

THE 48TH BOSTON UNIVERSITY CONFERENCE ON LANGUAGE DEVELOPMENT

NOVEMBER 2–5, 2023

List of Abstracts

Friday Presentations	2
Keynote Address	8
Friday Posters	9
Remote Posters	22
Saturday Presentations	24
Plenary Address	31
Saturday Posters	32
Remote Posters	46
Sunday Presentations	48
Symposium	51

FRIDAY, NOVEMBER 3

The contributions of auditory experience and spectral degradation to delays in spoken word recognition by children with cochlear implants

Christina Blomquist, Rochelle S. Newman and Jan Edwards

This study examines how auditory experience and spectral degradation contribute to delays in spoken word recognition by children with cochlear implants (CIs). Fifteen school-aged children with CIs were compared to children with typical hearing (TH) listening to clear or spectrally degraded speech, with hearing-age and chronological-age comparison groups for each listening condition.

Participants heard words while eye gaze was recorded. Target words (e.g., saddle) appeared in three conditions: 1) No-competitor trials with no phonologically similar words, 2) Cohort trials with one cohort competitor (sandwich), and 3) Contrast-cohort trials in which the competitor word had an initial consonant differing by a single phonetic feature (place or voicing), followed by a shared vowel (shadow).

Preliminary results suggest that auditory experience better accounts for observed delays in lexical access by children with CIs, while signal degradation appears to better account for differences in the dynamics of lexical competition.

Preschoolers' real-time eye movements reveal sensitivity to connective meanings during word learning

Elizabeth Swanson, Hugh Rabagliati and Alex de Carvalho

We evaluated 4- to 6-year-olds' and adults' real-time processing and comprehension of the French connectives 'alors' ('so') and 'mais' ('but') in sentences containing a novel word (e.g., "Anna had soup for lunch, [so/but] she used a bamoule"). Participants saw pairs of images side-by-side: one semantically associated with the initial context (a spoon) and one contrasting with it (a fork). Preschoolers pointed to the semantically associated image at above-chance rates for both 'but' and 'so' sentences, but looked and pointed to the associated image more in the 'so' than the 'but' condition. While previous studies based on offline measures suggested that children fail to understand the contrastive meaning of 'but' and do not distinguish between the meanings of 'but' and 'so,' our results indicate that 4- to 6-year-olds display some understanding of contrastive connectives during real-time sentence processing, although their final interpretations still do not reflect a contrastive understanding of 'but.'

Relativized Minimality in L2 revisited: Effects of L1 and tense on processing of object relative clauses

Lydia White, Vera Xia and Natália Brambatti Guzzo

Previous research shows object relative clauses (ORCs, e.g., "the musician who the waiter likes") are harder to process than subject relatives (SRCs, e.g., "the musician who likes the waiter"). However, mismatched features between the relative head and the intervening subject, such as singular vs. plural (e.g., "the musician who the waiters like"), have been shown to decrease ORC processing difficulties for child and adult native speakers. We present a self-paced reading experiment on L2 processing of English RCs, comparing speakers of Mandarin and Spanish, investigating the effect of L1 (Spanish—number marking vs. Mandarin—no number marking), verb tense (past vs. present), and featural match vs. mismatch (both singular/both plural vs. mixed singular-plural) on SRC and ORC processing. The results replicate the SRC advantage, but show no further effect of manipulation of the verb or intervenor. We conclude that intervention effects may not always be found in online L2 processing.

Audiovisual Perception of Mandarin Tones by Children with Cochlear Implants

Ping Tang, Yanan Shen, Yan Feng and Shanpeng Li

This study tested whether children with cochlear implants (CIs) could use visual cues (e.g., speakers' mouth movements) to facilitate their tonal perception in both citation form and connected speech contexts. It further explored the effect of early implantation on audiovisual integration in tonal perception. Two experiments examined the audiovisual perception of Mandarin tones in citation forms (Experiment 1) and connected speech (Experiment 2), under both quiet and noisy conditions. The results indicated that children with CIs improved their tonal recognition accuracy from audio-only (AO) to audiovisual (AV) conditions in both citation form and connected speech contexts, though such visual benefits only existed under noisy conditions. Furthermore, children who received implants earlier demonstrated a larger visual benefit in perceiving citation tones under noise. These results, for the first time, evidenced a visual benefit in tonal perception for children with CIs and an advantage in audiovisual integration with early implantation.

Effects of uncertainty on word learning in 2-year-old infants and adults

Alan Langus, Barbara Hoehle and Adamantios Gafos

Research shows that variability can facilitate as well as hinder infants' performance in word-learning tasks. Here we argue that these contradictory effects of variability can be explained by variability in the entropy (i.e., uncertainty or the overall predictability) of the learning situation. To test whether entropy has an effect on word learning, 2-year-old children and adults participated in a word learning experiment where we manipulated the entropy (i.e., uncertainty) in the familiarization phase. We show that both infants and adults learned the words, but they showed significant differences in pupil size between conditions that could only have emerged from the differences in entropy in the familiarization phase. Our results show that participants learn words better in situations that are more predictable, with information theoretic measures capturing differences in physiological and behavioral responses that may help to quantify the complexity of word learning tasks across the lifespan.

Feature reassembly in adult SLA – a bi-directional study of Spanish and English relative pronouns

Wenqi Zeng, Katherine Will and Becky Gonzalez

This bidirectional study examines the acquisition of relative pronouns (RPs) in restricted clauses in adult L2 English/L2 Spanish. Distinct L2 learning tasks result from cross-linguistic differences in the licensing of RPs, based on the interaction of the [+human] feature with syntactic role. Participants completed an elicited production task, an acceptability judgment task, a proficiency measure, and a background questionnaire. Equivalent task versions were presented in English OR Spanish (depending on the group). Production data indicate that both L2 groups accurately produce grammatical RPs in each condition and display greater individual variation than NSs. Judgment data show that L2 Spanish learners are less accurate in crucial conditions than L2 English learners. These results are consistent with the Feature Reassembly Hypothesis (Lardiere, 2009), given that the learning task for L2 Spanish is more complex due to the interaction of the [+human] feature with an object dependency.

Rapid label-referent mapping with vocoded speech in young infants

Amanda Saksida, Mireia Marimon and Alan Langus

Studies show that the speech envelope is important for speech perception in adults and infants. The role of speech envelope in speech comprehension can be observed with vocoded speech that preserves the envelope and disregards the fine structure cues. Here we investigate the perception of vocoded speech in 7-9-month-old infants with a label-referent mapping paradigm using pupillometry. We show that infants can rapidly map labels to visual referents with natural speech as well as with 16-channel vocoded speech. However, infants' performance in the label-referent mapping task deteriorates rapidly with vocoded speech synthesized with fewer channels. Our results suggest that infants rely less on envelope cues in speech comprehension than human adults and older children. Because vocoded speech simulates acoustic perception with cochlear implants, our results maybe relevant for speech perception in infants and young children who wear CIs.

Active information-seeking in support of learning extensions of novel words

Molly Cutler, Martin Zettersten and Casey Lew-Williams

A key debate in language learning centers on how people successfully learn the extension of a novel word, despite inherent ambiguity in the input. Across two studies (total N=400), we tested whether learners reduce ambiguity about a word's extension by actively sampling the environment. Adult participants were first shown ambiguous learning situations in which novel words were presented with exemplars that were drawn from a subordinate-level category (e.g., Dalmatians), a basic-level category (e.g., dogs), or a superordinate-level category (e.g., animals). Learners then had the opportunity to sample the label of additional exemplars. Participants adapted their sampling choices as a function of training. Moreover, participants varied in their sampling strategies, pursuing both confirmatory strategies (selecting exemplars similar to the training set) and constraining strategies (selecting exemplars that constrain the word's extension). Overall, these findings show that learners spontaneously pursue sampling strategies that support generalizing novel word meanings.

Uncovering Cross-linguistic Morphosyntactic Transfer in Second Language Learning

Zoey Liu, Emily Prud'hommeaux and Joshua K. Hartshorne

Prior studies on morphosyntactic transfer from L1 to L2 have targeted narrowly-defined phenomena and a few language pairs, making it unclear whether and which morphosyntactic features are consistently transferred independent of L1-L2 pair. This study addresses these limitations by using machine learning to identify consistent patterns of transfer (if any) in L2 morphosyntax across 275 L1-L2 pairs. If transfer effects exist, they should allow one to distinguish writing in L2 produced by speakers with different L1 backgrounds. We first trained statistical classifiers to predict L1s using POS tags and syntactic dependencies of combined L2 data; the classifiers achieving much better performance than several baselines confirmed there is morphosyntactic transfer across L1-L2 pairs. We then designed a rich set of hand-curated morphosyntactic features for L1 classification. Results demonstrated strong transfer effects for certain auxiliary/lexical verb morphological features; meanwhile the average clausal length is among the least affected.

Investigating infants' sensitivity to the shape of prosodic contours

Jessica Gemignani, Caterina Marino, Anna Martinez Alvarez and Judit Gervain

Prosody is the fundamental organizing principle of spoken language, but how early does the sensitivity to different shapes of prosodic contours remains unclear. In this study, two experiments were carried out to address this question. In the first experiment, newborns prenatally exposed to French were presented with French sentences having standard and deviant prosodic contours, with deviant contours obtained by time-reversing the standard ones. In the second experiment, the French material was presented to newborns prenatally exposed to Italian, a language with similarities to French but different prominence. In both, infants' brain responses were measured with fNIRS. Permutation tests revealed a cluster of channels in the right hemisphere in which brain responses significantly differed between the two conditions for the French group, but not for the Italian. These results contribute to a better understanding of the role of prenatal experience on the early sensitivity to shapes of prosodic contours.

Word Learning through Pragmatic Inference in Children with Autism: a Web-Based Eye-Tracking Study

Katherine Trice, Angelina DiNardo and Zhenghan Qi

As there is a correlation between a memory advantage for pragmatically inferred words and social-cognitive skills, and atypical social cognition is central to autism, we examined how autistic children encode and retrieve novel words in a pragmatic-inferential vs. direct-mapping context relative to typically developing (TD) peers. 34 6-to-9-year-old autistic children and 34 TD children learned eight novel words – four in the direct mapping condition, which could be uniquely mapped to one novel object, and four in the inference condition, required children to assume that the speaker intends to be informative to correctly map the word. We found that autistic children can successfully resolve these pragmatic inferences but perform significantly worse during immediate recall and show no memory advantage for pragmatic inference in retention. However, autistic children show a lack of memory decay, which may serve as a protective mechanism in the face of reduced facilitation from socially-engaged learning situations.

Reconsidering the Semantic Subset Principle: Japanese children do have wide scope of disjunction under negation

Tetsuya Sano, Akari Ohba, Mayuko Yusa and Kamil Deen

Goro & Akiba (2004, GA2004) famously showed that Japanese children interpret disjunction 'ka' under negation (1, neg-OR) conjunctively – an option available to English speakers, but not to Japanese adults. In this paper, we show GA2004 (and others) failed to consider inferential factors of the context, and when controlled for, Japanese children indeed evince the disjunctive reading from early ages. We propose a new mechanism for how they do this, despite scarce positive evidence: The Hierarchical Uniformity Principle, whereby Japanese children acquire disjunction ka as +PPI when they notice that ka is also used as a question marker (hierarchically higher than negation), or that ka becomes a +PPI some when combined with a wh-phrase (also higher than negation, since *not>some).

Coverbal speech gestures do not impact preschoolers' ability to use prosodic information to constrain parsing

Elodie Charpentier, Leticia Schiavon Kolberg and Alex de Carvalho

Recent studies demonstrate that coverbal speech gestures, such as eyebrow movements and head nods, align with prosodic boundaries in speech. However, it remains unclear whether coverbal speech gestures impact listeners' ability to use prosody to constrain parsing. In a sentence-completion task, we tested French preschoolers' ability to constrain their interpretation of homophones (e.g., ferme, meaning either the noun "farm" or the verb "close" depending on the prosodic/syntactic structure of the sentences), presented either in audio-visual modality (through a video of the speaker uttering the sentences) or in audio-only modality. The results revealed that in both modalities, children successfully exploited the sentence's prosodic structure to assign the appropriate syntactic category to the target word. However, there was no significant difference in performance between the audio-only and audio-visual modalities. This suggests that the presence of coverbal speech gestures does not impact children's ability to use prosodic information to constrain parsing.

Accurate, but not flexible? Perceptual learning of receptive prosody in autistic adolescents

Chigusa Kurumada, Rachel Rivera, Paul Allen and Loisa Bennetto

Autistic children and adolescents often have difficulty recognizing the linguistic and affective meaning of speech prosody. One possible, yet underexplored, reason for these challenges may be the phonetic variability present in everyday speech. Even seemingly straightforward distinctions (e.g., question vs. statement) exhibit substantial variability due to physiological and socio-indexical characteristics, such as the talker's height, gender, age, and accent/dialect. This study investigates the new hypothesis that autistic adolescents may be slower in adapting to the differences as compared to neurotypical, age-matched controls. 48 subjects (aged 12-17, 50% autistic) participated in a discrimination and an adaptation experiments. The results suggest that autistic adolescents are as accurate as NT controls in discriminating between subtle prosodic variations. However, they were significantly less likely to adapt to the characteristics of the current speaker's speech prosody. This finding provides novel insight into perceptual and neural causes of difficulties in everyday linguistic communication in autistic individuals.

Emergent syntactic categories and increasing granularity: evidence from a multilingual corpus study

Núria Bosch and Theresa Biberauer

This paper summarises a multilingual corpus study of 10 children in the CHILDES database across 5 languages (Catalan, Italian, Spanish, German and Dutch). It focuses on the acquisition of the CP- and 'Split CP'-domains. We present two key generalisations which, we argue, are incompatible with contemporary theories of syntactic development postulating universal categorial sequences of fixed (cartographic) granularity (e.g., Friedmann et al., 2021; Westergaard, 2009): whilst CP-structures emerge very early, further CP-internal elaboration (a Split CP-domain) systematically emerges late. We propose that these findings reflect the predictions of so-called neo-emergentist generative approaches, which adopt emergent categories and allow for changes in categorial granularity: Biberauer & Roberts' (2015) emergent categorial hierarchy suggests early grammars feature a 'basic/macro-level CP which is subsequently refined into finer-grained, potentially (part-)cartographic micro-level CP-structure. The current study points to the plausibility of several key neo-emergentist expectations, which do not arise on other accounts.

Pitch and repetition in bilingual infant-directed speech

Andrea Ramirez Barajas, Michelle Cohn and Katharine Graf Estes

The goal of this research is to understand how bilingual parents adjust their speech when addressing their infants. We examine prosodic characteristics of IDS and ADS by Spanish-English bilingual and English-speaking monolingual parents. We found that bilingual and monolingual parents made similar acoustic adjustments in pitch during IDS. While both parent groups produced higher pitch in IDS than ADS, bilinguals exaggerated IDS pitch more in English than in Spanish. We also examined how parents adjust pitch across nearby word repetitions. For bilinguals, pitch in IDS was consistent across repeated labels for the same object in a single language or across languages; in ADS pitch decreased across repetitions. Thus, parents did not use pitch to emphasize language changes, contrary to predictions. Our results suggest that bilingual parents adjust pitch in IDS similarly to English-speaking monolinguals and bilinguals exhibit similar prosodic characteristics in both of their languages.

The influence of social and non-social language input on autistic children's language learning

Krisya Louie, Heeju Hwang, Carol K. S. To, Chui Yin Ng and Jean Ng

Previous research suggests that autistic children can learn language through exposure to non-social language input. This raises the possibility that non-socially mediated language input may play an equally important or a more dominant role than socially mediated input in autistic children's language learning. We tested this possibility by measuring the extent to which Cantonese-speaking autistic children adapted their syntactic choices in human-mediated syntactic priming (HP) and computer interaction-mediated syntactic priming (CP). We found that autistic children dynamically adjusted their use of syntactic structures in response to both social and non-social language input. Crucially, autistic children showed greater priming in CP than HP. These findings provide the first evidence that autistic children may be less sensitive to social language input than non-social input, suggesting that socially driven processes may play a relatively minor role in their language use and learning.

Negated disjunction in (native and) nonnative Korean

Youngin Lee and Bonnie D. Schwartz

The interpretation of negated disjunction (e.g., THE PIG DIDN'T EAT THE CARROT OR THE PEPPER) varies cross-linguistically (Szabolsci, 2002). For instance, negation scopes over disjunction (NOT>OR) in English ("The pig ate neither"), whereas disjunction scopes over negation (OR>NOT) in Japanese ("The pig ate either, but not both"). O'Grady, Lee, and Lee (2011) found that Korean native speakers appear to allow both interpretations, although NEG>OR predominated. Addressing methodological concerns in that research (e.g., pragmatic infelicity), this L2 study on Korean negated disjunction employs a modified TVJT with two critical conditions (NOT>OR story vs. OR>NOT story), presenting stimuli bimodally (aural-written) in future tense. Results to date show (a) L1-Korean controls sharply differentiate between the two interpretations, allowing OR>NOT rarely (compared to 30% of the time in O'Grady et al.) and (b) L2 groups vary by L1, with the OR>NOT acceptance rate low for the L1-English group but high for the L1-Japanese group.

*Acquisition of *ABA paradigms in a child Artificial Language Learning Experiment*

Giovanni Roversi, Kate Kinnaird and Athulya Aravind

Across the world's languages, only certain types of linguistic patterns are attested, while other, equally logically possible patterns appear to be non-existent. Are these gaps accidental or do they in fact reflect biases in our linguistic system? We bring developmental data to bear on this issue. As a concrete case study, we examine irregular adjectival degree paradigms. For example, English has adjectives like good-better-best, and other types of irregular paradigms are known from other languages, but no language seems to have paradigms that would look like good-better-goodest. We designed an Artificial Language Learning study to determine whether unattested adjectival paradigms are in fact harder to learn than attested ones. Our preliminary results indicate that children indeed find the unattested paradigms harder to learn than the attested ones. This brings suggestive evidence to the idea that language learning might be constrained in such a way that excludes these paradigms.

Touching to learn: How number of sensory cues impacts word learning

Amanda Seidl, Michelle Indarjit and Arielle Borovsky

Infants experience language in multisensory environments. For example, an infant may first be exposed to the word applesauce while touching, tasting, smelling, and seeing applesauce. In three experiments using distinct methods we asked whether the number of distinct senses linked with the semantic features of objects impacts toddlers' word recognition and learning. Results converge to support an account in which richer multisensory experiences better support word learning and recognition. We discuss two pathways through which rich multisensory experiences might support word learning.

How flexible are grammars past puberty? Evidence from Turkish-American returnees

Aylin Coskun Kunduz and Silvina Montrul

How flexible are grammars after puberty? To answer this, we test returnees: heritage speakers (HSs) born in an immigration context who returned to their homeland in later years. If returnees are target-like, then language is still nimble post-puberty; in contrast, if maturational effects are in play, post-puberty returnees would show variability. Twenty-five Turkish-American returnees, 15 Turkish HSs in the US and 11 monolinguals completed an Acceptability Judgement Task and a Sentence Repetition Task on three vulnerable structures in Turkish HSs: passives, relative clauses and anaphora. Results showed that i) returnees patterned with monolinguals who significantly outperformed HSs in both tasks, and ii) correlations between accuracy, age of return to Turkey and length of residence in Turkey of returnees were not significant. This suggests that complex morphosyntax is malleable post-puberty. These findings provide a unique angle on the roles of age and input factors in bilingual language acquisition and maintenance.

Corpus-based assessment of cues to thematic role assignment in German and Russian

Yevheniy Skyra, Rowena Garcia, Evan Kidd and Natalia Gagarina

Languages use a variety of linguistic features to mark thematic roles (e.g., case, word order), and children must acquire them from their input. Even though two languages may have the same typological means for signifying thematic roles (e.g., case marking), there is inevitable language-specific variation in the reliability of cues in the input. The current research investigates this problem in two languages: German and Russian. We analyzed German and Russian child-adult conversations using conditional inference trees and random forests to investigate which linguistic information is available to children to assign thematic roles. Our results showed that word order is the most reliable cue to thematic role assignment in German, even though it is a case marking language. In Russian case outranked word order. Our findings suggest that input distributions play a role in the creation of form-meaning mappings.

Natural dynamics of caregiver-child affect relate to communication and children's word knowledge

Mira Nencheva and Casey Lew-Williams

Children learn language in the context of rich social interactions that unfold in parallel with continuous emotional experiences. This investigation aims to understand how affect fluctuations relate to caregiver-child communication and children's word knowledge, using a corpus of multi-day LENA recordings and intermittent ratings of affect (24-30mo; N=25).

Children were more likely to know words that they hear more often in positive or high-arousal contexts. These moments were also associated with more dense communication (compared to negative, low-arousal moments). The amount of turn-taking surrounding word tokens partially mediated the relation between affect and word knowledge. Therefore, moments of positive valence or high arousal may support word learning in part by supporting mutually engaging communication.

This investigation expands the definition of word-learning contexts to include affective states and associated communicative behaviors. Together, these studies underscore the value of looking beyond linguistic communication to understand how children learn language.

