.

##### **Miguel Meira and Elaine Grolla: The left periphery of the sentence in child Brazilian Portuguese: Evidence for the "Growing Trees" approach**

We analyze the spontaneous productions of one child acquiring Brazilian Portuguese (BrP) in the light of the 'Growing Trees' approach (Friedmann, Beletti & Rizzi (2021)), which claims that functional projections above IP are acquired in two steps: first, in Stage 2, the lower left periphery develops, and in Stage 3, the upper left periphery emerges. Our corpus is comprised of 150 sessions of Lz, recorded between 1;07;12 and 5;00;02. We found that the order of emergence of all the collected sentences that activated projections in the left periphery was aligned with the 'Growing Trees' approach predictions: all of the structures from Stage 2 had already been present in the child's speech for at least four months before the first appearance of a Stage 3 construction, at 2;4. Our data is also relevant in teasing apart proposals concerning some structures in adult BrP, such as Wh-questions with doubly-filled-Comp and clefted Wh-questions.

##### **Nozomi Tanaka and Akari Ohba: The comprehension and production of Japanese relative clauses by children**

There is a cross-linguistic trend that subject relative clauses (SRCs) are acquired earlier than object relative clauses (ORCs) (Lau & Tanaka, 2021). Previous findings on Japanese RCs, however, are mixed. The aim of our study is to investigate whether Japanese 4- and 5-year-old children have an RC preference by testing both comprehension and production. Our results from a character selection task and a picture-based elicited production task show no evidence of such subject RC preference in either comprehension or production. However, we found that children produced RCs more accurately when the animacy of the subject and the object are different (e.g., the girl that is cutting the orange) than when the animacy of the subject and the object are the same (e.g., the girl that is chasing the boy), suggesting that an animacy effect influences the production of both RC types.

#### Group 5: Morpho-syntax

##### **Joyce van Zwet and Sharon Unsworth: Individual differences in structural priming in Dutch children: The influence of perspective-taking**

Children differ in the extent to which they copy the syntactic structures of the interlocutor (i.e., structural priming). It is unclear why some children engage more in structural priming than others. Previous research has shown that an individual's level of perspective-taking correlates with the amount of structural priming in adults. In this study, we investigated if primeability in children is also influenced by levels of perspective-taking. We found that perspective-taking abilities and language skills predict the amount of priming in children. This confirms our hypothesis that children who are better at perspective-taking are more sensitive to the linguistic contributions of others.

##### **Chiara Dal Farra, Aurore Gonzalez, Johannes Hein, Silvia Silleresi, Kazuko Yatsushiro, Uli Sauerland and Maria Teresa Guasti: What do you think we know about Italian children's long-distance wh-questions?**

We investigate the production of long-distance subject and object who-questions (LDQ) in 20 Italian children (4;2-6;2). We use a new design that allowed us to overcome issues of previous studies: we didn't provide children with the full LDQ in the experimental phase, and we didn't give them an elided prompt which may prime scope-marking constructions. We test whether both wh-copying and scope-marking, are used in Italian (a language that doesn't allow those constructions), and whether these correspond to developmental stages. Our results show that children were able to produce adult-like LDQs in 50% of the cases in both subject and object questions. In the remaining cases, they produced non-adultlike versions of LDQs: (i) subject questions, instead of object questions, and vice versa, (ii) wh-copying constructions, and (iii) resumptive elements in the base position (previously unattested). Scope-marking constructions were not produced, and no difference emerged between subject and object questions.

**Artemis Alexiadou and Ivona Ilic: Acquiring Japanese passives: A production study**

The acquisition of passives has been controversially discussed in the literature. Several studies have claimed that passives are delayed up to the age of 5 (Armon-Lotem et al. 2016). For Japanese the claim is that acquisition is delayed to the age of 7 (Okabe and Sano 2002). In this paper, we focus on the acquisition of Japanese direct passive constructions. We first present a comprehensive corpus study of child spontaneous production data and report on the developmental trajectory of Japanese passives. We demonstrate that children produce both long and short passives very early on. We argue that early acquisition stems from the transparent Voice morphology in Japanese, realized in the form of the morpheme *-rare*, which strongly supports the idea in Alexiadou et al. (2021) that children follow 1:1 correspondence between conceptual representations (CRs) and morphology, and which predicts that overt passive morphology facilitates the acquisition of otherwise challenging structures.

**Heidi Getz and Elissa Newport: Time strengthens children's knowledge of phrase and sentence structure**

Language learners keep track of statistical patterns in their input, a process called statistical learning. How is the information acquired via statistical learning encoded in memory, and how do these memories become permanent aspects of linguistic knowledge? We studied children's memory for grammatical patterns in a miniature phrase-structure language. Distributional information provided the only cues to phrase structure. Children age 7-9 listened to sentences from the miniature language, then were tested on knowledge of the language's phrase or sentence structure either immediately or 24h later. Surprisingly, accuracy on both tests was significantly higher after a delay, even though there was no additional exposure. This suggests that linguistic knowledge is strengthened and perhaps even re-organized during periods of time and/or sleep following statistical learning.

Group 6: Corpus & Simulation Studies**Masahiko Dansako: Subject interpretation in main and subordinate clause in child Japanese**

This paper aims to clarify whether child Japanese conforms to the rule of subject interpretation. In Japanese, nominative-marked subject in the conditional clause cannot have the same entity as the empty subject in the main clause. Given that nominative-marked subject is licensed in the TP domain (Takezawa 1987), NP-ga in the conditional clause cannot relate to the empty subject (i.e., have the scope over) in the matrix clause over the clause boundary. This grammatical restriction cannot be deduced from the instructions made by adults. Our results demonstrate that children in Japanese obeys the grammatical restriction at the age of two years old. This study further implies that children are highly sensitive to the phonetically realized case particles in the very early stage of language development.

