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Naturalistic observation of language development outside the home

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Overview

How do children learn to talk to others? Mastery of language means being able to communicate with a wide array of interlocutors (Schieffelin & Ochs, 1986). Yet researchers have tended to treat parent-child interaction as the paradigmatic site of language learning, neglecting how children learn to use language with other people in their lives. As a result, we have come to not only lack basic facts about the full distribution of children's language input and use; we miss precisely those contexts that call for complex conversational skills, such as adapting to novel interlocutors and maintaining conversations without parent scaffolding.

Recent technological advances allow us to observe complex social interaction from a child's point of view. Wearable, lightweight recording devices allow us to capture children's experiences with minimal disruption to their behavior (Bunce et al., 2024; Choi et al., 2023; Perry et al., 2018; Chaparro-Moreno et al., 2019), and automated transcription software has made it feasible to extract language statistics from even noisy, multiparty recordings. These methodological innovations make it possible to systematically examine how children navigate the wider world of non-parental interaction—how they initiate and maintain conversations with their peers, learn with teachers and siblings, or participate in structured and unstructured activities in group childcare.

In this symposium, we bring together four research groups across the disciplines of linguistics, comparative human development, psychology, and natural language processing who have collected naturalistic recordings of peer interactions from the child's perspective. These speakers examine diverse facets of early language experience that were unobservable in prior work, such as how children actively choose conversational partners, how children learn language when cared for by other children, how teachers speak differently to different children, and how classroom activities shape language use. Brought together, they make clear that a complete theory of children's language development—generalizable to varied caregiving practices, incorporating the choice to socialize, and capturing varied multiparty activities—requires going outside the home.

Claire Augusta Bergey, a postdoctoral scholar in Linguistics at Stanford University, will discuss how peer interaction shapes children's language. She will analyze many-child vest-mounted camera footage of free play at preschool, showing how children's active choice of conversational partners shapes their language input and use.

Marisa Casillas, a professor in Comparative Human Development at the University of Chicago, will analyze children's language input in two societies where older children are often caregivers. She will discuss how contexts of extended family care should inform our theories of language learning.

Daniel Messinger, a professor in the Department of Psychology at the University of Miami, will present analyses of teacher and child language in a classroom of children with and without hearing loss. He will show how teachers' speech to children corresponds to their language learning over time.

Robert Z. Sparks, a researcher in the Department of Psychology at Stanford University, will characterize variability in classroom language experience. He will present analyses of head-mounted camera data showing how language varies across age, setting, and activity context.

Claire Augusta Bergey: Children's choice of conversational partners [1]

How do children distribute their time among peer interactants? To investigate children's language and choice of social partners, we recorded free play among 37 preschoolers using vest-mounted cameras across 12 sessions, yielding approximately 142 hours of video that simultaneously tracks many children's points of view in the classroom. We find that children interact with a wide array of individuals over the course of an hour in the classroom, 15.75 on average. However, they do not divide their time evenly, engaging with some individuals much more than others: we find a roughly power law distribution in how children apportion their conversation with others. Examining the timecourse of each child's interactions, we find that there are bursts and lulls in the number of interactants and

[1]With Artem Lyu, Misha O'Keeffe, Senyi Yang, Yuliya Zubak, Benjamin Plum, Biying Li, Ashrita Patil, Changyi Zhou, Hoang Nguyen, Mary Markley, and Robert D. Hawkins. Funded by NSF SPRF 2404676.

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utterances over the course of a play session. Overall, our results emphasize that children shape their own language input and use through their choice of conversational partners.

Marisa Casillas: Child alloparental care and speech in extended family households

In many societies, much of infants' care is given by extended family (alloparenting), including by other children. Work examining children's language environments in two such societies—a Tseltal Mayan village in Mexico and a remote island community in Papua New Guinea—finds that child-addressed input from other children is significantly more prevalent there than in low-alloparenting societies (e.g., the U.S.) (Bunce et al., 2024; Casillas et al., 2021). What is the nature of peer input in the context of extended family care? One possibility is that peer input primarily comes from older children who are advanced enough to provide adult-like linguistic models; another is that children's language skills are incrementally stretched as they converse with similarly-aged and -skilled talkers. I examine peer input in daylong photo-linked audio recordings of 10 children under 3 years in these Tseltal and Papuan communities. I find that children in both communities are most likely to get peer input from siblings just slightly older than them (0–3 years). In the Papuan sample, much older siblings provided additional overhearable peer talk, underscoring the group-based approach to socializing children in this community. Using these data, I discuss the role that children play in the linguistic development of their juniors across variable alloparenting societies.

Daniel Messinger: The role of teacher language in preschool language development [2]

Previous research indicates that longer teacher utterances (higher mean length of utterance, MLU) is associated with gains in children's language abilities for children with and without disabilities. Presumably, teacher interactions with specific children undergird these findings, but we lack an understanding of the specific interactional dynamics and their impact on development. I will discuss preliminary findings from 35 longitudinal observations (1590 hours of audio recordings) from two cohorts of an inclusion classroom containing 3-4-year-olds. Fourteen of the 27 children had hearing loss. We found that child MLU increased over observations, and showed substantial variation between children. Mean child MLU showed associations with assessed receptive and expressive language ability abilities (as measured by the PLS-5). Strikingly, children who had higher mean teacher MLU exhibited larger increases in their own MLU over observations. In sum, the complexity of teacher language heard by individual children is associated with the complexity of the language produced by those children and the rate of increase in the complexity of the child's speech.

[2] With Gabriela Gutierrez, Juan Londoño, Batya Elbaum, Anchen Sun, Riccardo Fusaroli, Sophia Meibohm, Roberto Lazo, Luis Estrada, Laura Vitale, and Lynn K. Perry.

Robert Z. Sparks: Contextual variation in the preschool language environment[3]

Children's language experience varies across time, space, and activities. While much work has explored this variability in the home, less is known about language experience in classrooms, especially as it relates to the varied activities that children engage in. In this talk, we will characterize this variability using a dataset of egocentric head-mounted video recordings of 3-5-year-old children's classroom experiences in a single preschool classroom over a full year. Using this dataset, we measured both the quality (lexical diversity, MLU, lexical complexity) and the quantity (speech rate) of the language that children hear and produce across activity contexts. Initial analyses show that speech production rate increases with age, but with considerable within-child variability, suggesting that age alone does not serve as a good predictor of language production. Additionally, we observed wide variation in all language metrics across different activity contexts. Speech quality tended to be greater during indoor activities, which are more heavily scaffolded by teachers, compared with outdoor activities, where children experience more independent free play. These findings provide evidence for a dynamic, non-uniform language environment that is structured by children's activities in the classroom.

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[3] With Grace E. Keene, Bria Long, Malia J. Perez, Alvin W.M. Tan, Zi Yin, Virginia A. Marchman, and Michael C. Frank.