The Effect of L2 Age of Acquisition on L3 Regressive Transfer: Testing the Differential Stability Hypothesis

Joonhee Kim and Kitaek Kim

This study examined the effect of L2 age of acquisition (AoA) with a focus on the Korean-English L2 group and the Korean-English-Spanish L3 group in relation to their interpretation of English bare and definite plural noun phrases (NPs). The aim was to test the Differential Stability Hypothesis (DSH, Cabrelli Amaro, 2017). According to the DSH, there are fundamental differences in language stability between L1 and L2, with only the language system acquired after the age of 12 being affected by L3 influence. The L3 participants in this study, with advanced L2 proficiency and L2 AoA under 12, were expected not to demonstrate L3 regressive transfer by the DSH. Contra the DSH, the experimental results of an English truth-value judgment task revealed the presence of L3 regressive transfer in the bare plurals condition. Therefore, the DSH's claim of a L2 AoA threshold of 12 in predicting language stability cannot be supported.

On the (non-)relation between perceived acceptability and production of L2 English subject relative clauses

Fred Zenker and Bonnie D. Schwartz

L2ers sometimes produce relative clauses (RCs) of the 'resumptive' type (e.g., *THE MAN THAT MARY THINKS HE PANICKED), even when disallowed in both L1 and target language. This L2 English study uses an oral elicited production task (EPT) and an acceptability judgment task (AJT) to test Hylltenstam's (1984) speculation that L2 production of resumptive RCs is tied to perceived acceptability. Critical stimuli target subject RCs (SRCs) in three increasingly complex environments: short-distance/long-distance/WH-island. Sixty-one L1-English controls, 66 L1-Korean L2ers, and 73 L1-Mandarin L2ers completed both tasks and an English proficiency C-test; L2ers additionally undertook closely-translated L1 AJTs. In the EPT, rates of resumptive-RC responses increased with rising structural complexity for all groups, even after individuals who consistently accepted resumptive-RC trials in the English AJT were excluded. These results indicate resumption facilitates production of difficult-to-process L1/L2 English SRCs and challenge Hylltenstam's speculation that L2 production of resumptive RCs depends upon their acceptability.

Syntactic and referential cues independently inform verb meaning while referential cues trump syntax when in conflict

Yiran Chen, Alexander LaTourrette and John Trueswell

Early word-learning opportunities are often highly ambiguous, with this problem being especially difficult for verbs. While a verb's syntax can help to identify the referent event from the environment, learners still need to contend with the temporal and spatial misalignment between verbs and their referent events. Although children are shown to use syntax to infer verb meaning on subsequent day when there is no referent, it remains unclear what role syntax plays in verb learning across exposures in tandem with referential information. With three adult word-learning experiments, we showed that while syntax independently informed verb meaning in the absence of referents, it did not additionally constrain subsequent mappings when a referent was present. These results reveal both the power of syntax in cross-situational verb-learning—persisting across exposures—and its limitations—failing to supersede co-present referents.

Sensitivity to animacy information in 3rd person plural agreement in L2 Turkish

Munir Ozturhan, Alison Gabriele and Robert Fiorentino

In Turkish, 3rd person plural agreement becomes optional depending on the animacy of the subject. Animate plural subjects can take both plural-marked and singular verbs, but inanimate plural subjects are restricted to singular verbs. We examine whether English-speaking and Persian-speaking L2 learners of Turkish are sensitive to how animacy impacts 3rd person plural agreement, and how transfer and L2 proficiency modulate learners' judgments within the framework of the Feature Reassembly Hypothesis.

Overall, L2 learners did not show the animacy asymmetry for 3rd person plural agreement observed in native speakers. English-speaking learners with higher proficiency seemed to learn singular verbs can be used with animate plural subjects but showed no difference between singular and plural verbs for inanimate plural subjects. Persian-speaking learners showed transfer effects yielding patterns in Turkish that would be predicted for Persian. These results suggest feature reassembly in the L2 may be particularly difficult for features showing optionality.

KEYNOTE ADDRESS: Embodied and Embedded Word Learning: The Active Infant in a Social & Physical World

Dr. Catherine Tamis-LeMonda

The study of infant language development continues to inspire lively theoretical debate about early learning processes. Are infants endowed with core capacities that guide learning? Do they build knowledge from the bottom up? Do environments present infants with sufficient regularities that allow babies to connect word to world? Grounded in a developmental systems approach, I highlight the embodied and embedded nature of infant word learning. Learning is embodied in that the exuberant infant serendipitously generates immense amounts of varied, time-distributed practice across behavioral domains. Learning is embedded in that infants' behaviors elicit responses from caregivers that are temporally aligned with the objects of infant touch and the specific actions that infants produce. And infant-caregiver interactions unfold in a physical environment filled with regularities at many levels—as seen in the tight connection between speech input and the activities, spaces, and artifacts of everyday life. I present studies that reveal how moment-to-moment feedback loops generated by the active infant, the salience of caregiver response, and the predictability of environmental context propel word learning. I conclude with the importance of studying infant learning in ecologically valid settings to preserve and document the richness of behaviors over time and space.

FRIDAY, NOVEMBER 3: POSTERS

Group 1: Sign language acquisition

The role of ASL handshape classifiers in visual spatial skill development: A comparative analysis

Melody Schwenk and Lorna C. Quandt

Deaf and Hard-of-Hearing (DHH) people benefit from early exposure to American Sign Language (ASL). This study examines the use of ASL classifiers, early exposure, visual-spatial skills, and fluency in ASL. Using ASL handshape classifiers, which convey spatial information in ASL, this study examines the relationship between fluency and ASL acquisition age (AoA). This study used Vandenberg-Kuse Mental Rotation Tests (VKMRT), ASL Comprehension Tests (ASLCTs), and Block Design Subtests (BD). Handshape classifiers were spontaneously generated during VKMRT and BD tasks and coded. On VKMRT and BD tasks, classifiers (Bent3, BentL, Bent5, FlatO, and G) significantly improved performance. Classifiers overall significantly predicted spatial cognition tasks, depending on hearing status. Visual-spatial abilities of DHH signers were significantly enhanced by ASL classifiers, demonstrating their vital role in supporting these abilities. Deaf individuals' spatial cognition has been demonstrated by these findings, which highlight the relationship between movement, language, and cognition.

Profile of a Family's Bimodal Bilingual Development

Deborah Chen Pichler, Mary Cecilia Conte, Patrice Creamer, Martin Dale-Hench, Elaine Gale, Linghui Gan, Corina Goodwin, Shengyun Gu, Kaj Kraus, Chui-Yi Margaret Lee, Diane Lillo-Martin, Jeffrey Palmer, Bettie Petersen and Meghan Shaw

We provide the profile of one family's journey to bimodal bilingualism with their profoundly deaf child, 'Holly'. Holly's mother began to learn ASL and use it with Holly before they joined our study at 2;00. Holly developed in both ASL and English over the year of our observation, with vocabulary an area of particular strength. In ASL, her phonological accuracy increased from 69% to 86%. Analysis of English spontaneous speech put her performance in the same range as that of deaf and hearing children with deaf parents. Mother's ASL was already strong to begin with, and improved over the year, especially in phonology and syntax. Overall, this case study supports the conclusion that early access to ASL for deaf children from hearing parents can lead to successful bimodal bilingualism.

The impact of early sign language exposure on statistical learning in deaf and hard of hearing children

Anne Wienholz, Daniela Schönberger, Nele Jonasson, Rebecca Püppke, Isabella Buckenmaier, Brigitte Röder and Barbara Hänel-Faulhaber

Statistical learning has been described to be an essential part of language learning in children. Recent studies suggested that sign language exposure is an important determinant of sequence processing abilities in deaf and hard-of-hearing (DHH) children. In the present study, we investigated SL and the impact of AoA using a visual artificial grammar task (Schönberger et al., 2021), which allowed investigating transfer abilities as well. Additionally, we examined the impact of age of acquisition and the children's ability to transfer learned rules. Our study demonstrates that DHH children show effects of statistical learning when using artificial grammar and that learning and transfer abilities are affected by AoA. Thus, early language access seems to promote efficient statistical learning.

Age of acquisition effects in zero-anaphora comprehension in Turkish Sign Language

Hande Sevgi and Kadir Gökgöz

Late exposure to first language has effects on linguistic and cognitive skills. In this study, we investigate the comprehension of zero-anaphora in native and late Deaf adult Turkish Sign Language signers to understand their reference-tracking strategies in the absence of morphological cues and see if there are differences between these groups. The results of the task conducted with 32 participants (16native-16late) emphasize the impact of acquisition age on zero-anaphora comprehension in TID, revealing distinctive strategies employed by native and late-signers ($p < 0.05$ (0.01310)). The position of the intransitive clause has significant effect on responses ($p < 0.01$ (0.00807)), while thematic role did not show significance. As a follow-up, we focused on the response times of the native signers, which indicate that native signers demonstrate a strategy based on linear proximity to zero-anaphora, suggesting the influence of memory effects on retrieval. This study highlights the impact of delayed first language acquisition in syntax/semantics/pragmatics interface.

Group 2: Bilingual language learning

Charting the Impact of Environmental Transitions on Young Bilinguals' Language Exposure

Tanya Glowacki, Laia Fibla and Krista Byers-Heinlein

Bilingual children need regular exposure to their languages to become proficient in them. However, early exposure is highly variable and can change over time and across contexts. This study investigates transitions – changes in children's early environments – and how they influence bilingual language exposure longitudinally. We measured environmental changes and language exposure in 53 Montreal French-English bilingual children between birth and 30 months of age, through caregiver interviews. Transitions were common, with high individual variability among children. Most transitions did not lead to changes in exposure dominance. However, with age, children experienced more changes that led to more balanced language exposure and transitions related to language strategy led to larger changes in overall exposure. These findings shed light on how environmental variability affects early bilingual exposure and what factors play a larger role, setting the path for future work looking at these changes in relation to bilingual language development.

Phonological and Semantic Consolidation of Novel Words in Monolingual and Bilingual Children

Caitlyn Slawny, Margarethe McDonald and Margarita Kaushanskaya

Children must consolidate newly learned words within their lexical-semantic system, and in monolingual children, consolidation of novel words is known to require time and sleep. Yet, little is known about how bilingual children consolidate information. In line with the complementary learning systems framework, we expected children to consolidate novel words over time. In line with weaker-links account of bilingualism, we predicted that bilinguals might show weaker consolidation. Thirty-four monolingual children (Experiment 1) and 17 bilingual children (Experiment 2) learned English-like novel words. Phonological and semantic consolidation of newly-learned novel words were tested immediately after learning and after a 24-hour delay, via co-activation between newly-learned and familiar words. Monolinguals demonstrated semantic but not phonological consolidation immediately following learning. In contrast to the weaker-links hypothesis, bilinguals demonstrated phonological consolidation immediately following learning and semantic co-activation a day later. These findings suggest that bilingualism shapes within-language phonological and semantic consolidation.

Relational abstraction in early childhood: Rhetorical questions in bilingual acquisition: optionality at the syntax-discourse interface

Maria Ferin, Miriam Geiss, Theodoros Marinis and Tanja Kupisch

We address the bilingual acquisition of optional lexical-syntactic markers with a pragmatic function, such as discourse particles, focusing on the modification of rhetorical questions (RhQs) by heritage acquirers of Italian. The topic offers a novel perspective on bilingual acquisition, as it concerns not core grammar, but the ability to appropriately exploit optional cues to achieve a desired pragmatic meaning, signalling attitude and/or discourse function. We conducted an elicitation study with 88 Italian-German bilinguals and 80 monolingual controls (age range: 6.0-10.2). Quantitatively, bilingual children used fewer markers to modify RhQs, with a strong effect of dominance. Only monolinguals, and not bilinguals showed an increased rate of modification with increasing age. Qualitatively, bilingual children exploited the same types of cues as monolinguals, with, additionally, a few cases of lexical transfer from German. Thus, bilingual children can use the optional pragmatic markers of their heritage language in RhQs, especially if receiving higher exposure.

Contrastive Neural Network Reveals the Structure of Neuroanatomical Variation within Bilingualism

Wei Li, Aidas Aglinskas and Joshua K. Hartshorne

The relationship between age of acquisition, linguistic proficiency, and brain structure in language acquisition research is significant. Previous studies remain inconclusive with variability of cortical, subcortical, or cerebellar grey matters reported, due to confounding factors brought by individual differences unrelated to bilingualism, such as, age and sex (Pliatsikas et al, 2020). Our goal is to disentangle bilingual-specific neuroanatomical variation from the common variation. To achieve this, we trained a neural network called Contrastive Variational Autoencoder (CVAE). Based on traditional Variational Autoencoders (VAEs) that learn a compressed latent representation, CVAE incorporates contrastive learning. This enables successful learning of representations by contrasting pairs from the two distinct populations, thereby isolating the variations specific to one population from the shared variations (Aglinskas et al., 2022). With a training dataset includes over 2,000 brain images, we found the common variation shared by two populations can be consistently captured by CVAE.

Group 3: DLD/Language Delay

Comprehension and production of relative clauses by Mandarin-speaking children with and without developmental language disorder

Shenai Hu, Lin Zhong, Shaowei Li and Maria Teresa Guasti

This study investigates the comprehension and production of subject and object relative clauses (RCs) by Mandarin-speaking children with DLD and their typically developing (TD) peers. Fifty-six children aged from 03:08 to 08:07 were tested with a comprehension task, a production task, and a forward digit span (FDS) and a backward digit span (BDS) task. The DLD children performed better on the comprehension task than on the production task, whereas the TD children did not show significant difference between two tasks. In addition, the DLD children performed much worse than their TD counterparts in RC acquisition, and these children showed different patterns in comprehension and production. The BDS correlated with DLD children's RC acquisition, while both FDS and BDS correlated with TD children's performance. The results are discussed within current theories of DLD and indicate structural intervention and linear intervention have a great impact on Mandarin-speaking DLD children' RC acquisition.

German LITMUS sentence-repetition task as a screening tool for the identification of SLI in bilingual children in Germany: The role of syntactic complexity and working memory

Lina Abed Ibrahim and Cornelia Hamann

This study investigates the interaction between syntactic complexity, working memory (WM) and repetition accuracy on the German LITMUS-sentence-repetition-task in 106 monolingual and bilingual children with/out SLI. Repetition accuracy decreased as a function of cumulative syntactic complexity with larger effect sizes in the SLI groups. No associations with WM emerged for the SLI groups due to the lack of inter-individual variability in the digit recall data. Performance of MoTDs on less complex structures was predicted by vocabulary, whereas BiTDs relied on both verbal-short-term-memory and L2-vocabulary, probably compensating for their weaker (L2-)language abilities by resorting to their intact WM capacities. Interestingly, performance on structurally more complex structures was only predicted by verbal-short-term-memory in both TD groups confirming that processing of computationally more complex structures necessitates more WM capacities. The findings are relevant not only for theories of SLI, but also for shortening/ameliorating the task and ensuring best diagnostic accuracy in bilingual populations.

Do siblings of autistic children who do not receive a diagnosis of autism show typical language development trajectories?

Marielle Weyland, Pauline Maes and Mikhail Kissine

Early (pre)verbal productions and description of language trajectories in autism are often investigated by following the siblings of autistic children who have a Higher Likelihood of having Autism Spectrum Disorder (HL-ASD). HL-ASD children who do not receive a diagnosis of ASD are also at high risk of displaying language and communicational disabilities. To compare the early (pre)linguistic development of HL-ASD children who were diagnosed with autism versus those who were not, we analyzed association between canonical babbling volubility and consonant inventory at 18 months and diagnostic outcome, expressive vocabulary, nonverbal IQ at 36 months. Overall, we found no association between diagnostic outcome groups and measures at 36 months. Siblings of autistic children who themselves receive a diagnosis and those who do not all show weaknesses in language development and seem, over this period, to follow similar language trajectories overall.

Quantity and Quality: function word acquisition in children ages 13 to 36 months with hearing loss

Alexa Kondas, Hazel Cho, Abby Motley and Yun Kim

Function word acquisition is crucial for early language development, aiding in grammatical structure, word class acquisition, and word segmentation. Few studies have been done on the function word acquisition in atypically developing populations, particularly those with hearing loss. The current study analyzes the development of "a" and "the" articles in hearing loss populations utilizing the Ambrose corpus on CHILDES database. Our results show a significant delay in the production of "a" but not "the" in children with hearing loss, with the delay disappearing at 36 months. HL parents' use of "thi" may explain the increased production of "the" in the HL population. Children with cochlear implants had a delayed production of both "a" and "the," but by 36 months the production of "the" is no longer delayed. The study highlights the importance of input quality in hearing loss population's function word acquisition and the need for further research.

Group 4: Computational modeling

The structure of language to young children promotes distributional learning of atomic and static lexical representations

Philip A. Huebner and Jon Willits

This study investigates distributional language learning in neural networks when given child-directed speech, with a focus on semantic representations for words. Our simulations reveal a propensity in these models to form 'entangled' representations due to the statistics and forward-predictive nature of language, potentially impeding lexical inference. However, we also propose that the structure of child-directed speech can mitigate this entanglement by fostering more 'atomic' lexical representations, because speech to younger children facilitates category learning. We test this hypothesis in a set of simulations using artificial languages and the CHILDES corpus, showing models trained on language that starts out mimicking speech to younger children perform best. Our results underscore the significance of studying architecture-input interactions and the value of developmentally plausible language models. The study contributes to our understanding of how child-directed language structure may facilitate learning, mitigating risks associated with entangled representations.

I forgot but it's okay: Learning about island constraints under child-like memory constraints

Niels Dickson, Lisa Pearl and Richard Futrell

One type of complex syntactic knowledge children acquire concerns constraints on allowed wh-dependencies, sometimes called syntactic island constraints (Ross, 1967). Past computational cognitive modeling work (Dickson et al., 2022) has investigated how children might acquire this knowledge, and found that knowledge of syntactic island constraints can emerge automatically from learners who try to identify an efficient representation of the wh-dependencies in their input in general. Notably, this prior work assumed an idealized representation of children's input, with perfect memory of the wh-dependencies. Here, we investigate how this learning strategy fares with an imperfect, noisy representation of the input that may better reflect the impact of children's cognitive constraints on their input processing. We find that even highly-forgetful modeled learners are able to succeed, generating many observed empirical patterns about syntactic island knowledge. Our findings support the plausibility of this efficient-representation learning strategy by children, who have memory limitations.

A learning-based account of non-productivity in Dutch voicing alternations

Caleb Belth

A phonotactic restriction against syllable-final voiced obstruents in Dutch manifests in voicing alternations in some noun paradigms. For instance, in [bet] "bed" ~ [bedən] "beds" the stem-final obstruent is voiced in the plural, but unvoiced in the singular, where it occurs in syllable-final position. In other paradigms, the obstruent is voiceless throughout—e.g., [pet] "cap" ~ [petən] "caps". Alternating obstruents are often analyzed as being underlyingly voiced. However, despite children showing productive knowledge of many morphophonological processes, Dutch-learning children show no evidence of productive knowledge of the voicing alternation at 2;6-3;6, struggling to produce or interpret the singular form of alternating nonce nouns compared to non-alternating ones. We propose a learning-based explanation for this lack of productivity by applying a cognitively-motivated computational model to child-directed speech. The results suggest Dutch-learning children may lack this productive knowledge because they are able to form effective morphological generalizations without it.

Modelling the distributional learning of verb argument structure

Daoxin Li

Distributional learning mechanisms are important for language acquisition. But what are the units over which distributional learning operates? Claims about distributional learning mechanisms rest on which units are being used. To address this issue, we conducted two studies: (1) predicting child vocabulary data using statistics derived from child-directed speech, and (2) employing distributional semantic models built from child-directed speech to predict semantic category development. Critically, in both studies we manipulated the corpus used to calculate distributional statistics, varying whether words were left whole, or morphologically parsed with inflectional morphemes (e.g., -s, -y, -ed, and -ing) retained as distinct units in the corpus. Our findings consistently demonstrated that models performed significantly better when the inflectionally parsed corpus was used. These studies highlight the importance of considering what units are being used in distributional learning, and demonstrate the importance of sublexical morpheme-level units in the distributional learning of word meanings.

Group 5: Morpho-syntax in L2 learning

Task effects in the integration of plural marking in L2-English

Tania Ionin, Amy Atiles, Chae Eun Lee and Mien-Jen Wu

This paper examines the comprehension of both singular and plural NPs by adult L2-English learners whose L1, Mandarin Chinese, does not have obligatory plural marking. In Study 1, participants judged sentences as TRUE/FALSE on the basis of number (mis)matches. In Study 2 (modeled after Jiang et al. 2017), participants judged sentences as TRUE/FALSE on the basis of the spatial configuration, but number (mis)matches were also manipulated. Study 1 findings were that L2ers do pay attention to number, albeit with less accuracy than NSs; when the response was based on physical configuration (Study2), L2ers largely ignored number (mis)matches, unlike NSs. While Jiang et al. argue that L1-Mandarin L2-English learners lack automaticity with English plural marking, we suggest that the issue is more about task demands: L2ers can use plural marking to guide comprehension, but limitations on working-memory capacity make it difficult to take in multiple sources of information.

Interpretation and processing of negatively quantified sentences: A bidirectional study of learners of English and Chinese

Shaohua Fang and Alan Juffs

English and Chinese exhibit different interpretations for the sentence 'Every horse didn't jump over the fence.' This cross-linguistic variation poses challenges for L2 learners, particularly English learners of Chinese (ELC) who must acquire the absence of the inverse scope reading in Chinese, not present in their native English. Chinese learners of English (CLE), on the other hand, may find it easier to acquire scope interpretation due to positive evidence in the L2 input. Two experiments were conducted with 64 CLE and ELC. Results revealed that ELC rated the IS reading significantly higher than Chinese speakers, while CLE showed marginal differences compared to English speakers. Eye-tracking data indicated similar patterns. Bayesian analyses confirmed the marginal significances, supporting no significant differences across conditions. Overall, CLE and ELC achieved similar levels of success in native-like interpretations. The difference in interpretation performance between the TVJT and eye-tracking tasks can be attributed to task effects.