**Charles Yang: Productivity and recursion in English compounding**

We show that the productivity and recursivity of English noun compounding (e.g., cookie store, cookie baker) can be learned distributionally by the Tolerance Principle. By the same method, adjective-noun compounding (e.g., sweetheart, blackmail) and verb-noun compounding (e.g., turncoat, pickpocket) are found not to be productive and must be lexically learned and generally have non-compositional meanings.

**Iris Nowenstein and Sigríður Sigurjónsdóttir: A case for exceptions: Acquiring Icelandic dative productivity**

Icelandic datives are notoriously productive and robust, as has been extensively documented in formal approaches to case. Despite a consensus on the semantic nature of dative productivity, the case-meaning mapping has remained theoretically elusive and its existence even contested on the basis of correlations not being exact. We argue that from the acquisition standpoint, which has been lacking in the debate, generalizations do not need to be exact to be discovered and learned. Exceptions to productive rules can be tolerated and structured into subrules (Yang 2016). By combining child-language corpus analyses and experimental data from 146 children, we show that broad associations between case and meaning can be learned and form the basis of the dative productivity. This first comprehensive account of Icelandic dative acquisition also provides insights on the linking problem and the distributional information children use to discover associations between argument form and role (Pearl & Sprouse 2021).

**Qihui Xu, Martin Chodorow and Virginia Valian: Syntactic knowledge, statistics, or both? Simulating the production of very early child multiword utterances**

A central question for language development is whether the onset of combinatorial speech reflects statistical learning from the input, abstract syntactic knowledge, or both. One possibility is that both statistics and syntactic knowledge are important but contribute differently to different types of utterances. We use language models (LMs) with or without syntactic categories to test this hypothesis. Our results show that both statistical learning and syntactic knowledge are necessary in describing early child speech. A detailed by-item analysis shows that the production of short regular utterances could be characterized by statistical learning alone. However, the production of less regular utterances ("key-open-door"), perhaps due to limited vocabulary the child has, or longer utterances (e.g., "Susie-cat-in-the-hat"), in virtue of involving longer dependency, requires syntactic knowledge and cannot be achieved by statistics alone.

## Group 7: Semantics

### **Leo Rosenstein, KD Dretler and Martin Hackl: Children's interpretation of comparatives with differentials**

Children 4-5ya predominantly interpret sentences like (1) as saying (2) (Arii et al. (2016), Hackl et al. (2021)).

(1) The rabbit has two more pizzas than the hedgehog.

(2) The rabbit has two (total) pizzas.

We investigate whether children's interpretations of (1) are influenced by the utterance context to assess if this is a performance/processing effect, grammar-based (Arii et al. 2016), or rooted in incomplete number knowledge (Hackl et al. 2021). We ask children to identify "the friend who has n more NPs than X" across two conditions: in the "distractor condition" the scene contains an animal with exactly n NPs, and in the "no-distractor condition" it does not. Current theories predict that children will choose randomly in the no-distractor condition. We find, however, that the rate of adultlike selections is a function of the presence/absence of the distractor. We argue that this fits better within a performance/processing-based account.

### **Myrto Grigoroglou and Patricia A. Ganea: Revisiting the acquisition of conditionals in early language production**

Children produce conditionals (if-clauses) later than other complex constructions (e.g., because-clauses, when-clauses) for reasons that are poorly understood. On a conceptual explanation, children acquire conditionals later because they are cognitively more complex (e.g., hypothetical) than other constructions. On a psycholinguistic explanation, children produce conditionals infrequently because their meaning can also be conveyed by alternative constructions. Unlike prior research that focused on naturalistic production, we investigate children's production of conditionals experimentally, by eliciting descriptions of hypothetical events by 3- to 6-year-old children and adults. Results support the psycholinguistic explanation of children's late production of conditionals: although children, overall, used complex (i.e., subordinate) clauses less frequently than adults, they did not produce conditional clauses less frequently than other constructions of similar morphosyntactic complexity (e.g., causal, temporal) in either high- or low-hypotheticality scenarios. These findings inform our understanding of the factors that affect the order of acquisition of semantically complex constructions.

### **Masuyo Ito: Plurality inferences: Some insights from the Japanese**

Plural nouns in affirmative (declarative) sentences are apparently interpreted as 'more than one (noun)'. However, they are not interpreted this way in downward-entailing contexts. This difference has been explained by 'ambiguity' (Farkas & de Swart 2010) or 'implicature' (e.g. Sauerland 2003). Findings by Tieu et al. (2018), Sauerland et al. (2005) and Renans et al. (2020 [Turkish]) do support the 'implicature' explanation. They found that English/Turkish-speaking children have the same difficulty with plurality inferences as they do with standard scalar inferences. However, English/Turkish-speaking children may accept critical plural sentences by incorrectly assigning generic- or kind-reference interpretations because English/Turkish use plural morphology for these purposes. The Truth-Value-Judgement experiment investigates Japanese preschoolers' and adults' interpretation of the plural morpheme *tati* (used optionally) and bare nouns. *Tati* is tested because bare nouns are used in Japanese for both singular, plural, and generics or kind-reference. The *tati* results support the implicature explanation for plurality.

## Group 8: Sentence Processing

### **Rhosean Asmah, Sophie Domanski, Kathleen Oppenheimer and Yi Ting Huang: Verb-specific biases are shaped by developmental experience with verb-general tendencies**

By 5, children rely on lexical knowledge, like verb biases, to guide syntactic parsing. This study investigated what experiences inform development of verb biases, and whether children's representations mirror adults'. To estimate verb bias, we created a word-learning task that measured effects of lexical prediction on inferences of novel-word meanings (e.g., Lena is going to hit/find the bear with the avthut) in children (5;3 to 8;11) and adults. Eye-movements and actions were measured to novel objects: modifier, an unfamiliar object alongside an animal, and instrument, an unfamiliar tool-like object. While there was no age effect within instrument-biased verbs ( $p=0.306$ ), modifier-biased verbs adopted instrument interpretations more in children than adults ( $p=0.063$ ). Infrequent verbs tended toward instrument interpretations for both groups (all  $p's < .01$ ), suggesting greater influence of verb-general patterns when experience with verb-specific statistics was limited. These results suggest children's sentence predictions are influenced by relative knowledge of verb-general and verb-specific statistics.

### **Saad Dossari and Lauren Covey: That-trace phenomenon in Najdi Arabic learners of English: Evidence from sentence acceptability judgments**

In languages like English and Arabic, subject-extraction is largely possible, except when material is present in the CP layer, referred to as the "that-trace phenomenon." This study tests an approach by Kim and Goodall (in press) comparing two competing accounts of the that-trace effect: a syntactic (Anti-locality) vs. a processing explanation (PEW: Principle of End Weight). 54 Najdi-Arab learners of English and 28 natives took an acceptability judgment experiment. LME models revealed similar results in L2ers and NS, with both groups showing a typical that-trace effect. This is in line with Anti-locality, which expects Arabic learners to show native-like sensitivity to that-trace effects in their L2. However, proficiency modulated results, with lower proficiency learners showing degraded judgments to subject-extraction sentences in general. Thus, results provide emerging support for Kim and Goodall, such that even learners whose L1 exhibits that-trace effects are sensitive to PEW at lower levels of proficiency.

**Jess Villiger and Molly Flaherty: Do children share adult biases?: A silent gesture study with 6-year-olds**

In “silent gesture” studies, hearing, non-signing adult participants describe a scene/item in gesture without speech. Interestingly, there is remarkable consistency of subject-object-verb (SOV) ordering of gestures cross-culturally regardless of native language order. This preference is argued to reflect deeply rooted cognitive or communicative biases that shape language structure. However, this literature makes a critical assumption: that adult ordering biases reflect the types of biases that have given natural languages their shape, even though children are the world’s primary language learners. Here we look to child learners and find that 6-year-old English speaking children do not fully align with silent gesture work with adults. Like adults, child participants’ silent gesture orders do not follow their spoken language. Also consistent with adults, children preferred verb-final orders. However, in contrast to adult results, when children gestured utterances that had both subjects and objects, object-subject orders were nearly twice as frequent as subject-object orders.

Group 9: Adolescent Language Learning**Arynn S. Byrd, Yi Ting Huang and Jan Edwards: Examining how African American English- and Mainstream American English-speaking children process subject-verb agreement in sentences**

Previous research suggests that AAE-speaking children do not use morphological features that are present in MAE, but not AAE, in comprehension tasks. However, whether these differences would be observed if the inflectional marker was a more salient morpheme remains unclear. This study investigates how AAE- and MAE-speaking children use “was/were”, a more perceptually salient feature, to interpret sentences in MAE. Sixty participants, ages 7;0-9;12, who were identified as MAE or AAE speakers, heard sentences in MAE that had an unambiguous (e.g., Jeremiah) or ambiguous (Carolyn May) subject. Ambiguous sentences could only be disambiguated by attending to the verb (was vs. were), which signifies a plurality contrast in MAE only. AAE-speaking children were less likely than MAE speakers to use was/were when interpreting ambiguous MAE sentences. These results suggest that, regardless of perceptual saliency, contrastive morphological features between AAE and MAE impact how children who speak AAE process sentences in MAE.

**Thomas Hammond and Kook-Hee Gil: Initial state of L2 French interrogatives: Classroom input overrides derivational complexity and L1 transfer**

The present study tests predictions of first language (L1) transfer, derivational complexity and properties of the input on the initial state of L2 French interrogatives by L1 English adolescents (n=30). The data under analysis is a subcomponent of the French Progression Corpus (Myles et al. 1999), a collection of semi-naturalistic spoken transcripts from English classroom-learners of L2 French whose L2 input was limited to the secondary school classroom. Relative frequency counts show that learners overwhelmingly favour L2 interrogative forms that mirrored the structure of interrogative chunks presented frequently in the classroom by way of question-answer sequences in role play activities. This preference is despite the chunks’ greater derivational complexity to grammatical L2 alternatives and their structural dissimilarity to the learners’ L1. The results suggest that in classroom L2 contexts, input properties can override derivational complexity and L1 transfer at the initial state of L2 grammar.