The acquisition of the periphrastic and se-passives in L2 Spanish: A priming and acceptability task investigation

Erin Mauffray and Victoria Mateu

This study investigates the effects of construction frequency in the L2 and transfer from the L1 in the acquisition of the periphrastic and se-passives in L2 Spanish. The two constructions differ in that the periphrastic passive, but not the se-passive, has an analogous structure in English, and the se-passive is at least eight times more frequent than the periphrastic passive in Spanish. We ask: How accessible are periphrastic and se-passives for L2ers in production? And do L2ers' productions reflect target-like representations of these structures? Preliminary results from our priming task show that both L2ers and native speakers produce a comparable number of passives in both immediate and delayed priming. However, results from the AJT reveal non-target-like performance by L2ers on se-passives. This is the first study to test both passive constructions, offering insight into the particular abilities of L2ers, and highlighting the importance of using multiple methodologies.

Syntactic or semantic sensitivity? Predictive aural processing of Mandarin garden-path sentences by L1, L2, and heritage speakers

Vanessa Sheu and Elaine J. Francis

Previous studies suggest L1 and L2 speakers of English use different real-time strategies to interpret garden-path sentences. Specifically, L1 speakers show a weaker garden-path effect when the initial misleading reading is implausible, whereas L2 speakers do not. The current study extends this line of research to a new language (Mandarin) and a new population of bilingual speakers (heritage speakers). We report the results of a self-paced listening task in which plausible and implausible garden-path sentences were presented to L1, L2, and heritage speakers of Mandarin. Preliminary results from 42 participants (30 L1, 12 heritage) showed that L1 speakers responded faster after the disambiguation point in implausible vs. plausible sentences. In contrast, heritage speakers showed no differences at the disambiguation point but slower RTs at the preceding plausibility cue in implausible sentences. This suggests that heritage speakers noticed the semantic cues but did not integrate them into online syntactic prediction.

Group 6: Social context of word learning

How does shared book reading support language development? Evidence from a dual head-mounted eye-tracking study

Yayun Zhang, Caroline Rowland and Chen Yu

The extra-textual talk generated during shared book reading has been found to contain a high level of structurally rich linguistic construction. However, it is unclear how toddlers process the diverse linguistic input and how additional extralinguistic cues, such as gestures, work together with linguistic input in this learning process. We conducted a dual head-mounted eye-tracking study to investigate how shared book reading may support toddlers' learning of word-referent mappings during book-reading interactions. We found that toddlers are constantly exposed to a mixture of simple and complex utterances regardless of gesture use. Although gestures do not change parents' speech complexity, they successfully drive the child's attention to the named referent. Our findings suggest that shared book reading provides toddlers with a linguistically diverse language training ground. Gestures provide learners an easier pathway to associate the word with its referent, which is likely to facilitate real-time language comprehension.

Adults, but not 3-year-olds, use prior linguistic context to inform subsequent noun mappings

Alexander LaTourrette, Charles Yang and John Trueswell

Children's earliest word learning opportunities are often ambiguous, but linguistic context can reduce this ambiguity. However, it is an open question whether a noun's linguistic context on one exposure can guide inferences about its meaning on subsequent exposures. Here, we tested whether adults and 3-year-olds used prior linguistic contexts when selecting a novel noun's referent on later exposures. In Study 1, we found that when informative linguistic context was presented only two exposures before learners had the opportunity to use it, only adults systematically made referent selections compatible with the prior linguistic context. In Study 2, we examined an alternative role for sentence context: verifying or disconfirming a previously hypothesized meaning. Again, adults correctly used informative sentence contexts to either confirm or reject their prior meanings, but 3-year-olds did not. This suggests linguistic context's role in children's noun learning is primarily local, rather than constraining children's inferences across exposures.

Toddlers learn words from a social robot?!

Mireia Marimon, Charleen Oelschlägel and Alan Langus

In the coming years, technological advances will further increase the role of digital technologies in language learning. We explored what role social robots could play in education by testing German-learning toddlers in a word-learning eye-tracking experiment with a social-humanoid robot, in which learning was only possible if the robots' social cues were followed. The robot turned its head/gazed towards one of two novel objects and labelled it. During the familiarization, children looked faster and longer to the labelled object, suggesting that toddlers can follow the robot's social cues. At test, infants older than the group average did not show significant differences between the two objects, whereas younger children looked longer to the correct object than to the incorrect one. Younger children, who have not fully mastered the use of social cues and tend to fail in similar tasks involving humans, may benefit from the structured social cues provided by robots.

Assessing Intergenerational Transmission of Bikol

Louward Allen Zubiri and Kamil Deen

We present the results of a large-scale effort to document the acquisition of language varieties in the Bicol region of the Philippines. Children in this region are considered emergent multilinguals, acquiring Bikol (bik; Austronesian), alongside Filipino (the national language based on Tagalog) and English (also an official language). Despite Bikol being considered vigorous by Philippine national institutions, our >100-hour corpus from 10 family contexts reveals substantial variability in intergenerational transmission. We present various analyses of the data suggesting potential obsolescence in future generations, and the need for further attention and resources on Bikol communities.

Group 7: Child-directed input

What do Parents Really Think? Maternal Beliefs around Parentese Predict its use in Daylong Recordings

Naja Ferjan Ramirez

The present study focuses on parental use of parentese: the acoustically exaggerated, clear, and higher-pitched speech produced by male and female adults across cultures when they address infants. While previous research shows that parentese enhances language learning, it is still unclear what drives the variability in the amount of parental parentese use. We report on the development of a questionnaire assessing parental beliefs, attitudes, and knowledge around parentese. We also directly relate parental questionnaire scores to their own parentese use, obtained through naturalistic daylong recordings. Results suggest that parental beliefs around parentese are variable, and that maternal and paternal links between beliefs and behavior are distinct, emphasizing the importance of studying all caregivers. A better understanding of parental beliefs, and their relation to behavior, contributes to theories of language acquisition and aids in intervention design.

Comparing utterance composition and conversational content in everyday language input to blind and sighted toddlers

Eugenia Lukin, Erin Campbell, Lillianna Righter and Erika Bergelson

Blind children acquire language without visual input. We consider whether parents of blind infants tailor speech to their children as a compensatory mechanism, by looking at the type and conversational content of the utterances the children hear. Specifically, we investigate whether they hear speech that is high in informativity (information-adding utterance types and content). We classified a corpus of daylong recordings from blind and sighted infants for utterance types: imperatives, interrogatives, declaratives, directives, and utterance content: extensions, expansions, affirmations, repetitions, initiations, and reading/singing. We tested for group differences in the proportion of each utterance type and content category, and found that the input across our measures did not differ for blind vs. sighted children's input. Input to blind and sighted children was highly similar, neither less, nor more "helpful", suggesting input informativity is not likely to be a central compensatory mechanism.

Simplification in contingent child-directed speech is the result of responsive attunement

Morgane Jourdain and Sabine Stoll

Our aim is to identify the underlying mechanisms explaining why contingent child-directed speech (CDS) is simpler than non-contingent CDS. We hypothesize that adults adapt the complexity of their utterance to the complexity of the child's directly preceding utterance. We call this specific type of accommodation on an utterance-by-utterance basis "responsive attunement". We conducted a corpus study on three languages with complex verb morphology, Chintang, Qaqet and Turkish. We compared the length of children's utterances and verb units in number of morphemes to that of adults' contingent response. Our results show that indeed, the length of verbs and utterances in contingent CDS is correlated with the length of the utterances and verbs in the child's preceding production. Because the Chintang corpus also contains ADS, we tested if responsive attunement was specific to CDS. Results in contingent ADS were similar, which suggests that responsive attunement is a general property of human interaction.

Exploring prosodic variation between contexts in infant-directed speech and its relation to language development

Jenna DiStefano, Michelle Cohn, Georgia Zellou and Katharine Graf Estes

Language spoken to infants differs perceptually and acoustically from speech directed to adults. We know little about how speech varies depending on context within infant-directed speech (IDS). This study asks: 1) Does parents' pitch adjustment from adult-directed speech (ADS) to IDS vary depending on context? 2) What is the relationship between IDS pitch and vocabulary development? Fundamental frequency (f_0), was extracted from the speech of 11- to 20-month-old infant-parent dyads while they completed three tasks: free-play, sorting, and reading a picture book. To elicit ADS, similar tasks were completed within a parent-experimenter interaction. We found that pitch adjustment was significantly different between tasks. Parents' f_0 adjustment was also positively correlated with infant vocabulary size. These results suggest that parents use pitch differently depending on the context and that pitch is important for infant vocabulary development.

Using Naturalistic Language Samples to Understand the Link between Language Input and Speech-Language Development in Preschoolers with Cochlear Implants

Rochelle S. Newman, Jan R. Edwards, Benjamin Munson, Rachel R. Romeo, Jessica E. Kosie and Meg Cychosz

We characterize the everyday speech-language environments of preschoolers with and without cochlear implants (CIs) and evaluate how the children's environments predicted their vocal maturity outcomes. Eighteen children with CIs (31-65 chronological months; 12-54 hearing age months) were matched to two groups of typical hearing controls. Children completed a single daylong audio recording (appx. 16 hrs./child; >730 hours of observation) where they wore a lightweight recorder for an entire day. Estimates of the home language environment (e.g. quantity/loudness of caregiver input, number of conversational turns between the child and an adult), as well as child vocal outcomes (e.g. quantity, duration, loudness of hourly child vocalizations; quantity and timing of vocalizations contingent with caregiver speech) were derived for each hour, of each recording. Results show differences by hearing group on vocalization maturity and contingent vocalizations made with caregivers. Additional results relating the language environment to children's outcomes will be discussed.

Group 8: Phonetics & Phonology in L2 acquisition

Foreign-language speech segmentation in ab initio child learners: The roles of sublexical and lexical L2 overlap and phonological awareness

Katie Von Holzen, Marie Schnieders, Sophia Wulfert and Holger Hopp

When adults segment words in a new language, they continue to apply sublexical, phonotactic cues from the L1 (Finn & Hudson Kam, 2008) and benefit from in form and meaning with L1 equivalents (i.e. cognates: English: /kraʊn/; German: /kro:nə/; noncognate: English: /skɪn/; German: /haʊt/; Shoemaker & Rast, 2013). In two studies, we examine the role of developing L1 lexical and sublexical knowledge as well as phonological awareness skills, which may support L2 acquisition in young children (Hu, 2014), on German 6- to 9-year-olds' segmentation of English speech before they receive instruction in English. Our results show that children were able to segment and subsequently recognize words, which improved with increasing phonological awareness skills. Unlike adult FL learners, there was no evidence that school-aged children use L1 phonotactic cues (Study 1) nor benefit from form-based lexical overlap with their L1 (Study 2) when they begin learning a new language.

Learning representations at the phonetics-phonology interface in Spanish as a heritage language

Gemma Repiso Puigdeliura

This paper examines the acquisition of vowel epenthesis (i.e., EV) in consonant + rhotic clusters (i.e., /Cr/) in Spanish as a heritage language (e.g., /tronko/ → [təronko] 'log') to shed light on the robustness of the encoding of representations at the phonetic-phonology level. /Cr/ sequences were elicited using the pictureless book *Frog, where are you* (Mayer, 1969) from child and adult heritage speakers (i.e., HSs), as well as from child and adult Spanish speakers raised in monolingual environments (i.e., SpanMonoSs). Our results show that coarticulatory patterns in Spanish /Cr/ sequences continue to mature at ~ 8 years of age. Such late development of gestural organization, however, is not constrained by a competing representation at the phonetics-phonology interface in the HSs. In addition, our grammatical predictors showing that shared features between the consonant and the tap increase probability and duration of EV provide support for a perceptual analysis of vowel insertion.

Phonetic properties of code-switching in infant-directed and adult-directed speech

Erika Exton and Rochelle S. Newman

Infants in bilingual environments must acquire two languages with different phoneme inventories. While infant-directed speech in a single-language context may highlight the differences between two languages (i.e. VOT in the case of English-Spanish), studies of adult-directed speech show that the languages are often produced more similarly in a language-mixing context. The goal of this study is to evaluate whether the effect of being in a language-mixing context differs between IDS and ADS. Spanish-English bilingual women narrate stories in IDS and ADS, using a set of six wordless picture books. In each register, stories are told in English, Spanish, and while switching between languages. VOTs of voiceless stops are measured and analyzed. Preliminary work suggests an interaction between register and context in both Spanish and English, such that mothers accentuate the difference between either voiced and voiceless stops or between English and Spanish more in IDS than in ADS.

Group 9: Pragmatic development

Negation-triggered inferences in preschool children

Xiaowen Zhang and Peng Zhou

The present paper examined preschool Mandarin-speaking children's ability to infer plausible alternatives triggered by negation. Experiment 1 tested three- to five-year-old children's ability to make logical inferences on negation. Participants heard 'This is not X', while seeing four pictures that formed different relations with 'X', and they were asked to choose ALL the possible alternatives. Experiment 2 further examined children's ability to make real-world inferences based on taxonomic relations, where they were asked to choose only ONE alternative. Results showed that in Experiment 1, participants' tendencies to choose taxonomic, thematic or unrelated alternatives did not differ from each other. In Experiment 2, four- and five-year-olds exhibited a stronger tendency to choose taxonomic elements. Our findings show that preschool children are able to make logical inferences on negation. In addition, four- and five-year-olds can make further real-world inferences based on the taxonomic relations, but three-year-olds are less able to do so.

Pragmatic underpinnings of the basic-level bias

Anna Papafragou and June Choe

Both children learning word meanings and adults labelling objects prefer "basic"-level terms ("dog"), over subordinate-level ("dalmatian") or superordinate-level ("animal") terms. We propose that the basic-level bias partly has linguistic-pragmatic underpinnings, and that the use of basic and non-basic terms crucially involves identifying the relevant level of pragmatic informativeness. We test two predictions. First, a superordinate-level term should be judged as infelicitous (but not entirely incorrect) where the basic-level one is known and relevant. Second, the basic level should be preferred in production, unless the context introduces more specific informativeness expectations. Results from a ternary rating task show that adults but not children are sensitive to the pragmatic violations (of calling a familiar dog an "animal", for example). However, children still preferred the basic-level in a subsequent production task. We conclude that the basic-level bias can be linked to expectations about the pragmatic levels of informativeness encoded in category labels.

Learning factivity via syntax and pragmatics: a corpus study

Serene Siow and Nick Huang

Belief verbs describe abstract mental states, making their semantics potentially difficult to learn. Dudley et al. (2017), analyzing know and think, hypothesize that learners might use syntax and pragmatics to learn whether a belief verb is factive or non-factive. Our study of seven prominent English belief verbs in child-directed speech (factive: know, remember, see; non-factive: think, guess, say, tell) suggests that these verbs can indeed be differentiated syntactically and pragmatically in the input. Regarding syntax, factive verbs occurred often with interrogative clauses, while non-factive verbs think, guess, say occurred more often with declarative clauses. Tell's distribution was ambiguous, matching suggestions that tell has both factive and non-factive uses. Regarding pragmatics, factive verbs showed higher proportions of indirect questions than non-factive verbs. The exception to this pattern was see, which will be discussed. We plan to expand the analysis to Mandarin corpora, to investigate the cross-linguistic viability of these bootstrapping hypotheses.

Preschoolers are adult-like in their sensitivity to sentence-level focus: Evidence from logical scope interpretation

Balazs Suranyi and Máté Gulás

Much existing research suggests that the acquisition of Information Structure (IS) in general, and focus in particular, is a prolonged process, pointing to non-adult-like performance at preschool ages in comprehension. Our experiment investigated preschoolers' focus interpretation, relying on the effect that focus on negation can have on logical scope interpretation. Potentially logically ambiguous negated disjunctive sentences were placed in two SCOPE scenarios (disjunction narrow vs. wide scope) in a focused-negation and in a neutral IS condition. Both adult controls' and children's results showed highly significant interaction between SCOPE and IS. Focus on negation shifted acceptance rates in the same direction from the baseline by almost identical degrees in the two age groups in both SCOPE conditions. These results strongly suggest that preschool children already have the competence to access prosodically marked information structure in comprehension, and they can exploit it in an adult-like manner to guide logical scope interpretation.

Group 10: Language & Cognition

Understanding the relationship between children's literalist behavior and metaphor comprehension development
Mary Beth Neff and Ingrid Lossius Falkum

A common finding in metaphor comprehension research is that children tend to favor literal interpretations. Previously, children's literalist tendencies have been treated as indicative of delayed metaphor comprehension development. We investigate whether this observed literalism genuinely reflects difficulties with metaphor comprehension or whether children may privilege literal interpretations when available. We assessed 3-to-7-year-olds' metaphor comprehension abilities using different novel functional, attributional, and psychological metaphors. Preliminary findings suggest that when children were not provided with literal options, they could derive metaphorical interpretations successfully (Study1). However, when literal response options were available, children predominantly chose them over metaphorical interpretations (Study2). These initial findings challenge the previous assumption that young children's literalism is solely attributable to a deficit in metaphor comprehension. Final results will be discussed, including response time and adult sample comparisons.

On the role of alternatives and QUD in implicatures with disjunction in child Romanian

Adina Camelia Bleotu, Andreea Nicolae, Anton Benz, Gabriela Bilbiie, Mara Panaitescu, Monica Casa and Lyn Tieu
Children are known to derive more implicatures when the stronger alternative is made available through contrast or contextually relevant through a story/QUD. We extend this investigation to the exclusivity implicature of disjunction in child Romanian, an understudied language, targeting the prosodically marked *sau* 'or', *sau...sau* and *fie...fie* 'either or'. Based on results from three experiments, we show that simply hearing unrelated conjunctive statements such as *The deer chose a cake and a salad* is not enough to boost implicatures. Instead, implicatures increase as an effect of both access to alternatives and explicit contextual relevance (expressed through the explicit conjunctive question *Did the hen push the train and the boat?*). This supports a Relevance-based Account, ascribing relevance an important role in implicature-derivation. Interestingly, the boost in implicatures can be seen only for *sau* and *sau...sau*, not for *fie...fie*, which is ambiguous between an inclusive disjunction and conjunction.

Similarity is an uneven guide to meaning: Developmental differences in cross-situational polyseme learning

Victor Gomes, Alexander LaTourrette, Katinka Tangen and John Trueswell

Acquiring multiple meanings for a word is often proposed to be difficult for word learners. However, the degree of difficulty may depend on the meanings: Floyd and Goldberg (2020) [4] demonstrated that word-learning is easier for both adults and 4- to 7-year-olds when words' multiple meanings are related (i.e., polysemous, like "cap") than unrelated (i.e., homophonous, like "bat"). However, all labeling events were referentially unambiguous, and word-learning was only tested after all labeling events completed. Thus, it is unclear if polysemy 1) benefits learning in more common, ambiguous contexts, and 2) helps learners infer new polysemous meanings across exposures. Here, we address those questions by using the same sets of related (i.e., polysemous) referents from Floyd & Goldberg (2020) in a cross-situational word-learning paradigm, and found that children showed limited ability to use prior meanings to infer polysemous mappings under ambiguity.

Conceptual constraints on preschoolers' interpretations of ambiguous sentences

Paul Haward and Mahesh Srinivasan

Conceptual combination is a hallmark of human cognition. Yet even the simplest of combinations produces a structure that has an ambiguous meaning. Consider a sentence like "The restaurant is efficient." Humans represent numerous properties as true of restaurants – properties like serving food, having electricity, plumbing, foundations, wifi, overhead lighting, chairs and tables, menus, and restrooms. But to which of these properties does "efficient" apply? Considering each interpretation would be computationally costly. Prior research demonstrates that adults possess a strong bias to interpret sentences in terms of form properties—e.g., serving food for a restaurant—which are understood with (i) stability (e.g., restaurants will always serve food) and (ii) certainty (e.g., I'm certain a restaurant will serve food). Across two studies, with both familiar and novel kinds, we provide evidence this bias is present by age four. Given its early emergence, we highlight its significance for language acquisition and complex thought.

Does Brief Exposure Allow 6-month-old Infants to Link Sign Language to Cognition?

Alison Lobo, Miriam Novack and Sandra R. Waxman

Even before infants speak, language exerts a powerful influence on their cognition. Listening to language supports 4-month-old infants' ability to form object categories, while non-linguistic signals (backwards speech) do not. This language-cognition link is initially abstract enough to include language in the visual modality: American Sign Language (ASL). However, by 6 months, ASL no longer boosts cognition in hearing infants. Here we test whether brief exposure to ASL permits infants to maintain the link between Sign and cognition. 5- & 6-month-old infants viewed a 2-minute video of a woman signing a story in ASL, followed by a standard categorization task with ASL. Results show that brief exposure is insufficient for ASL to boost cognition in 5- & 6-month-old infants, indicating that longer and richer exposure is needed. Follow-ups will investigate the effect of prolonged and earlier ASL exposure, and will illuminate infants' remarkable plasticity in early language and cognitive development.

Group 11: Corpus studies of language learning

The syntax of adverbs in the early production of Italian children

Sonia Patrizi and Emanuela Sanfelici

This paper investigates the syntactic properties of adverbs in Italian children's early productions. Theoretical studies have argued that adverbs are hierarchically merged along the clausal spine in a fixed order constrained by UG. This observation finds large support cross-linguistically, in adult languages, but has never been verified in child language. We filled this gap analyzing the spontaneous speech of 17 Italian monolingual children ranging from 1;04-3;04. We investigated whether children's production of adverbs respect the adverbial hierarchy proposed in literature, and whether the adverbial hierarchy "grows" with the syntactic tree. Our findings suggest that adverbs placement is constrained by UG from the beginning of production, since adverbs are hierarchically merged along the clausal spine in a fixed order also in Italian children's early production. In addition, our data suggest that the hierarchy is unraveled from the bottom to the top of the tree, in line with the Growing trees approach.