**Evangelia Daskalaki, Adriana Soto-Corominas, Aisha Barise and Johanne Paradis: The role of morphological cues in the comprehension of complex syntax: The case of Arabic-speaking children in Canada**

This study explored the interdependence between morphological and syntactic comprehension in heritage contexts. Specifically, we focused on bilingual, first generation, Syrian Arabic-speaking children in Canada (N=108; Mean Age: 12;3; Mean Age of Onset of Acquisition: 7;6) and using two offline sentence-picture matching tasks targeting relative clauses and gender (on clitics), we asked: (i) whether bilingual children would benefit from disambiguating gender mismatches in relative clauses and (ii) whether their ability to profit from gender mismatches would be contingent on their knowledge of gender morphology (on resumptive clitics). Our results supported the conclusion that, like monolingual children, first generation children use morphological cues to comprehend complex syntax in their L1. Furthermore, their comprehension of relative clauses is contingent on their comprehension of gender morphology.

**Wesley Ricketts and Joshua K. Hartshorne: Evaluating unsupervised word segmentation in adults: A meta-analysis**

Humans, even from infancy, are capable of unsupervised (“statistical”) learning of linguistic information. However, it remains unclear which of the myriad algorithms for unsupervised learning captures human abilities. This matters because unsupervised learning algorithms vary greatly in how much can be learned how quickly. Thus, which algorithm(s) humans use may place a strong bound on how much of language can actually be learned in an unsupervised fashion. As a step towards more precisely characterizing human unsupervised learning capabilities, we quantitatively synthesize the literature on adult unsupervised (“statistical”) word segmentation. Unfortunately, most confidence intervals were very large, and few moderators were found to be significant. These findings are consistent with prior work suggesting low power and precision in the literature. Constraining theory will require more, higher-powered studies.

Group 10: Multilingual Learning**Brechje A. van Osch, Merete Anderssen, Natalia Mitrofanova and Ludovica Serratrice: Cross-linguistic influence in L<sub>n</sub> processing: Gender agreement in Norwegian possessives**

This study investigates cross-linguistic influence (CLI) of possessive pronouns in Norwegian as an L<sub>n</sub>. Three groups of L<sub>n</sub> speakers with different L1s (English, Dutch and Spanish) were compared to each other as well as to Norwegian controls, in terms of their judgment and processing (as measured by a self-paced reading task) of sentences with and without gender violations. The results point towards CLI effects in the online task, but the effects are less clear in judgments, indicating a dissociation between learners’ explicit and implicit knowledge.

**Jing Crystal Zhong and Bonnie D. Schwartz: Transfer in Cantonese-English learners' L3 Mandarin**

This study tests for the source of transfer in L3 acquisition: the L1, according to the L1 Status Factor (“L1SF,” e.g., Leung, 2002); the L2-Interlanguage, according to the L2 Status Factor (“L2SF,” e.g., Bardel & Falk, 2007). Thirty-two L1-Cantonese-L2-English-L3-Mandarin learners completed L2-English and L3-Mandarin acceptability judgment tasks (and proficiency tests). L3-Mandarin results on the Double Object Construction (DOC) indicate L1-Cantonese transfer into L3-Interlanguage. L2-English results on Passivization in the DOC of the Recipient implicate L1-Cantonese transfer into L2-Interlanguage, muddling determination of the transfer source for the L3-Interlanguage; this demonstrates the import of testing L3ers on closely-matched phenomena in their L2-Interlanguage. The findings argue against the L2SF but provide evidence for the L1SF. Since Cantonese is structurally/typologically much more similar to Mandarin than English is, the data are also compatible with the Typological Primacy Model (e.g., Rothman, 2011), which states that the (perceived) structurally/typologically more similar language constitutes the transfer language.

Group 11: L2 Acquisition**Qi Cheng and Jessie Zeng: Grammatical attainment by deaf learners with and without early sign language support as compared to hearing L2 learners**

Deaf individuals are often reported to have lower English proficiency when compared to native hearing English speakers, especially for grammatical structures (Quigley & King 1980). Several factors have been identified to explain this lower performance, including reduced input (lack auditory input, acquired mostly via print), L2 interference effect from sign languages, and insufficient early language support (critical period effects). We used the English Grammar Quiz from Hartshorne et al. (2018) to compare deaf individuals with or without early sign language support with hearing L2 learners with various language input and age of acquisition. Our results suggest that deaf English learners resemble hearing L2 learners with reduced input or late exposure in grammatical attainment. Lacking auditory input does not qualitatively change the attainment of grammatical structures in a spoken language, and early sign language support is beneficial for better grammatical attainment.

**Kristen Zhuang and Elaine Lau: Take it or deny it? – The effect of conflicting sociopragmatic norms and values in L1 and L2 on the response strategies to compliments by Chinese ESL learners**

Traditionally, when receiving a compliment Western culture would accept it, while East Asian culture (such as Chinese) would reject it. Therefore, this study investigated how Chinese ESL learners would accommodate to the conflicting sociopragmatic norms and values in L2, and adjust to the pragmatic dissonance created to L1. By adopting an experimental method, we created controlled contexts to elicit Chinese ESL learners’ spontaneous responses towards compliments. Results show that although modern Chinese ESL learners have become more open and accepting to compliments, they displayed different styles in response to compliments when using their L1 and L2. Moreover, though they patterned alike native English speakers in the English mode, they retained some traces of their L1 culture compared with the native counterparts. Further discussion on how a bilingual mind handles conflicting sociopragmatic norms and values in L1 and L2 will be presented in the programme.