Referent-oriented interactions in infancy: A naturalistic, longitudinal case study

Erica Wojcik, Meghan C. Pierce, Gracie Stevens and Sarah Goulding

In the first year of an infant's life, caregivers use labeling, pointing, gaze and other cues to communicate about referents in their environment. While there is some evidence from lab-based studies that young infants use referent-oriented cues during communication, naturalistic studies have found that young infants do not robustly attend to or leverage these cues during dyadic interactions. Using a uniquely dense longitudinal dataset of headcam recordings, the current study examined parent and infant referent-oriented behaviors around word utterances in one infants' life between 6-12 months of age. We found that parent-infant-referent interactions change with development. Notably, the average proportion of referent-oriented cues during word utterances was lower than in previous studies, and there was substantial variability across individual words for all cues. Referent-oriented communication differs across contexts, and there is likely no universal trajectory of parent and infant behaviors that can be applied to all words.

Modeling the Learning of Syntactic Parameters from Parsed Data

Molly Thornber, Matthew Alexander, Lucas Piermarocchi, Zach Sebree and Alan Ke

This study presents an initial effort to integrate real language input, automatic parsing, and learning algorithms into a computational model, aiming to achieve a comprehensive understanding of the learning mechanisms involved in first language acquisition. The computational model provides a new tool to assess the development of syntactic knowledge by parsing and learning from real linguistic data. The learning trajectory of each syntactic parameter can be evaluated based on the linguistic input, allowing for an assessment of the correlation between input and learning. This also enables the comparison of the effects of different types of input on child language acquisition and reveals the learning order and trajectories of syntactic knowledge being investigated.

Group 12: Morpho-syntax in child language learning

Acquisition of passives and benefactives in Japanese: In reference to Theory of Mind

Reiko Okabe, Miwa Isobe, Shigeto Kawahara, Yukino Kobayashi, Yasuyo Minagawa, Saeka Miyahara and Tomoko Monou

Acquisitional studies of Japanese passives and benefactives have reported that children have difficulty with both passives and benefactives even around age five, but the source of difficulty is still a mystery. Both constructions have similar non-canonical case-marking patterns: Nominative NP serves as affectee and Dative NP as agent. As the same scene can be depicted by either construction depending on the affectee's emotional state, understanding of the feelings of a third person is indispensable to comprehend them. Our study is the first attempt to compare child passives and benefactives and to investigate their relationship with the development of Theory of Mind (ToM). We conducted comprehension tests of passives/benefactives and ToM test (Sally-Ann and Smarties tasks) with 19 Japanese-speaking children (4;6-5;5). They performed poorly on both constructions, which replicates the previous findings. Most of them, however, passed the ToM test, suggesting that their difficulty is attributable to non-canonical case-marking patterns.

The comprehension of clefts in French: what's Person got to do with it?

Stephanie Durrleman, Ur Shlonsky and Anamaria Bentea

Whereas previous studies revealed that object clefts in French are harder to comprehend than subject clefts, no study has examined whether a pronoun in the cleft pivot and/or the intervening subject position, or a mismatch in Person, improves performance with object clefts. We address this in a picture-selection task assessing comprehension of object clefts by varying the featural specification of both the cleft pivot/focalized element and of the intervener. The results obtained from forty-two children (4;5yo-7;10yo) revealed no difference between subject and object clefts containing a 1st person pronominal subject (irrespective of whether the pivot is +N or -N). The data reveal significantly lower accuracy with clefts containing a 3rd person pronoun (as pivot or subject) when paired with a +N constituent matching in Person and Number. The results further indicate that children struggle with clefts containing a 1st person pivot (irrespective of whether the subject is +N or -N).

Discovering inflectional and derivational suffixes in infancy

Megha Sundara and Michelle Johnson

Infants discover frequent morphological suffixes early (Kim & Sundara, 2021). Consistent with their type frequency in the input, English-learning infants discover -s first; 6-month-olds relate suffixed nonce verbs like babs, but not babbling or babbed with the stem bab. By 8-months English-learning infants successfully relate suffixed nonce verbs like babbling with the stem bab. In Experiment 1, we found that monolingual English-learning 10- but not 8-month-olds relate nonce words suffixed with the third most frequent English suffix, -ed with stems. In Experiment 2 we are testing whether 10-month-olds relate suffixed nonce words like babbie and doppie with stems. The suffix -ie denoting the diminutive (e.g., doggie), and homophonous with the adjectival -y (e.g., fluffy), is the fourth most frequent suffix in English. However, unlike -s, -ed and -ing, -ie is derivational. Our findings will have implications for understanding the lexical representation of complex words and its developmental roots.

Subsets from supersets: How children correctly interpret pre-subject only

Kamil Deen, Patrick Brennan, Yu-Tzu Chang, Raymond Daniels, Youngin Lee, Kaiying Lin, Akari Ohba, Anupama Reddy, Alexander Tang, Shigeo Tonoike, Annika Topelian, Jue Wang, Mayuko Yusa and Louward Allen Zubiri

Children are known to misinterpret pre-subject only (e.g., "Only the cat got a car") as if it were preverbal only (e.g., "The cat only got a car"). Though numerous theoretical explanations have been put forward (Crain, 1992;1994, Patterson et.al., 2006, Gualmini et al., 2003, Hohle et al., 2009, Kim, 2012, Hackl et.al., 2015, a.o.), we show that the reported challenge of pre-subject-only is in fact methodological in origin - previous studies failed to satisfy a crucial felicity requirement of only: to extract a subset from an established superset of referents. We use a modified TVJT (Crain & Thornton, 1998) to show that when this felicity condition is properly met, children are able to interpret pre-subject-only correctly.

The role of Anti-Agreement in the comprehension of relative clauses and wh-questions in Tashlhiyt Berber

Imane Bou-Saboun and Jeffrey Lidz

Evidence from typologically distinct languages suggests that the subject-object asymmetry persists independent of the morphosyntactic cues to the extraction site. We asked whether a preference for subject relative clauses and wh-questions is mitigated by an unambiguous morphological cue to extraction of the subject. We consider Tashlhiyt Berber (TB), a language where subject and object RCs and wh-questions surface as identical strings that can be disambiguated through anti-agreement, a suppression of subject-verb agreement triggered by subject extraction. We tested 86 child learners of TB (mean age 3;6, range 2;2-5;2) using a pointing task paradigm. Children were more likely to interpret the extracted item as a subject in the subject conditions the older they are, whereas they performed at chance in the object condition, irrespective of age. In conclusion, a reduced bias in the object condition suggests sensitivity to the unambiguous verbal morphology.

Children can interpret counterfactual conditionals incrementally using morpho-syntactic cues

Semih Can Aktepe and Duygu Özge

By age four, children demonstrate the ability to utilize morphosyntactic cues and connectives for meaning assignment and logical reasoning incrementally. However, we do not know whether children can incrementally use morphosyntax and logical connectives for counterfactual conditional reasoning. We address this issue for the first time, conducting an eye-tracking experiment using visual world paradigm to investigate when children can reason adult-like using counterfactuals and whether they can incrementally integrate the morphosyntax of counterfactuals in a language that encodes both the conditional and counterfactual meaning in concatenated verbal suffixes. Our results show that children as young as age four can interpret counterfactual conditionals incrementally right after they heard counterfactual morphosyntax. To our knowledge, this is the first piece of evidence showing that the morphosyntax marked on verbs quickly leads to complex inferences such as generating hypothetical alternatives for counterfactual reasoning not only in adults but also in very young children.

Remote posters (Friday)

Investigating the processing of codeswitched determiner phrases: a window to explore the child bilingual mental lexicon.

Raquel Fernández Fuertes, Tamara Gómez Carrero and Juana Muñoz Licerias

We focus on language activation and inhibition in the bilingual child's processing of codeswitching between a determiner (DET) and a noun (N). We tested L1 Spanish-L2 English children to investigate how the mental representation of formal features is responsible for the sensitivity to grammatical gender which in turn impacts on how bilinguals' language activation/inhibition processes are at play and shape processing. We target the directionality of the switch (English-DET/Spanish-N -the casa- versus Spanish-DET/English-N -la house-) and the implicit gender agreement mechanism in the case of Spanish-DET/English-N switches (la house versus el house) using acceptability judgment data and eyetracking during reading data. Results suggest lower processing costs of English-DET switches and higher ones of non-congruent Spanish-DET switches. The preference for classifying the English non-gendered nouns along the lines of the Spanish gendered nouns lends support for the hypothesis that the two nouns depicting the same concept are associated in the bilingual mind.

The road to negation: A comparative study of five culturally and typologically diverse languages

Sakine Çabuk-Ballı, Paul Widmer and Sabine Stoll

This study investigates the acquisition of negative functions in early language development across five culturally and typologically diverse languages: Chintang, English, Indonesian, Sesotho, and Turkish. We aim to determine if there is a universal trajectory for negative function development and examine the role of input types (child-directed and child-surrounding speech) and the relationship between negative functions and sentence types. Data comes from child language acquisition corpora in the ACQDIV database. The analysis reveals a consistent order of development, progressing from basic to abstract negative meanings as language skills advance. However, language-specific trajectories exist within the sample, including variations in frequency of denial in child speech and the presence of prohibition in ambient language. Results show age and quantity of child-directed speech significantly influence the development of negative functions. Our findings highlight the importance of direct input quantity and cross-cultural variations in shaping the developmental trajectory of negation in different languages.

Cross-linguistic influence in the interpretation of null/overt subjects by heritage Mandarin Chinese Children

Shijia Yang and Kook-Hee Gil

This study investigates a cross-linguistic influence (CLI) in the heritage Chinese interlanguage by Chinese-English bilingual children. Our Picture Selection Task tracks their interpretational preferences of null/overt subjects in heritage Chinese with respect to their antecedents. We hypothesize that heritage Chinese children will overgeneralise English overt pronouns to Chinese and would show consistent subject preferences across all anaphora conditions (null/overt x forward/backward) following the English pattern. The results show high subject preferences in 3 out of 4 conditions by heritage children (HC) as predicted, not in the overt/backward condition, thus not fully supporting our prediction. However, a closer inspection in this condition reveals that HC shows very different preferences from MC. We use this different trajectory between MC and HC to argue for CLI from English overt pronouns to null/overt pronouns in Chinese, as also suggested for Italian-English bilinguals (Serratrice et al., 2004).

Pragmatic atypicalities in undiagnosed sisters of autistic individuals

Marie Belenger and Mikhail Kissine

Atypicality in socio-pragmatics is a robust characteristic of autism. Autism is more frequently diagnosed in males than females with growing evidence that diagnostic tools are less likely to identify autistic females. Previous studies reported that autistic females tend to experience less pragmatic difficulties than autistic males. This hypothesis is difficult to investigate because females diagnosed at an early age may be so precisely because they display autism features similar to those of autistic males. The solution we adopt here is to study females considered at Elevated Likelihood for Autism (ELA).

45 participants (9-16 years old) took part in this study. We assessed language abilities using the CELF-5 and parents reported pragmatic abilities through the CCC-2 as well as the age of their children first words and phrases.

Results suggest that despite no delays in language acquisition and language abilities in the normal range, ELA females still experience difficulties in pragmatics.

Ameliorating cues in the comprehension of object relative clauses in child Spanish: assessing the interaction between DOM and word order

Jacopo Torregrossa and Giacomo Presotto

Object relative clauses (ORs) are typically difficult for children to comprehend. Despite that, their comprehension can be eased when so-called ameliorating cues occur. In this study, we take into account Spanish ORs' comprehension by Spanish monolingual children aged 4-6. Specifically, we consider two potentially ameliorating cues therein: differential-object-marking (DOM) and word order (WO) (i.e., the position of the subject within the relative clause), which can both disambiguate ORs from subject relative clauses (SRs). We show that both DOM and WO bring about ameliorations when occurring in isolation, but hinder comprehension when concurrent. Moreover, DOM is only effective when it is acquired, which we take as evidence in favour of grammar-based accounts to intervention locality.

On the licensing conditions for the acquisition of nominal ellipsis in Italian

Caterina Tasinato and Emanuela Sanfelici

This study investigates the production of lexical and elliptical DPs by typically developing Italian-acquiring children, with the aim to define the licensing factor for the acquisition of nominal (NP) ellipsis, i.e., whether is agreement, partitivity or focus. Results of a longitudinal analysis on the spontaneous speech of 10 Italian children (CHILDES) showed that (i) the determiners marking the production of elliptical DPs differ and develop independently from those introducing the lexical DPs, (ii) the DP-internal agreement pattern is target in both lexical and elliptical DPs, (iii) lexical DPs are produced before the elliptical ones. Consequently, whereas the agreement seems to be a prerequisite to produce a DP in general, the specific types of determiners found in NP ellipsis suggest that a notion of set restriction may be the licensor for the acquisition of NP ellipsis in Italian, in line with the partitivity or the focus accounts.

Acquisition of gender agreement is dependent on the distribution of forms in different contexts

Jekaterina Mazara and Sabine Stoll

In Sursilvan-Tuatschin (Rhaeto-Romance, Switzerland) attributive and predicative agreement differ for masculine forms. Additionally, the distribution of forms in predicative position is heavily skewed towards unmarked forms, while that of the attributive position is uniformly distributed.

We analyze the error production of 6 Tuatschin learning children in a longitudinal corpus to assess whether position and required agreement marker have an effect on error rate. We find that predicative position has a positive effect on error rate. Even for feminine forms, which are the same in both positions, we find an increase in log odds of errors in predicatives of 2.38 (95% CI: [1.66, 3.17]) compared to their use in the attributive position. Our results suggest that agreement marking is not acquired uniformly across all positions but is influenced by the distribution of forms in individual contexts.

SATURDAY, NOVEMBER 4

Vocal maturity predicts adult responsiveness in a Tzeltal Mayan community

Yuchen Jin, Juan Méndez Girón, Gilles Polian, Kennedy Casey and Marisa Casillas

US caregivers are more responsive to infants' language-like than non-language-like vocalizations (e.g., canonical babble and words > non-canonical babble). These contingent responses draw children in as active conversational contributors, even before they begin to speak, and reflect culturally marked modes of caregiver-infant interaction that are unlikely to be universal. For example, under ethnographic accounts of Mayan language socialization, children are brought into the adult social world first as side participants before gaining rights as ratified interlocutors. In this study, we ask: what features of Tzeltal children's early speech drive their recognizability as potential interlocutors? Our findings show that Tzeltal adults respond more to children's canonical and lexical vocalizations, relative to non-canonical vocalizations, and become increasingly selective for lexicality over age. These results align with findings from US caregivers, suggesting that, even across diverse childrearing contexts, canonicity and lexicality can serve as key cues to children's readiness to be interlocutors.

Morpho-phonology and Articulatory Energy in Expressing Complex Motion Events in Turkish Sign Language (TİD) and Age of Acquisition Effects

Kadir Gökgöz, Onur Keles and Emre Bilgili

We analyze the expression of complex motion events with a Path and Manner, offer an estimation of articulatory energy calculation by using OpenPose (a pose estimation library), and discuss differences between native and late signers. Morpho-phonologically, late signers produce more conflated forms, (simultaneous manner and path) whereas native signers produce more sequenced forms (manner and path separately). This suggests that morpho-phonological sequencing of physically simultaneous events is sensitive to age-of-acquisition in TİD (see Özyürek et al. 2015 for a similar finding in Turkish homesigners). Overall, late signers spent more articulatory energy. Furthermore, a strong age-of-acquisition effect is present for the non-dominant side, suggesting that while native signers do not use the non-dominant side when it is not required, possibly due to an articulatory inhibition strategy (Sanders and Napoli 2016), late signers less frequently employ this inhibition strategy.

Hierarchical versus linear processing in toddlers: The case of subject-verb agreement

Rushen Shi and Audrey-Anne Gilbert

We investigated subject-verb agreement in toddlers, using hierarchically distinct subjects containing linearly matched NPs. In Structure 1, the subject contained a PP-modifier: [NP1-sg [Prep NP2-sg/pl]] [V-sg ...], with NP1 agreeing with V. In Structure 2, the conjoined NPs of the subject both contributed to subject-verb agreement: [NP1-sg Conj NP2-sg/pl] [V-pl ...]. The number congruency between NP2 and V was manipulated for assessing potential interference effect. French-learning 30-36-month-olds participated in a preferential-looking experiment, half hearing Structure-1 sentences with correct verb agreement (e.g., Le ballon dans la main V-sg...) versus incorrect-agreeing Structure-2 sentences (*Le ballon et la main V-sg...), and vice versa for the other half of participants (Le ballon et/dans la main V-pl ...). Results showed that toddlers discriminated grammatical versus ungrammatical structures, demonstrating hierarchical processing/representation. Interestingly, grammaticality processing was also affected in sub-conditions presenting locally incongruent NP2-V (relative to locally congruent NP2-V), resembling interference effect (agreement attraction) in adult processing.

The dynamics of child-driven information-seeking and caregiver scaffolding during word learning

Martin Zettersten, Alyssa Guillu and Casey Lew-Williams

Language learning emerges from dynamic communicative exchanges characterized by two key dimensions. First, children are not simply passive observers, but instead actively seek new information. Second, caregivers scaffold the learning environment. We conducted a preregistered study (current N=62; target N=96; 36-72 mos; preregistration: https://osf.io/s24eb/?view_only=7cbcd0ef12354103b5fe7a897d13f694) investigating how caregiver scaffolding and children's information-seeking mutually contribute to word learning. We introduced a novel word learning paradigm that independently varied whether children and/or their caregivers could structure input in a joint Learning Phase and measured children's word learning in a pre-post test design. We found that (1) providing children and their caregivers opportunities to actively control the learning curriculum promoted learning events with unfamiliar words and (2) children learned best when provided the opportunity to control their learning input. Our results provide insight into how children's information-seeking strategies interact with caregivers' scaffolding to create informative word learning moments.

Who did what to whom? Marking event participants in Nicaraguan Sign Language

Annemarie Kocab, Jessica Carter and Jesse Snedeker

Two strong hypotheses bridge typology and acquisition. The word-order hypothesis proposes that this cognitively-salient cue is available to children before linguistic cues and thus appears early in language emergence. The agent-first hypothesis proposes that agents have a privileged role in event representations leading children to expect agent-first order, shaping emerging languages. While spoken-language creoles conform to these predictions, this could reflect properties of the contact languages. Emerging sign languages offer a more mixed picture. Studies of NSL have reached varying conclusions, perhaps because of argument dropping. We successfully elicited full transitives from NSL signers using stimuli designed to eliminate argument dropping. Participants overwhelmingly produced verb-final sentences, with no preference for agent-first order. Instead, they used spatial marking: assigning each argument a locus and moving the verb from one to the other. While cohort-1 often used body anchored loci, cohort-3 used abstract loci. Signers also used patient markers and paired-verb constructions.

A meta-analysis of syntactic priming experiments in children

Shanthi Kumarage, Seamus Donnelly and Evan Kidd

A substantial literature exists using syntactic priming with children to test the nature of underlying syntactic representations and learning mechanisms supporting the acquisition of grammar. In this paper we present the first meta-analysis of syntactic priming studies in children. We identified 36 eligible studies containing 106 effect sizes. We used multi-level meta-analysis, allowing the inclusion of multiple effect sizes from the same study. Our analysis confirmed that priming is a large and robust effect, but with significant heterogeneity in the size of the effect. Several methodological choices influenced the magnitude of the effect: (i) within- or between-subjects design, (ii) structural alternation investigated, and (iii) the animacy configuration of syntactic arguments. In addition, lexical overlap increased the magnitude of, but was not necessary to observe, the priming effect. We found no effect of age, including in interaction with lexical overlap. Our results support early abstract rather than item-based representations of syntax.

Cross-culturally children attend more to surrounding child speech than to surrounding adult speech

Johanna Schick and Sabine Stoll

Infants are able to learn novel words through overhearing speech from early on. Here, we explore a largely unexplored type of surrounding speech: speech from other children. We asked whether children are more attentive when listening to surrounding child speech compared to surrounding adult speech and whether their level of attention to the two types of speech differs across cultures.

We tested 68 Shipibo-Konibo children (Peruvian Amazon) and 60 Swiss children (age range: 8-20 months) in a cross-cultural head-turn experiment in two conditions: foreign vs. native language. Results indicate that children from both cultures attend longer to child speech than adult speech and that the language they were exposed to (foreign vs. native) did not have an effect. Considering the learning potential of surrounding speech, it is therefore possible that surrounding child speech serves as a more effective source of input providing better learning opportunities compared to surrounding adult speech.

The impact of language experience on word order in the first cohort of an emerging sign language

Rachel Miles and Rachel Mayberry

One commonality observed across the first generation or cohort in emerging sign languages is a lack of convergence on a common word order and a tendency to produce only one argument per verb. We present findings from the first cohort of signers in a new signing community in Vanuatu. Participants differed in whether they had access to language prior to entering the signing community. Descriptions of simple events were elicited using a communicative task. For intransitive events, participants predominantly produced SV word order. For transitive events, hearing participants with prior language access predominantly produced SVO word order. However, deaf participants without prior language access produced many single argument structures and did not converge on a common word order. Our results demonstrate that in creating linguistic structure in a new language, the age of the language is not the sole factor. The language experience of individuals in the community is significant.