**Vikki Janke and Marina Kolokonte: Testing knowledge of English verb phrase ellipsis in Greek advanced learners of English**

Our study investigated Greek L2 advanced learners of English and their acquisition of English Verb Phrase Ellipsis (VPE), a construction Greek lacks. This enabled us to (a) assess the extent to which advanced late learners acquire grammatical phenomena not instantiated in their L1 and (b) explore reasons for variability in their performance. Greek and English participants undertook a sentence-completion-judgement-task in which VPE sentences were manipulated according to the interpretability of the affixes in the antecedent and elided clauses (progressive vs. perfective aspect). Building on Hawkins (2012), we explored the principle of recoverability (Rouveret, 2012) and the interpretability hypothesis (Tsimpli & Dimitrakopoulou, 2007) and how they relate to participants’ acceptability judgements. Our results provide further cross-linguistic support for L2 learners’ ability to acquire constructions that are absent from their L1 and not learnable from positive linguistic evidence, but they invite a more careful consideration of the principle of recoverability in VPE.

Group 12: L2 Acquisition**Carrie Jackson, Holger Hopp and Theres Grüter: Syntactically-constrained semantic prediction in L1 and L2 speakers**

While research shows L2 listeners use semantic cues on verbs to predict upcoming direct objects in SVO clauses, no studies have investigated whether the use semantic cues predictively when embedded in a word order that poses difficulties in L2 production. In two visual-world experiments, we investigate how word order differences modulate semantic prediction, especially when L1 and L2 word orders differ, to investigate whether syntax constrains L2 and L1 semantic prediction. In both experiments, L1 and L2 German speakers engaged in semantic prediction with German subject-first (SVO) and adverb-first verb-second (AdvVS) sentences containing either transitive or intransitive verbs. Effects were delayed for L2 speakers versus L1 speakers to similar degrees across all sentence types. Thus, adult L2 speakers engage in syntactically-constrained semantic prediction, including in syntactic contexts absent in the L1, suggesting that modulations in L2 semantic prediction based on syntax may be quantitative, not qualitative, in nature.

**Tingting Wang, Utako Minai and Alison Gabriele: Evaluating referent salience in pronoun processing by native and non-native speakers**

This study investigated two discourse-level cues that have been argued to modulate referent salience in English: subjecthood and pronominalization. We tested English natives (n=49) and Chinese-speaking learners of English (n=50) using an picture verification task (PVT) with visual-world eye-tracking (via Gorilla), in three conditions created by manipulating the two cues: (1) Baseline condition, where subjecthood is the only relevant cue; (2) Pronominalized subject condition, where the two cues coincide as the subject is pronominalized (3) Pronominalized object condition, where the two cues diverge. We took a novel approach by testing learners in both their L1 (Chinese) and L2 (English) to examine any possible L1 influence. Results suggest that learners can successfully integrate discourse cues in interpreting ambiguous pronouns by showing PVT results similarly to English natives, but still showed influence from the L1 during online processing by having eye-movements similarly in both their L1 and L2, but differently from English natives.

**Tania Ionin, Amy Atilas, Sea Hee Choi, Chae Eun Lee and Mien-Jen Wu: Online vs. offline sensitivity to missing plural marking in L2 English**

Unlike English, Mandarin has optional and highly restricted plural marking. Prior studies have provided conflicting evidence regarding whether L1-Mandarin L2-English learners are able to achieve target-like sensitivity to missing plural marking online. We address this issue by systematically manipulating cues to plurality both offline and online. Adult L1-Mandarin L2-English learners and native English controls completed an online task (self-paced reading) and an offline task (acceptability judgments) in which the factors of determiner (quantifier vs. numeral), plurality (ungrammatical singular vs. grammatical plural) and partitivity (partitive vs. non-partitive determiner) were manipulated. Both groups detected missing plural marking in the offline task, but the learners to a lesser degree than the native speakers. Online, native speakers slowed down for missing plural marking in all conditions; learners slowed down more with partitives than non-partitives, but the effects did not reach significance. The results are discussed in light of the Morphological Congruency Hypothesis (Jiang 2007).

Group 13: Language Input

**Klaudia Kulawska, Meredith L. Rowe, Katie A. McLaughlin, Liliana J. Lengua and Rachel R. Romeo: Does conversational context influence SES associations with language input and language development?**

On average, children from more advantaged socioeconomic status (SES) backgrounds receive greater quantity (number of words) and quality (lexical and syntactic complexity) of language input. However, it is unknown how the socioemotional context of language interactions affects these relationships. A large (n=275), longitudinal, SES-diverse sample of 3-year-old children and their mothers were video-recorded during free-play in two conditions: during unrestricted free play, and during a frustrating play scenario where mothers often regulated their child's emotions and behaviors. Transcripts revealed that quantitative input measures varied across interactional contexts, with no significant SES-quantity associations in the regulatory context. However, qualitative measures of grammatical complexity and lexical diversity did not vary across contexts, most strongly predicted children's language outcomes, and partially explained relationships between SES and language outcomes. This suggests that interaction context moderates SES relationships with quantitative input measures, yet invariant qualitative measures are the strongest predictors of children's language development.

**Grace K. Kim, Meredith L. Rowe, Katie A. McLaughlin, Liliana J. Lengua and Rachel R. Romeo: The role of conversational semantic contingency on children's language development across socioeconomic backgrounds**

Prior research with small, demographically homogeneous samples finds that caregivers' semantic contingency supports children's language development. However it is unknown whether this relationship varies for families from diverse socioeconomic statuses (SES). A large (n=275), longitudinal, SES-diverse sample of mother-child dyads were recorded during free-play when children were 3-years-old, and receptive language was assessed 9 months later. Videos were transcribed verbatim at the utterance level, and automated repetition indices computed the proportion of maternal utterances with lexical overlap of word roots from the child's previous 6 utterances. Maternal overlap positively predicted receptive language scores; SES moderated this relationship such that overlap more strongly predicted language scores for lower-SES families, indicating a protective effect of high lexical overlap. Overlap also mediated the effect of SES on language scores. Results indicate that semantic contingency supports language development for all children, but is especially beneficial for children in the context of low SES.