Processing to Learn? Effects of prediction error in L2 structural priming

Duygu Safak and Holger Hopp

This study tests whether and how sentence processing drives learning via prediction error in two priming experiments using visual world eye-tracking among adult L2 learners.

Exp.1 investigates whether prediction error underlies priming when ditransitive verbs biased to either double-object-dative (DO) or prepositional-object-dative (PO) occur in the other structure. L1-German–L2-English learners read prime sentences crossing Verb Bias and Structure Type. Subsequently, they heard target sentences – with unbiased verbs – while viewing visual scenes. Gaze data revealed PO- priming and surprisal verb bias effects on PO-priming, i.e., more predictive looks to the theme after PO primes with DO-bias (vs. PO-bias) verbs.

In Exp.2, we probe whether grammatical verb-selectional restrictions circumscribe prediction-error-based priming. When target sentences contained non-alternating verbs (e.g., donate), priming and surprisal effects were reduced. These results point to (prediction-)error-driven learning in the L2 acquisition of syntactic optionality, and suggest that grammatical knowledge constrains how L2 learners process to learn.

Controlled morphological variation in Ayöök child-directed speech

Sophie Pierson

The pathway to segmentation of complex morphology in polysynthetic languages is poorly understood. Ayöök, a Mixe-Zoque language spoken in Oaxaca, is a polysynthetic head-marking language with hierarchical-inverse alignment and productive stem change. For this study, 68 hours of naturalistic, home-based recordings of three children (2;10-4;6) have been collected; each child was recorded longitudinally for 12 months. Samples of ADS are taken from conversation during recording sessions between the children's mothers and the native-speaker research collaborator. This study demonstrates that while verbs in CDS are syntagmatically-simpler (i.e., fewer morphemes per verb) than they are in ADS, they are more paradigmatically-complex (i.e., more unique forms per lemma). However, morphological variation in CDS is controlled by using a more limited inventory of affixes. This controlled variation may support the acquisition of complex verbal morphology in Ayöök by demonstrating the combinatorial possibilities of verbs with a manageable subset of the affixes available to speakers.

Using story-guided looking to measure young children's recognition of phonetically reduced words

Caroline Beech, Megan Shelton and Daniel Swingley

Infants readily recognize a number of words when tested on maximally clear pronunciations in the laboratory. However, the everyday speech that infants hear is much more variable. For example, reduced pronunciations, where some sounds in the canonical pronunciation are naturally dropped or altered, are common even in speech to children. The present study employed a new story-guided looking method (a variation on language-guided looking) to create felicitous conditions for testing 18- to 24-month-olds' recognition of reduced pronunciations of familiar words. Results from the current sample (n=18 out target 32 pre-registered) indicate significant recognition of clear pronunciations, but no recognition of reduced pronunciations, even when they were preceded by a clear mention of the same word in the previous sentence. Overall, the results of this study highlight an important challenge in language acquisition, and demonstrate a powerful new method for studying children's language comprehension under more naturalistic conditions.

The acquisition of relative clauses by Italian-German bilingual children: The effect of child-internal and child-external factors

Anna Michelotti, Jacopo Torregrossa and Flavia Adani [REMOTE]

Studies on the bilingual acquisition of subject (SR) and object relative clauses (OR) have focused on comprehension. The present study examines the production of these constructions in Italian by children speaking Italian as heritage language (HL) and German as societal language (SL). We consider which child-internal (HL proficiency and age) and child-external factors (input quantity and input diversity) affect production and whether they modulate the acquisition of SRs and ORs.

We tested 43 German-Italian bilingual children. The results suggest that HL proficiency affects the production of both relative types, with ORs being less likely to reach ceiling performance. We found no effect of input measures suggesting that the expressing skills involved in the production of relative clauses are strongly related to the individual HL proficiency rather than receptive-based cues, such as input measures.

Infants use inflectional morphology to categorize verbs in varying syntactic environment

Audrey-Anne Gilbert and Rushen Shi

Previous research showed that around age one, infants begin categorizing novel nouns using determiners, but have difficulty categorizing novel verbs using subject-pronouns (e.g., Höhle, et al., 2004). We inquire whether infants use bound morphemes to categorize verbs, considering that infants already recognize bound morphemes from 11 months (Culbertson, et al., 2016; Marquis & Shi, 2012; Mintz, 2013). In a preferential looking experiment French-learning 14- and 18-20-month-olds were familiarized with pseudo-verbs: non-affixed (e.g., crale [kral], second-person singular) and affixed (e.g., cralez [kral-e], second-person plural, with the French /e/-morpheme). Each verb was an imperative utterance. Test trials presented the non-affixed words in two new syntactic structures: Subject-Pronoun+Verb (i.e., Grammatical, e.g., Tu crales "You crale"), versus Det+Noun (Ungrammatical, e.g., Le crale "The crale"). Results showed that both ages discriminated the test trials significantly. Thus, by 14 months, infants use inflectional morphology to bootstrap verb categorization and generalize the category to varying syntactic structures.

Comparing language input in homes of blind and sighted children: Insights from daylong recordings

Erin Campbell, Lillianna Richter, Eugenia Lukin and Elika Bergelson

As well-established by prior work (Gleitman & Gleitman, 1992; Gleitman et al 2005), young children (sighted or blind) leverage language to learn language. Using daylong audio recordings from 15 blind children and 15 demographically-matched sighted children (6–30mo.; M:16mo.), we asked whether their parents adapt their language input based on their children's perceptual access. We measured language input in terms of quantity, interactiveness, linguistic complexity, and conceptual features. We found that blind and sighted children heard similar quantities of speech and received similar interaction. However, the groups differed along the linguistic complexity and conceptual dimensions of language input. Specifically, language input to blind children was characterized by more complex speech and less focus on children's here-and-now. By providing more complex input, parents of blind children may be (deliberately or not) helping their children on their path to language.

Crosslinguistic priming of syntactic and information structure in bilingual development: Evidence from Polish-English bilingual children

Marta Wesierska, Katherine Messenger, Vanessa Cieplinska and Ludovica Serratrice

Whether bilingual children's syntactic representations are shared cross-linguistically remains unclear. Adult bilinguals show priming of syntactic and information structure across languages, but evidence for crosslinguistic syntactic priming in child bilinguals is limited. We investigated crosslinguistic priming in Polish-English bilingual children, testing whether children could be primed to produce (1) a passive in English by a passive in Polish and vice versa (syntactic priming), and (2) a passive in English by an OVS prime in Polish, or an OVS in Polish by a passive in English (information structure priming). 47 bilinguals (7;11–11;4) completed two Snap! games a week apart. We observed small (~2%) crosslinguistic syntactic and information structure priming effects from Polish to English. However, priming was not bidirectional: English passive primes did not elicit more Polish passive or OVS responses. Using within-language priming we are now testing whether children have single-language representations that are not yet shared.

How toddlers answer multiple wh-questions

Keely New, Premvanti Patel and Athulya Aravind

The ability to comprehend wh-questions is one that already emerges in infancy. Infants comprehend subject wh-questions like "Who ate something?" by 15-months, and distinguish them from object wh-questions like "What did Mom eat?" by 20-months. Adult linguistic competence, however, includes more complex wh-questions like "Who ate what?", which in turn demand more complex answers. In this work, we investigate 2-and-3-year-olds' understanding of multiple wh-questions. To do so, we probed their sensitivity to restrictions on which wh-word in a multiple question can be fronted (the "superiority constraint"). Using a novel "fly-in-the-wall" paradigm, which recreates naturalistic parent-child interactions, we elicited responses from toddlers on grammatical and ungrammatical multiple wh-questions, as well as single wh-questions. Toddlers differentiated single and multiple wh-questions, often giving adult-like pair-list responses to the latter. Both groups distinguished between ill-formed and well-formed questions in their response patterns, albeit in different ways.

Language input from mother-mother dyads: An exploratory study of gender/sex-related variability in the use of parentese

Adeline Braverman, Lili Correa and Naja Ferjan Ramirez

In heterosexual couples in the USA, fathers tend to provide less input to their children than do mothers. These differences are generally explained by sex-based biological or gender-based social factors. These hypotheses are difficult to evaluate in heterosexual couples, wherein mothers usually serve as main caregivers. Here we examine the relationship between language input, gender/sex, and familial roles using daylong recordings from mother-mother-headed families. We found significant correlations between parentese use and caregiver responsibilities, and between the extent to which mothers differ in their parentese use and the degree of imbalance in their caregiving responsibilities. In comparing mother-mother to mother-father dyads, we found a significant difference between overall word counts but no differences in any other language input measures, including the imbalance in parentese use within couples. These findings suggest that parentese use is tied to involvement in caregiving and have implications for the broader field of language acquisition research.

Factors conditioning individual differences in heritage language bilingualism: The case of Mandarin sortal classifiers

Jiuzhou Hao, Maki Kubota, Fatih Bayram, Jorge Gonz lez Alonso, Theres Grüter, Muhan Li and Jason Rothman

While variation also characterizes linguistic outcomes in monolingual speakers, the degree of attested heritage language variation is significantly more extreme. This study puts such an observation into a test at the processing level and investigates what factors predict the differential use of linguistic cues in processing Mandarin sortal classifiers. Classifiers simultaneously encode semantic and grammatical form class information about the co-occurring nouns. The current study tested sixty Mandarin heritage speakers (HSs) living in an English-speaking environment in a Visual World eye-tracking experiment. Results suggest that HSs who attended Saturday Schools for Mandarin and/or have more Mandarin exposure at home were more likely to rely on the semantic information. These suggest that with more exposure and use of the heritage language, HSs were more sensitive to the features encoded in classifiers, especially the semantic features as the processing of classifier-nouns is inherently lexical.

Stop voicing perception in the societal and heritage language of Spanish-English bilingual preschoolers: The role of age, input quantity and quality

Simona Montanari, Jeremy Steffman and Robert Mayr

Despite extensive work on perceptual development in bilingual infants, little is known about speech perception in bilingual preschoolers. This study investigates stop voicing perception in the societal and heritage language of Spanish-English bilingual preschoolers. Perception was assessed through a forced-choice minimal-pair identification task in which children heard synthesized audio stimuli that varied systematically along a /p-b/ and /t-d/ Voice Onset Time (VOT) continuum and were asked to match them with one of two pictures for each contrast. The results of Bayesian mixed-effects logistic regression analyses revealed that the children displayed separate stop voicing contrasts in each language, although categorical perception in English was affected by their experience with Spanish, as evidenced by different patterns from matched English monolinguals. The results also showed that age predicted perceptual skills in English, whereas input quantity solely predicted Spanish perception, suggesting that child-internal and external factors play different roles on bilingual perceptual performance.

Comparing parent-report and looking time measures of infants' knowledge of individual words

Melanie Lopez Perez, Charlotte Moore, Andrea Sander-Montant and Krista Byers-Heinlein

How accurately can we measure children's knowledge of individual words? We studied 126 French-English monolingual and bilingual 14-31-month-olds, examining whether their performance on a looking-time paradigm (i.e., children's looking at a dog versus a distractor when "dog" was labeled) was related to their parent-reported word knowledge measured via the MacArthur-Bates Communicative Development Inventories (i.e., whether children were reported to say "dog"). Results showed a significant bivariate relationship between the two word-level measures, but this relation disappeared once we controlled for total vocabulary size and age. These findings suggest that although the looking-while-listening and parent-reported word production are related, their connection may largely be explained by confounding variables rather than a direct performance link. While current methodological approaches are likely adequate for measuring children's overall vocabulary knowledge (e.g., total vocabulary size), their adequacy for capturing word-level knowledge should be more carefully considered.

Sources of evidence for acquiring discourse connectives: Explaining production-comprehension asymmetry in the acquisition of but

Hugh Rabagliati, Hans Wilke, Hannah Rohde and Barbora Skarabela

How do children acquire the meanings of discourse connectives like "but"? Early corpus analyses concluded that "but" is mastered before pre-school. However, comprehension experiments, both recent and old, show that even school-aged children struggle with "but".

What can explain this mismatch? We investigated (1) whether prior corpus analyses over-stated children's capability and (2) whether "but"'s contrastive meaning can easily be learned from caregiver speech. We used the human simulation paradigm to measure whether children and adults use "but" in recognisably different contexts from "and".

We found that prior corpus analyses indeed over-stated children's capability with "but". Moreover, the contexts where caregivers use "but" significantly overlap with where they use "and", suggesting that learning "but"'s contrastive meaning will be hard. Finally, caregivers rarely used the full range of "but"'s senses.

Thus, children are delayed at mastering connectives like "but", presumably because recovering their meaning from fluent speech is unexpectedly difficult.

Alternative representations for obstruent+lateral strings in German-speaking children with phonological disorders
Aliza Ellner and Heather Goad

Branching onsets are challenging for children with phonological disorders, who exhibit immature speech-motor patterns and protracted acquisition with sometimes atypical repairs. We investigate the representations underlying productions of target obstruent+lateral (C[l]) onsets in German-speaking children with phonological disorders using recordings from the NeumannFoxBoyer Clinical Corpus (Fox-Boyer, 2002, 2014). Although these children produce [l] accurately, their realizations show seemingly unusual phonetic profiles. We find that phonetic analysis supports a representation of their C[l] strings alternative to branching onsets: the children's realizations match those in adult languages where C+[l] are separated by a nucleus. The nucleus may remain empty, manifesting in a pause, place sharing, and lack of expected devoicing of [l]; or it may be filled, manifesting in unexpected aspiration of C, frication of [l], or schwa. We argue that the typology and phonetic realizations of C[l] strings in adult languages provide an alternative representation for these children's C[l] strings.

You call it a dog, but I call it a dalmatian: Preschoolers learn and use new sociolinguistic associations

Sophie Regan and Mahesh Srinivasan

To comprehend speech, listeners have to segment rapidly-unfolding speech into discrete words, access word meanings, and generate compositional interpretations—all in a short time. This requires making predictions about what speakers will say next. However, such predictions are difficult to make because individual speakers can vary dramatically in how they speak at all levels of language. Luckily for listeners, rather than being random, this variation can often be predicted by social factors such as gender, age, and community membership. Prior research suggests that adults use knowledge of these sociolinguistic associations when processing spoken language. Here, we explore the developmental trajectory of this ability and show that four to six-year-olds can rapidly learn a novel association between group membership and lexical choice, and use this association to (1) predict what someone will say by observing their group membership, and (2) predict a person's group membership from observing what they say.

Children do not overuse "the" in natural production

Yuanfan Ying, Valentine Hacquard, Alexander Williams and Jeffrey Lidz

English-learning children (age 3-5) have been claimed to have a non-adultlike knowledge of definite "the" given their overuse in elicited production studies, yet comprehension studies show no clear support. We conducted a corpus study and a behavioral study examining children's natural production and found no evidence for systematic overuse of "the" – elicited production errors may be due to experimental artifacts. Specifically, in mother-child interactions, children (1;0-3;11) use 'the N' (as opposed to 'a N') at the same rate as mothers across clause types and syntactic environments, and their rate of reference-related miscommunication with "the" is low for 2-year-olds. Moreover, we show that adults are equally successful in guessing "the" used by children (2-, 3-, and 4-year-olds) and mothers, given linguistic contexts only. Together, our findings suggest that English-learning children have an early grasp of the definite/indefinite distinction, and a performance account is needed to explain their alleged "the"-overuse.

Alienology: Producing opaque phonology

Danica Reid, Sahibnoor Dhani, Danielle Brady and Ashley Farris-Trimble

Very little work to date has examined how children acquire phonologically opaque forms. This study investigates the acquisition of the opaque interaction of Canadian raising and flapping. Canadian English-speaking children from the Metro Vancouver area were recorded producing words with the /aɪ/-diphthong that differed in the conditions for raising and flapping. Both a lower first formant (indicating a higher vowel) and a higher second formant (indicating fronting) are characteristic of Canadian raising. Measures of both formants show that younger children (aged 4-6) only raise and front the /aɪ/ diphthong to /ʌɪ/ in transparent contexts (before voiceless obstruents), while older children (aged 7-9) have learned the opaque interaction and raise and front the diphthong before /t/-flaps and voiceless obstruents.

How does social contingency facilitate early vocabulary development?

Elena Luchkina and Fei Xu

Experience with socially contingent interactions facilitates language advances in infancy. Infants whose parents respond to their vocalizations more often during the first year have larger vocabularies in the second year. We ask how social contingency achieves this facilitative effect. One possibility is that parents who speak in response to their infants more often produce larger amount of word types and tokens and produce longer utterances, which would accelerate vocabulary growth. Another possibility is that the frequency of verbal and non-verbal socially contingent responses helps infants build a link between their words or vocalizations and others' behaviors, promoting vocabulary growth. Our video-corpus analysis of naturalistic interactions of 20 parent-infant dyads observed at 9 and 12 months provides support only for the second possibility. The frequency of socially contingent interactions has a significant longitudinal effect (but no concurrent effects) on infants' vocabulary, even after we control for the amount of word input.

Copula Absence Variation in Adult and Child Corpus Speech

Jordyn Martin, Marisa Casillas, Sharese King and Claire Bergey

Copula absence (e.g., "this \emptyset yours"; "he \emptyset going") is a systematic feature of African American English (AAE). But how children gain mastery over the appropriate environments for omission is still unknown because this feature of AAE is also an attested developmental feature of children acquiring other English varieties. Previous work established syntactic environment and nonlinear change with age as crucial for understanding AAE copula acquisition. We jointly examine these factors, and also add linguistic input, to shed more light on the acquisition of this feature. We coded the syntactic environments of copula omission in child-caregiver conversation at 4;6 and 4;10 in five Black Chicagoland families. Parents omitted copula in a stricter set of environments. Parents and children shared the most frequent omission environments but differed in relative omission rates. Overall, children's usage reflects both their linguistic input and more general patterns of omission for English acquisition.

Infants' initial sensitivity to vowel harmony is experience independent

Elizabeth Sola-Llonch and Megha Sundara

Although vowel harmony involves non-adjacent dependencies, something difficult for infants to track, infants with native language experience tune into vowel harmony early. We investigated whether the development of sensitivity to vowel harmony is consistent with Attunement theories of perceptual development (Aslin & Pisoni, 1980), where perceptual sensitivities are partially developed at birth and are either enhanced by language experience or lost in the absence of experience. Using the central fixation procedure, we tested 4- and 8-month-old infants' sensitivity to backness harmony, focusing on infants with no experience with a language with vowel harmony. We found that 4-month-olds without experience showed a credible preference for harmony, but 8-month-olds did not. Thus, experience is not necessary to detect vowel harmony at an early age, and this sensitivity declines in the absence of experience. These results support Attunement theories, where initial perceptual sensitivities facilitate the learning of salient non-adjacent dependencies like harmony.

Delayed language development affects semantic competition in 18-month-olds

Justin Kueser, Claney Outzen, MaryCarson Adams, Barbara Brown, Sharon Christ, Risa Stiegler and Arielle Borovsky

Children with typical development (TD) recognize semantic relations between words early in development, yet it is unclear how this ability is affected in children with early language delay (LD; aka, Late-talking). We explore this question using an eye-tracking paradigm manipulating the degree of semantic overlap between labeled target objects and unnamed distractor objects to measure real-time recognition of known word meanings in 18-month-olds (N = 133; 67 LD, 67 TD). Additionally, we assessed how structure in children's vocabulary affected the potential for spreading activation to competing words by measuring the study words' density of semantic interconnections among their semantic neighbors. Semantic overlap condition differentially affected lexical recognition as a function of language status and potential for spreading activation. These patterns have implications for the language trajectories of children with LD – beyond delayed word learning, these children are primed to process and learn different kinds of words.

Children's Interpretations of Referential and Expletive It

Athulya Aravind and Megan Gotowski

The task of word-learning is often thought of as mapping forms to meanings. But some wordforms lack meaning altogether: expletive words, like 'it' in "It is clear that I'm right", are merely syntactic placeholders, which contrast with the homophonous referential pronoun (e.g. "It (=the referent) is a book"). How do children learn forms that don't make available a meaning to map to, and how do they distinguish them from meaningful homophones? We investigate this question by examining children's treatment of expletive 'it'. In a referent-selection task, we probed 4-year-old children's interpretations of sentences with expletive and referential 'it' in ambiguous and unambiguous contexts. Our results suggest that children have access to both expletive and referential interpretations in the appropriate contexts. Moreover, we find that children in fact privilege the expletive reading over referential ones in ambiguous contexts.

PLENARY ADDRESS: The Fingerprints of Universal Grammar

Dr. Kamil Deen

One key argument for innate, language-specific knowledge (aka Universal Grammar) is the Problem of Induction. I present evidence from a variety of typologically distinct languages that inform us on different facets of the Problem of Induction, where child behavior deviates from the input in UG-predicted ways. Each case by itself is indicative of innate, language-specific biases, but taken together provide a far more compelling argument.

SATURDAY, NOVEMBER 4: POSTERS

Group 1: Pragmatic development in school age children

Children's delay in scalar implicatures: Evidence for processing account

Shuyan Wang

Studies have shown that young children cannot derive scalar implicatures (SIs) at an adult-like level (e.g., Barner et al. 2011; Chierchia et al. 2001; among many others). Some argue that SI computation is costly and beyond children's processing capacities (e.g., Pouscoulous et al. 2007; Tieu et al. 2016). It predicts that with more processing resources available, children can compute more SIs. This project aimed to investigate whether presenting alternatives in context can affect Mandarin-speaking children's SI computation. If the alternative is provided, children do not need to retrieve it from mental lexicon and thus the processing load should be reduced. This project also explored the detailed developmental path by testing 5- to 8-year-old children.