**Paris Gappmayr and Amy Lieberman: The alignment of deaf children's gaze with parent ASL input**

Children acquiring ASL must learn to recognize when to direct gaze to their parents in order to perceive linguistic input. We analyzed naturalistic play sessions in ASL between deaf children (n=21) aged 9-60 months (M = 34 months) and their parents to determine how children's perception of parent signs changes across development. Across all participants, 43% of sign tokens were at least partially perceived, and of these, 65% were fully perceived. We ran a logistic regression model to predict the odds that a sign would be seen by the child; as expected, increasing child age improved the odds of a sign being seen, as well as the number of tokens produced by the parents. The timing of child gaze relative to parent sign production was consistent across ages. Our findings contribute to our understanding of the development of highly tuned visual attention among deaf children learning ASL.

**Maria Mavridaki and Agnes Melinda Kovacs: Do pedagogical questions promote infants' inquisitiveness and learning?**

Infants use behaviors (e.g. pointing, vocalizations) eliciting information transfer from adults and the amount of pointing predicts language outcomes later on. We investigated whether responding to 12- and 18-month-olds' information-seeking behaviors with pedagogical questions before providing information fosters learning and increases the frequency of pointing. In the Experimental Condition after an object 'magically' appeared and infants could point, the experimenter provided pedagogical questions (e.g. 'Do you know what this is for?') before demonstrating the object's function. In the Control the function demonstration was preceded by a statement ('I found this in the cupboard yesterday!'). We compared how often infants pointed across trials and how many functions they reproduced in a subsequent test phase. 18-month-olds point more in the Experimental compared to the Control Condition. For 12-m.o., pedagogical questions boost function reproduction when infants have not pointed, suggesting relations between infants' expressions of interest, adults' feedback and robustness of learning.

Group 14: Atypical Populations

**Rhiannon J. Luyster, Taylor Boyd, Thuy Buonocore, Taina Hernandez McShane and Sudha Arunachalam: Word learning over videoconferencing in autistic and non-spectrum children**

We asked whether autistic and non-spectrum preschoolers could learn novel nouns presented over videoconferencing in 'addressed' and 'overheard' conditions. Our results showed that while autistic preschoolers learned equally well in both conditions, non-spectrum children performed better when the novel nouns were presented using addressed speech. This suggests that for non-spectrum children, remote situations in which they are overhearing others' speech (e.g., Zooming into a hybrid class) might not be ideal, and further highlight that for autistic children, learning from overheard speech might be a strength.

**Ivana Jovovic: The syntax of passives in adults with Williams Syndrome - Deficient or not?**

Children and adolescents with Williams Syndrome (WS) are reported to have difficulty comprehending passives of non-actional verbs such as love (Perović and Wexler, 2010). In this study we tested adult population diagnosed with WS (N=5, age range 16-59) in an attempt to tease apart the linguistic deficits from the effects of general language delay found in WS. Unlike previous studies, the present study tests the comprehension of both passives of subject experiencer (SE) verbs (love, hate) and passives of object experiencer verbs (OE) (scare, frighten). Using a TVJT, we control for the felicity of the passive by making the passive subject a topic of the discourse and having the by-phrase carry narrow focus.

Group 15: Reading Development

**Andrew Armstrong and Silvina Montrul: The impact of literacy on the comprehension of verbal passives in school-age Spanish heritage speakers and L1 Spanish adults**

This study investigates literacy effects on language development in L1 Spanish – L2 English bilingual children in the U.S. who learn to read in their L2, and L1 Spanish adults with different levels of formal education. We test the Literacy Enhancement Hypothesis using Elicited Imitation. The target structure was Spanish verbal passives, a morpho-syntactically complex structure that occurs more frequently in text. Study 1 contrasted 50 L1-Spanish bilingual children who developed literacy in Spanish and English OR in English only. Study 2 contrasted 53 L1-Spanish adults with different levels of formal education (0 – 30 years) in Spanish. Bilingual, biliterate children repeated passive sentences more accurately compared to bilingual children who learned to read in their L2 only. In study 2, vocabulary score predicted accuracy. The results provide support for the Literacy Enhancement Hypothesis and indicate L1 literacy as a crucial source of input for language development in bilingual children.

**Peter de Villiers, Vivian Almaraz, Sara Beltran, Lissandra Camacho, Lydia Quevedo and Ran Yan: Effects of low-income Latina mothers' language with their preschool children on later literacy development in English**

60 low income Hispanic-American mothers' child-directed language to their preschoolers in a free play session was coded for amount of between- and within-utterance mixing of Spanish and English as well as for the frequency of intrusive directives and the variation in sentence structures used by the mother, summed across both languages. Measures of expressive vocabulary and phonological awareness in English were available on the children at the end of preschool. The children's reading comprehension in English on a standardized test at the end of first grade was predicted by their age at testing, their own language at the end of preschool, and by the mother's language input. Only the variation in sentence structures used by the mother was a significant independent predictor among the mothers' language measures. There were no effects of amount of talk or amount of language mixing by the mothers.