Children make robust lexical predictions in a naturalistic context

Briony Waite, Anthony Yacovone and Jesse Snedeker

Adults seem to predict both the meaning and form of upcoming words during comprehension. But how (and when) does this ability develop? To address this question, we assessed the nature of children's (5–6yo) predictions during a cloze task in a naturalistic storytelling context. We had adults and children listen to a short story and occasionally guess a set of target words. These words varied in predictability (high vs. low cloze). We coded responses as correct or incorrect, and if incorrect, we also coded their semantic relationship to the target word. Children correctly guessed upcoming words with above chance performance. Moreover, when incorrect, they often provided semantically-related responses, highlighting their sensitivity to contextual constraints. Unlike prior work, we demonstrate robust predictive abilities in young children during a naturalistic cloze task. While children showed weaker prediction relative to adults, we also present an exploratory analysis that suggests prediction improves with age.

Pragmatic effects in conditional reasoning: The role of alternatives

Myrto Grigoroglou, Amina Shmanova and Patricia A. Ganea

When reasoning about conditionals, comprehenders frequently draw fallacious conclusions (e.g., If the animal is a dog, it has four legs. The animal has four legs. Therefore, the animal is a dog). Prior research indicates that fallacies can be limited in certain contexts, but the exact mechanism remains underdefined. We test the possibility that conditional reasoning is affected by access to alternative scenarios that could render the conditional false. Seven-year-olds and adults were presented with a box that lights up when you put the 'right toy' on it. Half of the participants saw two alternative 'toys'; half saw three alternative 'toys'. Participants answered questions about the classic conditional reasoning inferences: Modus Ponens, Modus Tollens, Denying the Antecedent, Affirming the Consequent. Findings show that logical fallacies in adults (but not children) disappeared when they evaluated conditional statements against the broader set of alternatives, and highlight the role of pragmatics in conditional reasoning.

Do children trust vigilant informants over gullible ones?

Diana Mazzarella, Marie Aguirre, Thomas Castelain and Nausicaa Pouscoulous

The present study investigates the emergence of first- and second-order vigilance towards deception in early and middle childhood, by testing children's propensity to accept a piece of information from the same partner, as a measure of their second-order epistemic vigilance (their ability to keep track of the vigilance of their partner and act accordingly). We tested four- to seven-year-olds (N = 225) and adults (N = 60) as a control group. Results revealed that children are sensitive to the distinction between a vigilant and a gullible partner starting from the age of 4. However, all children display a strong tendency to trust their partner, regardless of its vigilance/gullibility.

Group 2: Computational modeling

The Clustering Approach: an input-driven approach to parameter setting

Alan Ke, Jingying Xu and Lijun Ding

The previous parameter setting models can be classified into two categories based on assumptions about child language acquisition: The grammar selection approach considers language acquisition as the selection of the target grammar with the correct set of parameters from all possible human grammars. In contrast, the direct parameter setting approach works with a single grammar and assumes that its parameters are learned directly and individually. We argue that both approaches are faced by challenges and a hybrid approach can address the issues faced by both approaches. In this paper, building on Yang's (2002) initial effort on a hybrid model, we propose a new input-driven model: the Clustering Approach (CA). CA offers computational evidence that parameter setting remains a viable framework worthy of further exploration. It supports an input-driven approach that aligns with an emergentist perspective on the acquisition of syntactic parameters.

Addressing the Challenges of Compositional Generalization: A Comparative Study of Models of Language Learning and Representation

Shufan Mao, Philip Huebner and Jon Anthony Willits

How do children produce or comprehend novel sentences containing a recombination of known words? In this research we compare models of linguistic compositional generalization on an artificial language corpus designed to specifically test these capabilities. We test the newly proposed Constituent Tree Network (CTN) model, which stores semantic information in a graphical structure built by connecting word and phrase nodes that co-occur within syntactic structures. We compare this model to the LON model (Mao, Huebner, & Willits, 2023), a graphical model unconstrained by syntactic structure, and also to a neural network language model: GPT-2. We found that only the CTN model performed perfectly on all compositional generalization tasks. The research helps illustrate why some models of language representation (such as neural models like GPT) have difficulty with compositional generalization, suggesting that models of language and semantic development need to constrain the representation of distributional information in a more structured way.

Abstraction via exemplars? A representational case study on lexical category inference in BERT

Kanishka Misra and Najoung Kim

Exemplar based accounts are often considered to be in direct opposition to pure linguistic abstraction in explaining language learners' ability to generalize to novel expressions. However, the recent success of neural network language models on linguistically-sensitive tasks suggests that perhaps abstractions can arise via the encoding of exemplars. We provide empirical evidence for this claim by adapting an existing experiment that studies how an LM (BERT) generalizes the usage of novel tokens that belong to lexical categories such as Noun/Verb/Adjective/Adverb from exposure to only a single instance of their usage. We analyze the representational behavior of the novel tokens in these experiments, and find that BERT's capacity to generalize to unseen expressions involving the use of these novel tokens constitutes the movement of novel token representations towards regions of known category exemplars in two-dimensional space. Our results suggest that learners' encoding of exemplars can indeed give rise to abstraction-like behavior.

What are the units? Evaluating how morphological parsing affects distributional learning

Andrew Z. Flores and Jon Willits

Distributional learning mechanisms are important for language acquisition. But what are the units over which distributional learning operates? Claims about distributional learning mechanisms rest on which units are being used. To address this issue, we conducted two studies: (1) predicting child vocabulary data using statistics derived from child-directed speech, and (2) employing distributional semantic models built from child-directed speech to predict semantic category development. Critically, in both studies we manipulated the corpus used to calculate distributional statistics, varying whether words were left whole, or morphologically parsed with inflectional morphemes (e.g., -s, -y, -ed, and -ing) retained as distinct units in the corpus. Our findings consistently demonstrated that models performed significantly better when the inflectionally parsed corpus was used. These studies highlight the importance of considering what units are being used in distributional learning, and demonstrate the importance of sublexical morpheme-level units in the distributional learning of word meanings.

Group 3: L2 learning and effects of input

Do bilinguals follow first or second language in moving across spaces in speech and co-speech gesture?

Armita Ghobadi, Samantha Nichole Emerson and Seyda Ozcaliskan

Bilingualism involves mastering both speech and gesture patterns in a second language (L2). In first language (L1) speech and co-speech gestures form a tightly integrated system. Relatively less is known about the online effect of language on gesture in bilinguals speaking structurally different languages. This study focused on advanced bilinguals of Spanish (L1) with English (L2) in comparison to L1 English speakers and examined whether bilingual speakers would follow target L2 patterns not only in speech but also in gesture or follow L2 in speech but resort to L1 patterns in gesture. Participants' responses to the animated motion scenes were recorded and transcribed for speech and gesture. Preliminary results showed bilinguals' production in L2 followed the patterns of the target language in speech but not in gesture. Bilinguals used separated and conflated strategies in gestures at roughly similar rates in their L2, showing an effect of L1 on co-L2 gestures.

Accuracy in Listen and Repeat Boosts Comprehension of Turkish as a New Language

Patricia Brooks, Arshia K. Lodhi, Sabina Sharifova, Shan Jiang, Maya Rose, Suzanne van der Feest and Valerie Shafer

This study examined the role of perception-production links in promoting acquisition of Turkish case and number marking by naive learners. Undergraduates (N = 52) completed a computerized language-learning session on Zoom, where they heard Turkish question-answer dialogues featuring nouns inflected for case and number. Participants completed the Culture Fair test of nonverbal ability as an indicator of language-learning aptitude. Accuracy on comprehension trials and listen and repeat trials was scored separately for case and number marking. Nonverbal ability predicted comprehension (case and number marking) and listen and repeat accuracy (case only). Listen and repeat accuracy (case and number) predicted comprehension accuracy after controlling for nonverbal ability. Metalinguistic awareness was associated with comprehension accuracy, but unrelated to listen and repeat accuracy. In keeping with L2 models emphasizing implicit learning of grammar, learners' ability to link auditory and articulatory representations may boost comprehension without promoting awareness of underlying grammatical patterns.

The Unaccusative Trap in adult SLA: evidence from Brazilian Portuguese

Becky Gonzalez

This study examines the acquisition of argument structure patterns across verb types in L2 Brazilian Portuguese, motivated by prior research highlighting L2 learner difficulties with intransitive verbs in several languages, (e.g., English, Japanese, Italian, French, Spanish), even at high proficiency (e.g., Hirakawa, 2003; Montrul, 2005; Sorace, 1993). The results of a judgment task administered to a group of L2 learners and a group of NSs are consistent with the predictions of the Unaccusative Trap Hypothesis (Oshita, 2001), which claims that L2 learners initially interpret all intransitive verbs as unergatives and later restructure their grammar to accommodate two intransitive verb types. This study offers novel cross-linguistic evidence for the Unaccusative Trap, contributes to our knowledge of the role of lexical semantics in SLA, and expands the growing body of research on Brazilian Portuguese, an understudied and critical language in the US.

Hearing and writing German sounds: Influences of phonetic training on L2 perception and spelling

John Scott, Sadi E. Phillips, Charys B. Russell, Ryan Z. J. Lim, Isabelle Darcy and Lisa Süßenbach

Early difficulties in category perception and spelling can affect L2 learners long-term, with interference arising from multiple sources (e.g., L1 phonetics, phonology, grapheme-phoneme correspondences [GPCs], dyslexia). Pre- and post-tests of dictation spelling and aural oddity tasks measured effects of High- or Low-Variability Training (HVPT/LVPT) on category perception and orthographic awareness in first-semester L2 German. Over two days, nineteen L1 English speakers completed four hours of HVPT (nH=9; 4 voices) or LVPT (nL=10; 1 voice) with feedback targeting four contrasts for both vowels and consonants. To investigate generalizability of gains, both post-tests included at least one novel voice and final post-test included novel German words featuring familiar GPCs. Results suggest interactions between perception of consonants versus vowels and listener status as pre-learner or L2 learner, short-term gains for LVPT versus later gains for HVPT, and greater cognitive load for HVPT. We discuss analyses of aural and spelling results and broader implications.

Group 4: Word learning

Young Children can do Syntactic Bootstrapping with both Transitive and Intransitive Frames in the Same Session

Junyou Su and Letitia Naigles

Many studies on syntactic bootstrapping, i.e., the process of children making use of syntactic cues to learn verb meanings, investigate a single frame-meaning link, such as the transitive-causative or the intransitive-noncausative, in a given session for a given child, i.e., a between-subjects design. Through a longitudinal within-subject design, this study investigates whether children can use both transitive and intransitive frames in syntactic bootstrapping, whether this ability changes across 1.5 years, and the degree to which this ability is related to language, nonverbal cognition, or social factors. Seventeen typically developing English-acquiring children averaging 28 months of age at the first visit viewed the syntactic bootstrapping video every 4 months. The results showed that children abstracted both transitive and intransitive frames to acquire verb meanings through the whole span from 2 to 3 years. This ability was not correlated with either language or general nonverbal cognition, but instead with adaptive behavior/socialization scores.

Adaptation to recent linguistic experience guides new word learning in toddlers

Yukun Yu, Naomi Havron, Sandra R. Waxman and Cynthia Fisher

Children use syntax to learn words and adapt their expectations about familiar phrases based on new experience. Preschoolers also use these adapted expectations in word learning. To test the emergence of this effect, we used the phrase *the baby*, which can be followed by nouns (e.g., *the baby elephants*) or by verbs (e.g., *the baby draws*). In a two-day study, 24-month-olds were exposed to induction sentences where the baby preceded familiar nouns (Noun condition) or familiar verbs (Verb condition). On Day 2, during test trials, children heard the baby followed by novel words (e.g., *the baby gorps*). Children in the Verb condition were more likely to interpret the novel words as verbs than were children in the Noun condition. Preliminary data from 18-month-olds showed a similar pattern. These findings suggest that syntactic adaptation serves as one underlying mechanism for early syntax-guided word learning.

Three-year-olds generalize verb meanings across syntactic frames in cross-situational verb learning

Yiran Chen, Alexander LaTourrette and John Trueswell

Previous research suggests that a verb's meaning is learned partly through the aggregated profile of syntactic frames associated with it. For example, "turn" occurs with transitive and intransitive frames in causative alternation ("He turned the car"/"The car turned"), indicating it is a causal verb. Some evidence demonstrates that young children combine multiple frames to map verbs to appropriate events. However, previous work always presented these frames together, in a single dialogue. What remains unknown is how verb learning occurs when the frames are separated, uttered in different referential contexts, as is likely in children's everyday life. Using a preferential looking paradigm, we show that three-year-olds generalize verb meanings across different syntactic frames in a cross-situational learning task. These results shed light on the cross-situational mechanisms of syntactic bootstrapping.

Mandarin-speaking toddlers use input cues to learn novel unaccusative and unergative verbs

Ziqi Wang, Xiaolu Yang, Stella Christie and Rushen Shi

In two novel verb experiments using the visual fixation paradigm, we investigated how Mandarin-speaking 31-month-olds use distributional cues and semantic cues to categorize novel unaccusative and unergative verbs. In Experiment 1, participants were found to use the word order cue to categorize two novel verbs shai and man: after hearing "shai-le NP" and "NP man-le" in the training phase, they categorized shai as unaccusative and man as unergative, showing discrimination in looking times between grammatical trials "NP shai-le" and ungrammatical trials "man-le NP" in the test phase. In Experiment 2, participants employed the semantic cue of telicity provided via novel events to make categorizations: watching a telic event paired with shai-le and an atelic event paired with man-le led to differentiation between grammatical trials "shai-le NP" and ungrammatical trials "man-le NP". The findings provide evidence for toddlers' ability to extract information from the input and make generalizations in verb learning.

Distributional signatures of superordinate nouns

June Choe and Anna Papafragou

Taxonomies of object categories (and their labels) often include the superordinate (e.g., animal), basic (e.g., dog), and subordinate (e.g., dalmatian) levels of specificity. Of these, superordinate nouns are notoriously difficult to learn, but may be helped by distributional cues in the input. We hypothesize that the choice of a superordinate label encodes a particular pragmatic level of informativeness, which lends itself to certain functions. These functions should, in turn, lead to specific linguistic contexts of use. We focus on two such functions: 1) communicating lack of knowledge and 2) generalizing over sets and instances of many kinds. In a corpus analysis of child directed speech, we extract features corresponding to these functions (wh-phrases, universal quantifiers, plurals, anchoring cues) and compare their distribution between frequency-matched superordinate and basic-level pairs. We conclude that superordinate and basic-level nouns differ in pragmatic levels of informativity in ways that affect contexts of use.

Group 5: Vocabulary learning

Which words do children understand but not yet say? Syntactic complexity and the comprehension-production gap

Jonet Artis and Sudha Arunachalam

Children understand words before they produce them, but what determines whether a word will transition from only being understood to also being produced? We asked whether for verbs, the number of arguments they can take plays a role. We used data from the MCDI: Words and Gestures checklist (caregiver report of vocabulary, from Wordbank). We tagged each verb as being able to occur in intransitive, transitive, and/or ditransitive frames and asked whether syntactic frame predicts whether children (a) comprehend the verb, and (b) produce the verb, if they already comprehend it. We found no effects of frame on comprehension, but we did on production. Among verbs that children already comprehended, they were more likely to produce those that can occur in intransitive frames and less likely to produce those that can occur in ditransitive frames. These results highlight the role of syntactic complexity in determining which words children produce.

Parent-reported vocabulary and looking-while-listening in 164 Czech toddlers: support for validity of Czech CDI:WG and CDI:WS adaptations

Filip Smolík, Tereza Sloupová, Tereza Fialová, Kateřina Chládková and Nikola Paillereau

MacArthur-Bates CDI's are important instruments that were validated against various measures, including MLU and standardized/experimental tasks. Many studies found relations between parent-reported vocabulary and on-line word comprehension using looking-while-listening, but this has been typical in CDI validation studies. We used a looking-while-listening comprehension experiment with 164 Czech children as a part of our Czech CDI:WG and CDI:WS (re)norming studies to obtain objective validation data. In four age groups (mean age 11, 17, 19, and 24 months), children were presented with 40, 60, or 80 pairs of pictures, and heard a verbal label. Using permutation analyses as well as generalized additive mixed models, we established significant relations between vocabulary scores (comprehension in 11-month-olds, otherwise production) and fixating the target picture. In 11-month-olds, the effects were paradoxical, and likely due to factors other than word processing. In older children, the effects were robust and specific to vocabulary measures, not syntax or morphology.

Explanations of mechanistic support: the development of children's causal language

Karima Elgamal, Paul Muentener and Laura Lakusta

The current study explores whether and how children use mechanistic causal language when explaining why an object did or did not fall. Participants, 3-5 years, were shown two objects that contrasted in their mechanical properties: one was supported by a ground object (e.g., via hidden tape), and one fell. They were later shown the objects' properties acting inconsistent (e.g., the supported object now fell, while the object that previously fell was now supported) and then asked "why did that happen?". The findings suggest that by 3 years, children provide causal explanations, especially causal function explanations; (e.g., "maybe because it just stuck to the bottom of that bowl, also think that it could stick or glue") for mechanical support events and the likelihood of providing causal explanations increases with age.

Multimodal predictors of early object noun recognition in Tzeltal

Kennedy Casey and Marisa Casillas

What drives early word learning in Tzeltal? Directly-addressed speech from adults is less frequent in rural Tzeltal Mayan communities than in middle-class Western households. While Tzeltal children frequently handle objects, child-directed talk rarely centers around object labeling. These observations lead to a theoretical puzzle, given that leading accounts posit object labeling and handling as key predictors of word learning. To test for evidence of these driving factors in Tzeltal children's lexical development, we combined a word-recognition experiment with analyses of naturalistic input from daylong recordings (audio/photo) of children up to age 4. We found that Tzeltal children reliably recognized concrete object nouns, with mixed evidence for effects of natural adult object labeling and child object handling frequency on their speed and reliability of word recognition. Results indicate some shared utility of multimodal input features across diverse learning contexts, while also highlighting possible cross-community differences in key predictors of word learning.

Group 6: Bilingual language learning

Testing theories of the vocabulary spurt using longitudinal data from bilingual and monolingual infants

Miranda Gómez Díaz, Laia Fibla Reixachs and Krista Byers-Heinlein

Sometime before their second birthday, many children show a period of rapid expressive vocabulary growth called the vocabulary spurt. Accumulator models attribute the vocabulary spurt to the accumulation of experience with words, while cognitive models attribute it to changes in cognitive development. Bilingual infants were studied to test these theories. Logistic curves were fitted to longitudinal data from 40 16-30 month-olds to estimate timing and steepness of the vocabulary spurt in single-language and combined vocabularies. For single-language, infants with greater exposure had earlier and marginally steeper spurts. For combined vocabularies, monolinguals/unbalanced bilinguals showed an earlier and steeper vocabulary spurt than balanced bilinguals. Results better support predictions of accumulator models and showed that language balance plays a role in total vocabulary development. Results illuminate bilingual vocabulary acquisition and mechanisms of lexical development, and suggest that other factors, such as quality of language exposure and receptive vocabulary development, should also be explored.

Syntactic Processing in Child Heritage Language Bilinguals: An Eye-tracking Study of Which-questions in Romanian

Anamaria Bentea and Theodoros Marinis

This study aims to understand whether online processing and offline accuracy patterns in child heritage speakers/HSs are congruent with those in monolingual children and whether child HSs make use of morphosyntactic information (differential object marking/DOM and/or number marking) to incrementally interpret sentences during HL processing. In a webcam-based visual-world eye-tracking experiment, we compare subject and object which-questions in 24 Romanian-German bilinguals (Mage=8;00) and 30 monolingually-raised Romanian children (Mage=7;11). Participants saw picture pairs while listening to subject/object which-questions with/without number mismatch. Eye-movements and accuracy responses were recorded. Offline results revealed better accuracy with subject questions and an age effect in both groups, and that monolinguals were more accurate with object which-questions than HSs. Online results showed similar processing patterns in both groups for subject questions (i.e. more looks to Target than object questions) and higher proportion of looks to Target in object-questions with number mismatch than with number match in monolinguals.

The impact of codeswitching on bilinguals' novel verb learning

Emma Libersky, Caitlyn Slawny and Margarita Kaushanskaya

Bilingual children learn words in both single-language and codeswitched contexts, but the impact of codeswitched input on word learning remains unclear. We conducted two experiments examining the effect of codeswitching on bilingual children's verb (Experiment 1) and noun (Experiment 2) learning. In both experiments, Spanish-English bilingual children aged 4-6 years learned English-like novel words in single-language and codeswitched contexts across several teach-test cycles. We analyzed initial learning and learning over time, measuring the impacts of condition, language ability, and their interaction. Experiment 1 yielded a significant condition by language ability interaction, such that higher language children showed better verb learning in the codeswitched condition. Learning across conditions equalized in later trials. In Experiment 2, neither condition nor language ability predicted noun learning. The finding that codeswitching does not hinder—and may benefit—learning has implications for theories of code-switching and for bilingual language development.

Characterizing preschooler's grammatical errors for monolingual and dual language learners

Chelsea Brown

Language acquisition trajectories inform parents, educators, and clinicians. These expectations help track developmental goals, identify and address language delays or disabilities, and help tailor learning materials. However, this knowledge is missing for many bilingual children. This study addresses this by observing differences between preschool aged English monolingual and dual language learners in a language comprehension and sentence repetition task. Monolinguals score significantly higher in overall language and grammatical understanding. There is no difference in vocabulary comprehension or elaborated sentence structure. In the sentence repetition task, monolinguals are significantly more accurate, but the two groups don't differ in overall errors made per incorrect repetition. Specific error types were examined with both groups producing similar errors, though overall replacement, determiner replacement, and verb tense all approached significance. This is the start of documenting normed trajectories for dual language learners, and the specific error types allow for further nuanced exploration of language mechanisms.