**Delayed development of the Spanish trill by Spanish-English bilinguals**

*Gemma Repiso Puigdelliura*

The Spanish apicoalveolar trill is a late acquired sound, as monolingual Spanish speakers acquire it around 7 years of age (Bosch 1983). In this paper, we analyze the acquisition of the Spanish trill by Spanish-English bilingual children and compare their results to those of age-matched Spanish monolingual speakers. We examine intra-speaker variation using amount of Spanish input and output. 38 Spanish-English bilingual children and 41 monolingually-raised Mexican Spanish children narrated the book *Frog, where are you?* (Mayer 1969). Children were classified into a group of 6-to-8-year-olds and a group of 8-to-10-year-olds. We extracted all instances of word-initial and word-medial trills. Our models showed that Spanish-English bilinguals produced a lower rate of phonetic trills than that of the monolingual speakers. Moreover, amount of language output significantly predicted target-like phonetic trill. Our findings suggest a delayed development of the Spanish trill in the bilingual population.

**Discourse markedness impacts acquisition of wh-questions: Evidence from ALL**

*An Nguyen, Jennifer Culbertson and Geraldine Legendre*

French, Brazilian Portuguese (BP), and English allow both fronted and in-situ information-seeking wh-questions, yet studies in these languages show that children produce mainly fronted questions in elicited tasks, which is surprising given that wh-in-situ is syntactically simpler. This is often attributed to a frequency effect of fronted questions being more frequent. We propose that discourse requirements also play a factor in this, as fronted questions are less discourse-constrained while wh-in-situ questions have to satisfy givenness. We present here an artificial language learning experiment testing learners' sensitivity to discourse-constraints on wh-question variation, but controlling for frequency. Participants were exposed to a miniature language with two variants, a syntactically simple but discourse-marked and a syntactically more complex but discourse-unmarked variant. Overall, learners prefer producing the discourse-unmarked variant, highlighting the role of discourse in conditioning variation. This suggests that non-adult-like patterns of wh-question production may be due to children's preference for less-constrained variants.

**The acquisition of adjunct control and working memory**

*Juliana Gerard and Dana McDaniel*

Sentences with adjunct control, as in "John phoned Bill before PRO walking to the shop," require a subject antecedent for PRO. Nevertheless, children accept other antecedents up to 7 years of age (Goodluck, 1981; Hsu et al., 1985; Goodluck & Behne, 1992; Janke, 2018). One explanation is that children have a non-adult grammar (Cairns et al., 1994; Broihier & Wexler, 1995; Adler, 2006). Alternatively, children's grammars are adultlike, and their non-adult interpretations are due to memory interference from ungrammatical antecedents; if so, children's interpretations will be predicted by working memory. Sentences with adjunct control were tested in a TVJT, as well as sentences with ambiguous pronouns (between-subjects), which are not predicted by working memory (Arnold et al., 2018, 2019). Children's adjunct control interpretations were predicted by working memory, while ambiguous pronouns were not. This is consistent with a memory interference account, but not a non-adult grammar account of children's interpretations.

**Perceptual and acoustic correlates of central vowels in Russian-English and Spanish-English bilingual children: The role of input frequency**

*Suzanne van der Feest, Genevieve Medina, Ingrid Davidovich, Evgeniya Maryutina, Theresa Bloder, Isabelle Barrière and Valerie Shafer*

This study systematically examines acoustic and perceptual analyses of Spanish-English and Russian-English 3- to 10-year-old bilingual children's productions of English /I/, /E/ and /i/. We asked (1) Do bilingual children show vowels production similar to monolinguals? (2) How does the amount of input in each language modulate production? (3) How does years of English experience modulate production? F1 and F2 frequencies were analyzed in recordings of spontaneous and elicited recorded speech. Spanish-English 4-to-6-year-olds differentiated /I/-/E/ based on F1 and /i/-/I/ based on F2, but only children with higher English input showed non-overlapping F1/F2 values. Spanish-English 7-to-10-year-olds showed distinct F1 and F2 values matching American English targets. Russian-English bilinguals showed similar patterns. We argue that overall results indicate that children with < 30% input and fewer years of English experience showed non-native vowel productions, and that frequency impacts production.

**"The duck hits! The monkey too!" – 3-to-4-year-olds understand ellipsis sentences and the adverb "too"**

*Leticia Schiavon Kolberg, Alex de Carvalho and Anne Christophe*

Preschoolers exploit prosodic information to distinguish between transitive (e.g., [The tiger][is hitting the duck too!]) and ellipsis sentences (e.g., [The tiger is hitting!][The duck too!]). However, it remains unclear whether children understand the meaning of the adverb "too" and can recover the elided information it conveys in ellipsis sentences. We presented French-learning 3-to-4-year-olds with ellipsis sentences (e.g., "[The duck is hitting!][The monkey too!]", or sentences in which the adverb "too" was replaced by a novel verb (e.g., "[The duck is hitting!][The monkey calis!]"), while they watched a video showing both the duck and the monkey hitting vs a video with the duck hitting and the monkey performing a novel action. The results showed that children in the ellipsis condition looked longer towards the same-action video than children who heard the sentences with the novel verb, showing that they understood the meaning of the adverb "too" and retrieved the antecedent of the ellipsis.

### **Infants' understanding of the syntax-semantics mapping for the Hungarian inessive locative**

*Rachel Dudley, Ágnes Melinda Kovács and Ernő Téglás*

Do infants master the syntax-semantics mapping for spatial morphemes as they start producing them? When do they know which argument is the Figure in the relation and which is the Ground? We use preferential looking to ask whether 20-month-old Hungarian-speaking infants have mastered the syntax-semantics mapping of the inessive locative case marker -ban/ben. We contrast two containment relations that are the inverse of each other (a box inside a bucket vs. a bucket inside a box), asking (i) whether infants are flexibly able to switch between these two relations and (ii) if this ability is dependent on their general linguistic development. We find that infants do not treat the relations in the same way, reminiscent of a conceptual bias for some kinds of containment over others. Nevertheless, infants with higher vocabulary size are able to overcome this bias to correctly map -ban/ben sentences to the appropriate relation.