Why do older children learn second languages faster than younger children?

Heesu Yun, Wei Li and Joshua K. Hartshorne

Understanding the impact of an individual's first language (L1) on acquiring a second language (L2) is crucial due to the rise of bilingualism. Previous research indicates that the L1 can both facilitate and hinder L2 learning (Mitchell et al., 2019). Studies suggest that older children or those with stronger L1 skills learn L2s more quickly (Chan & Hartshorne, 2022; Mayberry & Kluender, 2018; Snow & Hoefnagel-Höhle, 1978). Chan & Hartshorne (2022) investigated L2 English learning in international schools and found the age effect is driven by positive transfer. But the statistical results were weak and the measure of linguistic similarity is imprecise. We double the size of the dataset, increase the diversity of L1s, and use more precise metrics of linguistic similarity (Littell et al., 2017). Age effect and linguistic similarity effect were found, suggesting greater L1 proficiency leads to faster L2 acquisition, and that this is driven by positive transfer.

Group 7: Acquisition of phonology

Developmental changes in allophonic realization: Japanese-speaking children's production of fricative and affricate allophones

Kyoji Iwamoto, Sanae Matsui, Mafuyu Kitahara and Reiko Mazuka

The current study investigates the developmental processes of children's motor control ability and allophonic choice tendency by analyzing the recordings from an elicited production task, in which the participants were asked to produce novel words, including the /z/ or /zj/ sound as the first phoneme in the utterance-medial position; 108 Japanese-speaking participants in 6 age groups (5-, 7-, 9-, 11-, and 13-year-olds and adults) were considered. Tokens that included closure-like silence sections before the noise component were classified as affricates or otherwise as fricatives. These results suggest that children's allophonic realization of fricative and affricate allophones has the same tendency in developmental order as their consonant articulation ability. The results reveal that the choice of allophones is affected by children's age. An allophone that is easier to produce was produced more frequently in younger children. However, the changes were not uniform across the subparts of the allophones or between allophones.

Acquisition differences in Mayan languages: a prosodic account

Cassandra Caragine and Lydia Quevedo

Mayan languages mark agreement on the verb with two sets of exponents: Set A for ERG(ative) and Set B for ABS(olutive) arguments. Prior work indicates that children acquiring K'iche learn ABS-agreement morphology (Set B) in verbal contexts significantly later (>3;6) than their peers acquiring other Mayan languages, e.g. Tzeltal (2;6). These observations are based on correct production in 75% of obligatory contexts. We present a novel account of the age of acquisition (AoA) delay for K'iche. Drawing on phonological data, we propose that the relative delay in the acquisition of Set B in K'iche follows from prosodic smothering (PS) of the ABS morpheme by the preceding aspect marker. By increasing the opacity of morphological segmentation, this phonological process results in delayed acquisition of Set B. Our analysis highlights PS of Set B as a distinguishing factor between Chuj and K'iche, a difference not captured by previous accounts.

Consonant-vowel perceptual biases in infancy are linked to articulatory-motor productivity

Irene LORENZINI, Henny Yeung and Thierry NAZZI

Infants' articulatory-motor productivity has been correlated with the development of speech perception in several ways. We ask whether articulatory-motor productivity is also linked to the emergence of early biases for lexical processing.

Speakers of languages where consonants outnumber vowels display a perceptual bias for Consonants when segmenting, learning and recognizing word-forms. Such C-bias emerges in the first year of life, preceded by a bias for vowels. Auditory experience has been assumed to be critical in the C-bias development, however, articulatory-motor experience might also be at play.

In a Head-turn Preference Procedure, 32 French monolingual 7-month-olds completed a segmentation task testing their tendency to rely on C vs V. In parallel, babbling skills and general vocal productivity were investigated. We then tested whether those factors predict the development of the C-bias. Results showed a main effect of general vocal productivity ($p=0.006$; $\eta^2=0.262$) and an interaction vocal productivity x babbling ($p=0.012$; $\eta^2=0.229$).

Group 8: Semantic development

Semantic effects on the perception of emotional prosody in Mandarin Chinese: facilitation for L1 speakers versus interference for L2 learners

Cheng Xiao and Jiang Liu

Emotional prosody refers to the ways that tone of voice can be modulated to convey emotions. Native speakers show an advantage in recognizing emotional prosody of their culture groups over non-native speakers, and semantics facilitates such perception in an emotion congruent condition. However, few studies examined whether these findings can be generalized to tonal languages as Mandarin Chinese. This study investigates how semantics affects Chinese emotional prosody perception for L1 and L2 Chinese speakers. Overall, our results showed that native Chinese recognized Chinese emotional prosody more accurately and quickly over L2 learners, but the semantic effects on such perception differ in words and sentences. In words, the semantic-prosody congruency effect was observed in words for both groups, while it was only found for L2 group in sentences. We argue that the processing load causes L2 learners to have greater negative semantic interference with perceiving paralinguistic information, i.e., emotion prosody.

Children's encoding of mechanical support in dynamic events

Julia Hauss, Jennifer Barbosa, Angelina Pasquella, Barbara Landau, Paul Muentener and Laura Lakusta

We explored children's acquisition of mechanical support (MS) language by testing how children describe events depicting an agent putting an object on another via some mechanism (girl taping paper to door). Whereas previous studies using static configurations found that 4-year-olds use BE on more than lexical verbs to encode MS, we found that 4- and 6-year-old children used lexical verbs the majority of the time. Further, our events were constructed such that they could be encoded with different classes of lexical verbs - verbs (e.g., hang) that encode the spatial orientation of the figure relative to the ground or with verbs (e.g., stick, glue) that encode the mechanism. Adults used more Mechanism verbs than children and children used more Spatial Orientation verbs than adults. The results show that dynamic events elicit more lexical verbs compared to static configurations, and the types of mechanical lexical verbs used changes over development.

Mandarin-acquiring children's interpretation of presuppositional you 'again'

Ting Xu, Lyn Tieu and Stella Christie

Most previous studies on children's comprehension of the presupposition trigger 'again' report successful acquisition by preschool age. However, this conclusion is typically based on performance in Truth Value Judgment Tasks (TVJT). The presuppositional nature of 'again' poses a methodological challenge for the TVJT. In the current study, we designed an experiment to examine children's knowledge of presuppositional you 'again' in Mandarin. 56 Mandarin-acquiring children (3;11—5;12; M=4;10) and 34 adult native-speaker controls participated in a question-answer task. They listened to a series of pre-recorded stories illustrated with pictures. Each story involved two contrasting characters, only one of whom satisfied the presupposition of you. At the end of each story, participants had to answer a wh-question containing you. The task revealed some sensitivity to the presence of you, but showed that children are not adult-like with respect to the presupposition of you. We discuss implications of methodological choices when investigating presuppositions.

The role of linguistic cues and visual information in the felicity judgment of negative sentences in child Japanese

Ayumi Nobuki, Megumi Ishikawa and Utako Minai

Studies have suggested that challenges in comprehending negative sentences are attributed to the lack of felicity in context, and what factors determine the felicity of negation remains under discussion. Nordmeyer & Frank (2018) found that English-speaking pre-school children are sensitive to the felicity of true negative sentences (e.g., "Abby doesn't have an apple"), determined by visual information regarding whether the subject-referent character (e.g., Abby) has nothing or something other than an apple in the visual materials. The current study extended Nordmeyer & Frank (2018) to Japanese-speaking children, by adding a contrast-marking particle -wa in negative sentences, which may affect the felicity of negative sentences with respect to what the subject-referent character has in the visual materials. Findings suggested that Japanese-speaking pre-school children, though not robustly adult-like yet, showed emerging awareness of the influence of the contrast-marking particle -wa in negation and the felicity of negative sentences.

Group 9: Language & Cognition

Scene and Heard: Infants use shape and language to categorize places

Yi Lin, Agata Bochynska, Daniel Dilks and Moira Dillon

Infants interact with objects, hear them named, and produce object words earlier and more frequently than they navigate places, hear them named, and produce place words. Do infants nevertheless learn about objects and places in similar ways? In Experiment 1, 6- and 12-month-olds were familiarized to different examples of one kind of natural place (fields or canyons), each labeled by the same nonsense noun. At test, infants looked longer at an example from the novel category compared with a new example from the familiar category, suggesting that they had learned the familiar category. Ongoing Experiment 2 replaces natural places with rendered places differing in spatial layout alone and planned Experiment 3 replaces labeling phrases with tones. We hypothesize that infants will succeed in Experiment 2 but fail in Experiment 3. Our results expand the spatial domains of prior studies, painting a comprehensive picture of infants' intuitions about space and language.

Pragmatic skills in Down syndrome: A view from narrative retell

Elisa Mattiauda, Angela Hassiotis and Alexandra Perovic

Down syndrome (DS) is a neuro-developmental disorder associated with well-documented grammatical deficits, however less is known about their pragmatic profile. This study employs a narrative retelling task to explore aspects of pragmatic competence in a sample of adults and young people with DS, compared to controls matched on vocabulary comprehension. Participants viewed a story from the Multilingual Assessment Instrument for Narratives (MAIN, Gagarina et al., 2019), assessing aspects of story structure and comprehension. Our participants with DS mentioned fewer components of story grammar overall, omitting inferred information more frequently, despite producing stories of similar length as controls. They also showed difficulties in comprehending characters' mental states and goals. We discuss how such patterns may be explained by underlying syntactic deficits, rather than ToM issues. We also explore trends of variable performance across narrative abilities, cognition and age, in view of the high risk for dementia-related decline evidenced in this population.

Learning about perception from language: evidence from visibility inferences by congenitally blind adults

Ziwen Wang, Lisa Musz, Arielle Silverman, Clarissa Alfonso, Gabriel Pernel, Sophia Keil and Marina Bedny

We investigate how humans learn about perception from language by comparing visual knowledge across adults born blind and sighted. In previous studies blind people distinguished among verbs of looking (look, see, glance vs. stare). We compared how blind and sighted speakers understand these verbs in discourse context and use them to reason generatively about vision. Adults born blind (n=20) and sighted (n=40) listened to 3-to-4-sentence scenarios describing an observer glancing, staring at, or listening to, another agent from varying distances. Participants rated the likelihood that the observer would know agent's appearance features. Blind and sighted alike judged knowing less likely for glancing than staring and agreed on which features are easier to see (e.g., age easier than mood). Relative to sighted, blind adults underestimated how much visibility deteriorates with distance. Language transmits causal variables that influence perception i.e., time, distance and size, but not analogue weighting of these variables.

Simple and Subjunctives Conditionals in child Greek

Vina Tsakali and Irini Amanaki

Studies have suggested that challenges in comprehending negative sentences are attributed to the lack of felicity in context, and what factors determine the felicity of negation remains under discussion. Nordmeyer & Frank (2018) found that English-speaking pre-school children are sensitive to the felicity of true negative sentences (e.g., "Abby doesn't have an apple"), determined by visual information regarding whether the subject-referent character (e.g., Abby) has nothing or something other than an apple in the visual materials. The current study extended Nordmeyer & Frank (2018) to Japanese-speaking children, by adding a contrast-marking particle -wa in negative sentences, which may affect the felicity of negative sentences with respect to what the subject-referent character has in the visual materials. Findings suggested that Japanese-speaking pre-school children, though not robustly adult-like yet, showed emerging awareness of the influence of the contrast-marking particle -wa in negation and the felicity of negative sentences.

Bilingualism Effects On Theory Of Mind In Children With DLD

Clémence Gordon-Dana, Anamaria Bentea and Stephanie Durreleman

A subset of children with developmental language disorder (DLD) displays delays in Theory of Mind (ToM) [1], the understanding of mental states [2]. This work asked whether bilingualism could mitigate ToM difficulties in DLD, as suggested by preliminary work [3], and also explored for the first time (a) if this effect emerges in both first-order [4] and second-order ToM [5], and (b) if more balanced bilingualism as measured by the PaBiQ parental questionnaire [6] maximizes ToM benefits. Comparisons of two cohorts of 28 children with DLD (5 to 10 years) matched on age (MA = 7 years) showed that the bilinguals with DLD understood first-order false belief significantly better than monolinguals ($p = 0.043$), while no differences emerged for second-order ToM tasks. More balanced proficiency in two languages did not correlate with better ToM skills. Bilinguals' strength on first-order ToM compared to monolinguals suggests a bilingual socio-cognitive advantage in DLD.

Group 10: Heritage language

Heritage language status and language exposure in early trilingual development

Erin Quirk, Natasha Hadeed and Krista Byers-Heinlein

This study investigated potential predictors of early trilingual development in a group of 31 toddlers in Montréal, Canada, acquiring the two community languages, English and French, plus a heritage language. Children's language environment, their language use, and vocabulary size in all three languages were assessed via parent. Active use of a language, also assessed by parent report, was defined as producing a language when addressed in that language. Children's age, exposure, parental education, and habit of responding in a language were positively related to vocabulary size. Heritage language status was negatively related to vocabulary size. Only exposure related positively to active use of a language. However, active use of all three languages was associated with higher exposure to heritage languages and lower exposure to community languages. Our results indicate that trilingual development is tightly linked to language exposure, but that the sociolinguistic status of the languages may modulate this relationship.

Subject use in Bulgarian heritage speakers: The role of dominance

Dobrinka Genevska-Hanke and Cornelia Hamann

This study investigates the use of overt (OS) and null pronominal subjects (NS) in the oral narratives of 20 child heritage speakers of Bulgarian in Germany, comparing them monolingual children and adults as to the use of non-/ambiguous OS/NS in TC- and shift contexts as well as the overall use of OS/NS in TC.

Results show that all speakers used OS and NS comparably except for German-dominant bilinguals, supporting early acquisition of NS syntax but hinting to effects of CLI/dominance. Analyses of TC and -shift contexts revealed that children slightly overproduced OS in TC and used more ambiguous OS than adults. The bilinguals used significantly more ambiguous NS than monolinguals, an indication for discourse constraints not yet in place. Adults also produced some OS in TC and ambiguous OS and NS, which speaks to the gradient nature of the phenomenon with its effects amplified by bilingualism, development, dominance and CLI.

Case resilience in Marathi heritage speakers

Anupama Reddy and Kamil Deen

It is well known that heritage speakers struggle with functional language-specific features (e.g. case, agreement), particularly if it is not a feature of the dominant language (Kim et al., 2018; Chondrogianni & Schwartz, 2020). However, case in Marathi (a split ergative language spoken in India: ergative-absolutive voice, ERG-ABS, occurs in the perfective; nominative-accusative, NOM-ACC, in the imperfect) has been shown to be a strong cue for verb learning: when Marathi children (and Marathi adults) encounter intransitive verbs, they leverage case as their primary cue for determining transitivity (authors, 2022). In this study we investigate the influence of case marking on verb interpretation in heritage Marathi-speaking children (ages 4-14yrs) and find that heritage children are extremely sensitive to case cues from both alignment systems, particularly ACC, concluding that the fragility of case in heritage populations is modulated by the individual (case) properties of the heritage language.

Word order constraints for wh-questions in adult heritage Western Armenian

Annika Topelian and Kamil Deen

In this study, we investigate word order properties of wh-questions in adult (heritage) WA. The results of an acceptability judgment task (AJT) reveal two constraints on word order for wh-questions in WA (fronting and adjacency) and show that despite WA being almost exclusively a diasporic heritage language (HL), speakers systematically adhere to these constraints. Participants were tested on a 5-point-Likert-scale AJT (60 items presented auditorily, 24 experimental items distributed across 2 question types - subject, object - and four word order conditions (1-8); 36 filler items). Results to date show both fronted and non-fronted word orders are accepted, which suggests that WA heritage speakers allow either overt or covert checking of wh-features. Furthermore, the wh-phrase and the verb must always be adjacent in accepted word orders. Results also demonstrate that speakers are systematic in their judgments despite WA's status as a HL.

Group 11: Late L2 acquisition

'Passive' unaccusatives in L2 English: Learners' acceptability of overpassivized and lexically causativized intransitive verbs

Yu Tazaki

This study investigates 'passive' unaccusative errors (e.g., Miki was disappeared) by critically reviewing one of the most popular analyses, referred as to the Conceptualizable Agent (Ju, 2000). It claims that L2 English learners are more likely to passivize unaccusatives in externally caused events (the causer or cause of the event is apparent) than in internally caused events (the causer or cause of the event is not apparent). Additionally, under Ju's explanation, learners subsume intransitives under transitives. To test the prediction, the present study used a grammaticality judgment task administered to 76 learners of L2 English. The results of the task showed that learners accepted more passive errors with intransitive verbs when a cause of the event is inferable, and that causative errors were observed. These findings indicate that the Conceptualizable Agent is a plausible analysis of 'passive' errors, backing up transitivization analysis.

Going Beyond Speech Perception: Listening Effort in Multilinguals

Dana Bsharat-Maalouf, Jens Schmidtke, Tamar Degani and Hanin Karawani

Speech perception under adverse listening conditions (e.g., in noise) may pose challenges for listeners, especially for multilinguals. This study investigated how listening effort can explain such challenges. 46 Arabic-Hebrew-English multilinguals listened to words in quiet and in noise in each of their languages (240 total words per participant). Listening effort was measured using pupillometry during the perceptual task. The findings showed that perceptual performance was comparable across languages in the quiet condition, but that performance dropped in the noise condition, especially for the non-dominant language. Further, greater listening effort was exerted in noise. Most critically, whereas perceptual performance in the quiet condition did not differ across the dominant and non-dominant languages, pupillometry measures revealed differences across languages. Thus, to achieve the same perceptual performance in the dominant and non-dominant languages, multilinguals had to exert greater listening effort in their non-dominant language, highlighting the importance of assessing multilingual listening effort.

L2 and heritage learners of Mandarin use categorical and gradient verb constraints to predict upcoming arguments in dative constructions

Yanxin (Alice) Zhu and Theres Grüter

This study investigates prediction of the Mandarin dative alternation based on verb information among adult native and non-native speakers. Native speakers (N=59) and classroom learners (CLs, N=60, 38 sequential L2ers and 22 heritage speakers/HS) completed a visual world eye-tracking experiment. Results showed both L1ers and CLs (no difference between sequential L2ers and HSs) predicted a theme following PO-only (categorical constraints) and PO-biased verbs (gradient constraints), and a goal following DO-only verbs.

This study presents new evidence of active prediction of the Mandarin dative alternation for both categorical and gradient constraints, and demonstrates these effects generalize to L2 and heritage speakers. Notably, we observed no delay or reduction in the effect in the latter two groups, unlike other recent studies on sentence-level predictive processing among HSs and sequential L2ers, suggesting engagement in prediction may vary differentially depending on the nature of the linguistic cues involved.

Different language-usage experience leads to different learning outcomes: Evidence from Korean subject–predicate honorific agreement

Boo Kyung Jung and Gyu-Ho Shin

This study investigates whether and how L2 environments (foreign language vs. heritage language) affect L2 learners' comprehension behaviour regarding Korean subject–predicate honorific agreement. This knowledge manifests both cross-linguistic consistency (systematic dependency relation) and language-specific aspects (context-driven optionality; indirect honorification); L2-Korean textbooks over-emphasise honorification in general. L1-English L2-Korean learners, Korean heritage speakers living in the US, and native speakers of Korean participated in an acceptability judgement task (6-point Likert scale; with reaction-time measurement). Results show the two learner groups' asymmetric acceptability ratings and reaction times spent in the two mismatch conditions, suggesting the promising role of enhanced (albeit imperfect/partial) knowledge about, and usage experience of, home language for heritage speakers' acceptability ratings (controlling for L2-textbook input regarding honorification and approximating the native speakers' tendency) and their sentence-evaluation process (relaxing computation cost involving the agreement-related mismatch). This lends support to the major influence of L2-learning environments on non-dominant-language/L2 activities.

Group 12: Lexical processing

Word learning and recognition in monolingually- and multilingually-raised infants

Federica Bulgarelli, Sophie Barry and Erika Bergelson

Infants must learn to recognize words when they sound acoustically different from previously-heard instances. Under a year of age, infants struggle with this, not recognizing words produced by new talkers or in new accents. We ask whether infant's varying day-to-day experiences, namely exposure to multiple languages or exposure to accented speech, influences infant's willingness to accept never-before-heard instances of words. Monolingually and multilingually-raised 8-month-olds were habituated to a novel word-object link, and tested to see whether they would increase their looking time to a change in talker (Exp 1) or accent (Exp 2), which do not break the word-object link. We further tested word-object link learning by asking whether infants would increase their looking time when the word or object changed. Monolingually- and multilingually-raised infants increased looking times to all changes, suggesting that multilingual exposure, or exposure to accented speech, do not impact word learning and recognition as tested here.

Remember the only information that matters: four- and six-year-old children maintain single hypothesis across trials in word learning

Felix Wang and Meili Luo

Theories on whether children are single-hypothesis testers or can remember multiple potential referents in a given learning trial critically differ as a matter of the amount of information learners remember following learning. To provide settings where children have the best chance of remembering multiple referents, we use repetition of learning trials, where each trial includes two objects and one word that refers to one of the objects. This minimizes the amount of information present in learning instances, maximizing the chance of representing multiple referents. Experiment 1 tested 91 4-year-olds with unfamiliar objects as referents. Experiment 2 tested 91 4-year-olds with familiar animals as referents, and Experiment 3 tested 79 6-year-olds with familiar animals as referents. At test, the same trials from all three experiments were above chance, and the switch trials from all three experiments were at chance. The results showed children only store a single hypothesis during word learning.

Assessing two methods of webcam-based eye-tracking for child language research

Margaret Kandel and Jesse Snedeker

We investigate the feasibility of conducting web-based visual-world eye-tracking experiments with school-aged children. We test two webcam-based eye-tracking methods: automatic gaze estimation with WebGazer.js and frame-by-frame hand annotation of gaze direction from recorded webcam videos. Experiment 1 directly compares the two methods in a phonemic cohort task with 5–6 year-old children (using both two-image and quadrant-based displays). Experiment 2 more precisely investigates WebGazer.js' spatiotemporal resolution with 4–12 year-old-children in a visual fixation task. We find that it is possible to conduct web-based eye-tracking experiments with children in both supervised (Experiment 1) and unsupervised (Experiment 2) settings, however the webcam eye-tracking methods differ in their resolution. We provide recommendations for researchers conducting child eye-tracking studies online, including suggestions related to selecting an eye-tracking method, experimental design, sample/effect size estimates, data collection procedures, and analyses.

Group 13: Morpho-syntax in adult learning

Can youth suspects understand all Wh-questions?

Maria Arche, Venja Beck, Mai Fleetwood-Bird, Alexandra Perovic, Josep Quer and Jeannette Schaeffer

This novel study brings together teenage language comprehension and the field of youth criminal justice. It investigates to what extent Wh-questions in police and court interrogations can be comprehended by youth suspects. Research shows that 50-75% of teenage suspects have a significant - previously undiagnosed - language impairment (Bryan et al. 2007; Snow & Powell; 2005; 2008; Snow et.al. 2016; Fleetwood-Bird 2018). Wh-questions are a crucial part of interrogations because they attempt to ascertain the events and determine the degree of guilt. We show that (Dutch) interrogator utterances contain many complex Wh-questions that are known to be difficult for children with Developmental Language Disorder (DLD). We argue that this increases the vulnerability of youth suspects in criminal justice, thus undermining the fundamental right to a fair trial (a.o. Article 14 ICCPR 1976).

The L2 knowledge and processing of Arabic grammatical gender: L1s English and French

Kholoud Al-Thubaiti

This study investigated L1 effects on the L2 knowledge and processing of verbal gender agreement in standard Arabic. The study sample had 85 L1 Arabic controls, 25 L1 French (+ gender), and 25 L1 English (– gender). They were tested using an online grammaticality judgment task; the stimuli tested 3 factors: gender (masculine vs. feminine), noun root (same vs. different), and V-S agreement (matched vs. mismatched). Results from mixed-effects modelling showed no significant effect for the L1 background. Unlike L1 Arabic, the French and English groups showed lower accuracy on the mismatched condition. Their accuracy was comparable across gender, but incomparable across root types. They showed lower accuracy on stimuli with subject nouns that have distinct feminine and masculine roots (zamal ‘camel.M’ vs. naq-a ‘camel.F’). Regarding processing, the L2 groups showed comparable reaction times for agreement conditions across gender and root types. Overall results provide evidence against L1 transfer accounts.

Feature reassembly in L2 acquisition of quantification

Margaret Lei

Cantonese favors affixal quantification—a linguistic device that is essentially absent in Mandarin Chinese. The present study aims to examine the acquisition of the universal suffixal quantifier "saai3" by Mandarin-speaking learners of L2 Cantonese. Using both comprehension and production tasks, we tested 72 L2-learners at three proficiency levels and 33 native Cantonese speakers. Our findings show that all three levels of L2 learners are not fully aware of the [+definite] feature in their comprehension of "saai3", and that only the intermediate- and advanced-level learners are sensitive to its quantificational accessibility hierarchy. In addition, nearly half of the "saai3" tokens produced by the L2ers involve overgeneralization errors, reflecting a lack of checking the [+plural] feature. The mapping and reassembling of features (Lardiere 2009) in L2 Cantonese is particularly challenging due to the apparent overlap in both form and meaning between the suffixal universal quantifier and the suffixal aspectual markers in the language.

Antecedent preferences at the syntax-semantics and syntax-discourse interfaces: Testing the Interface Hypothesis with L1-Japanese L2-English speakers

Amy Atilis

Remote posters (Saturday)

Metathesis of consonants in child Greek

Eirini Ploumidi

This study, based on the longitudinal of four typically developing-Greek-speaking children investigates the application of onset consonant metathesis during the early and intermediate developmental phases in Greek, while exploring the (non-)occurrence of variation in the children's forms. The data demonstrate that onset consonants of adjacent syllables trade positions. The documented patterns are:

PATTERN 1:Metathesis of CORONAL onset consonants in word-initial position.

PATTERN 2:Metathesis of LABIAL onset consonants in word-initial position.

The availability of more than one metathesis pattern in the data indicates the presence of inter-child variation and may, also, lead to intra-child variation. This study proposes that the appearance of PATTERN 1 and/or PATTERN 2 in each child's data results from the availability of distinct acquisition paths corresponding to multiple co-emerging grammars (Kiparsky 1993; Anttila 2002; Tzakosta 2004). Each path favors the realization of certain place features word-initially, i.e. CORONAL- or LABIAL-initial outputs.

How Child-Directed Speech Enhances Word Segmentation: Insights from a Computational Modeling Study of Korean

Eon-Suk Ko, Jun Ho Chai and Seongmin Mun

This study investigated the advantages of child-directed speech (CDS) in word segmentation. The analysis focuses on comparing CDS and adult-directed speech (ADS) in computational word segmentation and identifying the properties of linguistic input contributing to the segmentability of words. We analyzed data from spontaneous interactions of 35 Korean mother-infant pairs from Ko corpus, supplemented by the Call Friend Korean corpus for comparative purposes. Phonetic transformation is applied to approximate a child's linguistic environment. Various algorithms, including sub-lexical and lexical approaches, are employed to evaluate model performance. The results indicated that CDS exhibits distinct corpus properties compared to ADS. Korean CDS demonstrated improved segmentability with a 12% increase over ADS. Specific corpus properties, including utterance length and proportion of hapax words, exhibit a stronger relationship with word segmentation performance in CDS compared to ADS. These findings shed light on how CDS facilitates word segmentation, a crucial step in language development.

Communicative efficiency is present in young children and becomes more adult-like with age

Shira Tal, Kenny Smith, Inbal Arnon and Jennifer Culbertson

Adult language users tend to efficiently balance between two competing pressures: the need to minimize production effort while maximizing understandability. However, it is not clear whether children's language use is also shaped by a similar efficient trade-off. Investigating whether such pressures are already present in young children is important for understanding the developmental nature of communicative efficiency – a tendency that is argued to shape language structure over time. Here, we investigate the development of communicative efficiency using a novel experimental paradigm with children ages 4-10. Results show that communicative efficiency is attested already in young children and becomes more adult-like with age: as children grow, they are more likely to shorten messages (minimize effort) when a short message is sufficient for accurate communication. We discuss the implications of our results for cognitive development of communicative efficiency as well as for theories about children's role in driving language change.

Prediction errors in structure and word learning.

Chiara Gambi and Katherine Messenger

Is children's acquisition of linguistic knowledge driven by prediction errors? Surprisingly, we have limited empirical evidence for this learning mechanism, and the evidence that does exist is mixed. Broadly, while evidence on the role of prediction errors in word learning is weak, with most studies suggesting children do not start benefitting from having their predictions disconfirmed until the age of 8 years, a small number of studies have consistently provided evidence for a role of prediction error in learning about structure. Here we aim to provide a conceptual replication and extension of one of these studies. If our work confirms previous evidence that prediction errors drive learning about structure, we will discuss this striking dissociation between word and structure learning and draw implications for the generality of prediction errors as a learning mechanism.

Socioeconomic Status, Parental Play and Book-reading, Maternal Work Status and Vocabulary Development in Young Korean Children

Jongmin Jung, Jun Ho Chai and Eon-Suk Ko

This study explored the impact of SES on children's vocabulary in Korea, where maternal education is near-homogenous and childcare enrollment is widespread. We investigated whether parent-child play and book reading (PBR) mediated the effect of SES. Additionally, vocabulary scores were compared between the stay-at-home and working mothers. Using structural equation modeling with 261 mothers, this study found that SES significantly predicted vocabulary scores with a relatively small coefficient, with PBR acting as a full mediator. Compared to stay-at-home mothers, working mothers had similar play frequencies, playtime, and higher book-reading frequencies, but no significant differences in children's vocabulary scores. This study emphasizes the relatively modest influence of SES on Korean children's vocabulary, which is fully mediated by parental efforts in PBR. Further research is necessary to comprehend the factors that intervene in the SES-vocabulary relationship based on maternal work status.

Parsing the roles of bilingualism and socioeconomic status in language ability in Autism Spectrum Disorder: Evidence from longitudinal data

Eleni Peristeri, Margreet Vogelzang and Ianthi Maria Tsimpli

Evidence on the language development of autistic children growing up in bilingual contexts has shown that bilingual autistic children do not show additional language delays when compared with monolingual peers. Cross-sectional research has also shown that bilingualism enhances verbal intelligence only for low-socioeconomic status (SES) autistic children. Here, we capitalize on longitudinal language data of 141 monolingual and bilingual autistic children, and a data-driven approach to derive meaningful groups among autistic children with varying levels of language experience defined in terms of bilingualism and SES, to test whether these empirically-derived groups diverge in language over 5 years of development. The clustering analysis of children's expressive vocabulary and syntactic comprehension data yielded two distinct clusters largely explained by bilingualism: children scoring high on syntactic comprehension were mostly bilinguals, while those scoring high in expressive vocabulary were mostly monolinguals. The findings also show that bilingualism in autism might attenuate SES-mediated language differences.

Cross-linguistic similarities in word learning: Prosodic focus is interpreted as contrastive in both English- and French-speaking children

Martin Ho Kwan Ip, Clara Dargent, Elizabeth Swanson, John Trueswell and Alex de Carvalho

Prosodic focus can be useful for referent identification and hence word learning (consider "Now MARY is gorp-ing!"). However, not all languages use prosodic focus for referential contrast. For instance, French uses syntax (e.g., clefting) rather than prosodic focus. In a cross-linguistic eye-tracking experiment, we investigated if universal preferences exist to interpret prosodic focus as referentially contrastive. English- and French-speaking 3- and 5-year-olds and adults were presented with two side-by-side videos, each with a person doing an action, while hearing utterances with prosodic focus on either the noun or the verb. In both language groups, participants who heard Noun-accented sentences looked more at the new person, while those who heard Verb-accented sentences looked longer at the new action. Our findings show that prosodic focus can be interpreted contrastively to learn the meanings of novel words, even in speakers whose language does not employ prosodic focus for this purpose.

SUNDAY, NOVEMBER 5

Linguistic and extralinguistic constraints on school-age children's use of variable nominal plural marking in Brazilian Portuguese

M. Cole Callen

This corpus-based study examines the sociolinguistic development of variable nominal number agreement in Brazilian Portuguese. Data come from the AlegreLong Corpus, which includes transcriptions of speech from seven monolingual Brazilian children between ages 4;3 and 9;0. An exhaustive sample of 654 plural DPs was extracted, and 1,289 individual DP elements were coded individually for several linguistic, stylistic, and social factors. Mixed-effects logistic regression revealed that children show adult-like knowledge of the linguistic and stylistic constraints on variable plural marking with no significant age-related differences. However, in the oldest age range observed, children use significantly more overt plural marking overall. Additionally, children do not demonstrate adult-like gender-related differences until ages 8;0–9;0. These findings largely coincide with previous studies on sociolinguistic development. The observed patterns suggest that sociolinguistic development continues into middle childhood, and exposure to prescriptive ideologies through formal education may influence the developmental trajectory of particular grammatical forms.

Show and Tell: Children's depictive strategies in silent gesture vs. sign

Casey Ferrara and Susan Goldin-Meadow

Gesture plays a vital role in human communication, allowing us to visually represent objects and characteristics. Children have been shown to rely on iconic information conveyed through gesture to learn new words. However, children's gestures typically lack iconicity compared to the gestures used by deaf homesigners. This study investigates the iconic strategies employed by non-signing children (ages 4-8) when gesture bears the full communicative burden as opposed to complementing speech (i.e., silent gesture). Preliminary findings show children employ a range of iconic strategies in their silent gesture, including hand-as-hand, hand-as-bodypart, and hand-as-object, but that some strategies may appear later than others. When later prompted with ASL signs, non-signing children quickly grasp how to incorporate them into their silent gestures to depict scenes. This research enhances our understanding of gesture in different communicative contexts, allowing us to compare the ways in which iconicity is employed within and without a linguistic system.

Maturation of grammar in adolescence: ERP evidence for continuous agreement consolidation

Guillaume Blais, Émilie Courteau, Karsten Steinhauer and Phaedra Royle

We used electrophysiological brain wave measures (EEG) to study French grammatical violations' effect on adolescents. Previous event-related potentials (ERP) studies have shown that younger children elicit different brainwave patterns than adults and that this pattern varies depending on the type of linguistic error. The main goal of the study is to test whether adolescents' brain response to gender agreement violations differs from adults' pattern or not. Adolescents have been targeted as they are in a transition period where most grammatical knowledge is assumed to be mature, while processing mechanisms are still undergoing consolidation. Despite the important cognitive changes during this period, EEG studies measuring real-time processing in adolescence are lacking in most languages, including French. This project tries to fill this knowledge gap. Our results point towards different processing between adults and adolescents for gender agreement on irregular adjectives, but not on regular determiners, which are processed similarly to adults.

Children selectively use "when" and "if" to talk about certain and uncertain possibilities

Yanwan Zhu and Roman Feiman

Adults can think about possible outcomes of non-actual events. In contrast, children under age 4 struggle to deploy modal concepts in psychological studies and some researchers propose that they cannot think about events as merely possible. However, 2-year-olds already use modal expressions, suggesting that maybe children can represent events as merely possible when they propose the possibility themselves. We investigated how children use different conditionals ("If/When A[ntecedent], (then) C[onsequent]") as a measure of whether they represent possible events as likely or uncertain. Using a Human Simulation Paradigm, we found that 2- to 4-year-old children differentiate "if" and "when" in their own production in an adult-like way, and the data pattern was unlikely to be driven only by distributional cues. Our results suggest that children under age 4 are able to represent – and express – that a state of the world is merely possible.

Domain and conventionality influence how metaphors are processed as well as children's inhibition control: A gesture-based study with Turkish speaking preschoolers.

Meryem Ezgi Bayramoğlu and Duygu Özge

How metaphors are processed has been a long-standing question. The indirect-access model suggests listeners initially impose literal meaning (decomposition) and then seek metaphorical interpretation. Conversely, the direct-access model proposes metaphors are directly interpreted without decomposition. Additionally, conventionality, as well as inhibition control (IC) and working memory (WM), influence metaphor processing. We investigated how novel and conventional metaphorical motion events (MMEs) in two different domains (emotion and body) are processed by Turkish children (MAge= 4,3; N = 20), and the effect of IC and WM on this process. Results suggested that body, as a concrete metaphorical domain, triggered the literal meaning while emotion, as a more abstract domain, led more metaphorical interpretation. Surprisingly, novel metaphors were processed more metaphorically. This result might stem from the attribution of emotion in some of the novel MMEs that evoke emotional responses. Children with better IC demonstrated more metaphorical responses regardless of conventionality and domain.

Neuroanatomical Support for the Maturation Hypothesis of Subject-Experiencer Passives

Roeland Hancock, Sahil Luthra and William Snyder

Children's comprehension of English passives using subject-experiencer verbs, which describe mental states, is delayed with respect to actional passives. We claim that comprehension of subject-experiencer passives relies on the maturation of semantic coercion needed to reconstrue the internal argument of a subject-experiencer verb into an external argument suitable for passivization. In a functional magnetic resonance study of adult sentence processing, we found that subject-experiencer passives were associated with increased activation in left medial prefrontal cortex (mPFC), a region whose maturational trajectory is prolonged compared to core language regions. This result aligns with Pykkänen's (2008) proposal of syntax-conceptual interface regions outside the core language, as well as neuroanatomical correlates of theory of mind (ToM) development. We suggest that these convergent findings implicate the mPFC as a region that supports conceptualization of mental states as possible possessions, constraining the parallel maturation of ToM and the syntax-conceptual interface.

Non-Canonical Agreement in Early Grammar

Megan Gotowski and Athulya Aravind

English verbs typically agree with the subject NP. Certain environments, however, trigger a non-canonical pattern. Prior research has established that children command canonical subject-verb agreement from an early age, but we know little about their knowledge of non-canonical agreement patterns. Filling this gap, we report on two experiments examining preschoolers' sensitivity to non-canonical agreement, first with constructions with expletive 'there' (Exp. 1) and then with constructions with locative-inversion (Exp. 2). In both of these cases, agreement is with the post-verbal noun, and not with the element in subject position. In an elicited repetition task, we find that children ages 3-5 produce singular agreement, regardless of the semantic number of the post-verbal noun, suggesting that they avoid non-canonical agreement.

Not a matter of a degree: ASL signing children and acquisition of gradability

Helen Koulidobrova and Gabriel Martinez Vera

This paper focuses on acquisition of gradable adjectives by children acquiring ASL as L1. Despite signer variability, research has described ASL, like English, as a [+degree] language—its adjectives are inherently comparative with several strategies for comparison. However, recent studies have challenged the [+degree] view arguing, instead, for a [-degree] approach. Two types of child corpora were examined: 4 Deaf-of-Deaf and 3 Codas (plus 2-3 Deaf adults each). We predicted the presence of informative structures in adult production, the syntactic information from which children take as evidence. None were found. Gradable predicates were observed early; almost no tokens of comparative morphemes in multi-word utterances; no overt comparatives with adjectives or other 'informative' structures, produced by adults or children in either language. The same predicates are observed at different times in both languages. Data do not support a [+degree] status of ASL.

Using ERP to examine lexicosemantic prediction in L1-Swedish learners of L2 English

José Alemán Bañón and Clara D. Martin

This ERP study uses a relatedness proportion paradigm to investigate lexicosemantic prediction in L1-Swedish learners of L2 English. Participants read prime-target pairs, word by word. Some of the pairs were semantically related (trousers-pants), which reduces N400 amplitude for related targets via priming. Crucially, the proportion of related pairs increased from 10% to 50% in the second experimental block, thereby increasing the reliability of the primes as predictive cues. This should yield a larger N400 reduction for related targets in the high proportion block. 36 L1-English and 53 L1-Swedish L2-English speakers elicited significant N400 effects within each block (less negative for related targets). Crucially, this N400 effect was larger in the high-proportion block in both groups, driven by a larger N400 reduction for related targets in the high-proportion block. Results suggest that at an advanced level of proficiency, prediction is qualitatively and quantitatively similar in the L1 and the L2.

Children's regularization increases when variation resembles speech errors

Kathryn Schuler and Yiran Chen

Children regularize pidgin/creole languages and input from late-learning parents. One hypothesis for such regularization is that these non-native language models may provide subtle linguistic cues indicating they are unreliable sources. While recent research shows adults regularize inconsistent variation more when linguistic cues suggest their language input might contain mistakes, it remains unknown whether children are sensitive to these cues and whether these cues modulate regularization if variation is conditioned. Using an artificial language learning paradigm, we found children regularized a conditioned plural-marking pattern more when non-dominant marker resembled speech-error of the dominant (ka/ga) than when it was distinct (ka/po), while adults regularized in neither. Crucially, when ka/ga marked a salient meaning contrast (singular/plural), children no longer regularized to the same extent. Thus, while learners use subtle linguistic cues to determine whether to regularize, they make use of these cues in conjunction with information about the structure of the input.

Mechanisms of early vocabulary acquisition persist under variability

Amelia Becker, Naomi Caselli, Amy Lieberman and Jennie Pyers

For deaf children learning a sign language with novice signer hearing caregivers, language exposure may be delayed and quantity of input may be smaller than for children with deaf signing caregivers. Through analysis of ASL-CDI 2.0 data, this study found that, despite this potential variability in early language input and overall slower sign acquisition, the composition of deaf children's vocabularies was similar regardless of caregiver hearing status. Signs with high iconicity and common phonological features were overrepresented for both groups. Distributions of lexical and semantic categories were also similar for children with hearing and deaf caregivers. These results suggest that mechanisms of vocabulary acquisition are robust even in the face of potentially limited and variable language experience during early childhood, such as is common for deaf children with hearing caregivers.

Children with DLD show deficits in the neural encoding of shape and movement.

Natalya Kaganovich, Jennifer Schumaker, Emma Gausman and Teanna Pounds

We examined event-related potentials (ERPs) elicited by changes in visual features (shape, movement, and color) in a group of school-aged (8-12 years) children with developmental language disorder (DLD, n=13) and their age-matched peers with typical development (TD, n=13). Children watched the Pokémon-like character change either its shape, mouth movement, and/or color. They pressed one button for 1-feature changes (e.g., only movement) and another button for 2-feature changes (e.g., shape and color). ERP responses to shape and movement changes were both reduced and delayed in children with DLD compared to children with TD. Furthermore, larger brain responses to 2- vs. 1-feature changes was present as early as 220 ms in children with TD. The same enhancement occurred almost 200 ms later in children with DLD. These results suggest that audiovisual speech processing challenges in children with DLD may stem from deficits in the encoding of visual information essential for lip reading.

SYMPOSIUM: Current and future contributions of studies of children with Specific Language Impairments
Mabel Rice, Sean Redmond, Claire Selin, Teresa Girolamo and Erin Andres