### **Phonological typology and learning biases for word forms**

*Johanna Basnak and Mitsuhiro Ota*

The hypothesis that typological distributions of phonological patterns reflect substantive learning biases has been tested primarily through generalization of typologically common vs. uncommon phonological patterns in artificial languages. However, learning can also be biased such that learners remember words with certain phonological structures more accurately than others. Can this type of form-learning bias explain why vowel harmony is typologically more common than vowel disharmony and consonant disharmony is more common than consonant harmony? To test this, we compared adult learners' recall accuracy of artificial language words with 'consonant harmony' (e.g., /fiffo/), 'vowel harmony' (/fiti/), and 'consonant/vowel disharmony' (/fito/). Vowel harmonic words were not learned differently from vowel disharmonic words, but consonant harmonic words were more, not less, accurately learned than consonant disharmonic words. These results indicate that form-learning biases exist, but do not align with typological distributions of relevant phonological patterns.

### **Investigating children's understanding of gapping with negation and disjunction**

*Lyn Tieu and Stephen Crain*

Gapping involves a coordinated structure in which the highest verb is elided in the second conjunct, e.g., "Tiger ate the apple and Zebra the banana." If a negation gaps, and the coordination involved is a disjunction, e.g., "Tiger didn't eat the apple or Zebra the banana", the gapped negation must take scope over the disjunction. In this study we investigated children's interpretation of such gapped sentences compared to their full counterparts, e.g., "Tiger didn't eat the apple or Zebra didn't eat the banana." Our experiment reveals that adults allow a wide-scope, inclusive interpretation of disjunction in the full sentences, but only a narrow-scope 'neither nor' interpretation for the gapped sentences. By contrast, 4-year-olds access a 'neither nor' interpretation for both the full and gapped sentences. We discuss two different possible explanations for this finding, relating to the Semantic Subset Principle and the possibility of an implicature-like conjunctive meaning.

### **Syntactic representations in Polish-English bilingual children: Evidence from priming**

*Marta Wesierska, Ludovica Serratrice, Vanessa Cieplinska and Katherine Messenger*

A developmental approach to syntactic representations requires an understanding of how bilingual children process their two languages. In two bi-directional cross-linguistic priming studies with Polish-English children (N=48; MAge=92mth), we investigated whether priming is predicted by structural overlap, language directionality, and language proficiency. Study 1 targeted structures that English and Polish share, the Adj+Noun/Relative clause alternation; Study 2 targeted an alternation that differs in each language, the possessor-first/possessor-second alternation in possessive constructions. Proficiency was assessed by expressive vocabulary and sentence repetition in each language but did not significantly contribute to either model. In Study 1 there was no significant effect of priming in either direction. Weak syntactic representations for relative clauses may have affected the parsing of the prime and/or the computation of the target. In Study 2, there was significant bi-directional priming, suggesting that the word order of semantic role of possessor created priming in the absence of structural overlap.

### **The development of canonical proportion continues through 6 years of age**

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Under standard accounts of language acquisition, a key aspect of phonological learning – the emergence of canonical syllables – is complete in infancy; however, this has not been thoroughly verified. We study the rate of canonical syllables in naturalistic speech in a cross-linguistic sample of 129 children aged 1-72 months and show that, contrary to expectations, the rate of canonical syllables continues to substantially increase through 6 years of age, long after vocalization combinations are thought to be driven by word choice, not phonological maturity. This study shows that children's phonological development continues past traditional stages of phoneme substitution (e.g., /k/ > [t]), necessitating a rethinking of how we conceptualize and monitor phonological development.

### **How do children interpret the meaning of conditional statements?**

*Patricia A. Ganea and Myrto Grigoroglou*

Conditionals have multiple meanings: the statement “If you don’t brush your teeth, you will get cavities” is logically true when you don’t brush your teeth and get cavities (conjunction), when you brush your teeth and don’t get cavities (biconditional) and when you brush your teeth and (still) get cavities (conditional). Developmental research shows difficulties achieving all three interpretations (often persisting into adulthood), but the nature of this difficulty remains unclear. We employ a novel paradigm that enables us to investigate children’s conditional interpretations at a broader/younger age-range. Across two experiments, children aged 3-10 and adults matched an if-then statement with one of two pictures: one depicting a scenario where the conditional is false vs. one of the three scenarios where the conditional is true. Overall, our study demonstrates mature comprehension of conditionals after age 9, earlier than previously thought, but also protracted difficulties. Factors contributing to these difficulties are discussed.

### **SYMPOSIUM: Methodological advances in gaze-based measures of language understanding**

*Martin Zettersten, Michael Frank, Marisa Casillas and Daniel Swingley*

Looking-preference procedures provide one of the most data-rich experimental methodologies in language development research. These methods have been used for more than 30 years, and we believe that the development of analytical and procedural best practices is overdue. In this symposium on language-guided looking methods, we discuss optimizing data analysis, new studies based on Peekbank (an open repository of looking preference data), and considerations for deployment in the field. Our goal is to provide new observations and empirically grounded, ready-to-use suggestions for users of looking-preference methods.