



UC San Diego Cognitive Science

Yueyan Tang's Dissertation Defense

Infant Joint Attention in the Wild: From Development to Naturalistic Pipelines

Friday, May 8th, 2026

11:00am – 1:00pm

<https://ucsd.zoom.us/j/96017872776>

Abstract:

Infants learn to share attention with caregivers long before they can speak, yet the development of this capacity remains poorly understood, in part because almost everything we know comes from controlled laboratory studies of Western, middle-class families using scripted cues that bear little resemblance to the behaviors that caregivers seem to actually use at home. This dissertation addresses that gap, across two parallel lines of inquiry.

The first concerns the development of joint attention itself. The results of Chapter 2 show that attention-following in a methodologically advanced laboratory paradigm emerges slowly and incrementally across the first year, with no reliable following before 7 months, and gradual growth thereafter. In addition, Chapter 3 shows that laboratory and home settings yield systematically different developmental pictures. The same infants follow attention substantially more following at home than in the lab, developmental trajectories diverge across settings, and individual performance in one context fails to predict performance in the other. Chapter 4 extends this to focus on caregivers' spontaneous attention-eliciting behaviors at home: mothers rarely used the isolated gaze or pointing cues that are emphasized in laboratory paradigms, and instead combined gaze, pointing, and speech in structured multimodal bids, the temporal context and sequential structure of which predict whether infants will follow attention.

The second concerns the infrastructure needed to study these interactions at scale (i.e., with generalizable and statistically powerful datasets). Chapter 5 presents OpenBabyographer, an open-source, accessible, inexpensive and modifiable first-person wearable for long-form audiovisual recordings in everyday settings. Chapters 6 and 7 benchmark automated open-source speech recognition and face detection algorithms against human-annotated "ground truth" coding, using recordings from OpenBabyographer (Chapter 5). Chapter 6 benchmarks data from primarily English-using caregivers, and Chapter 7 compares the former to a Mandarin-using caregiver sample, for the first cross-linguistic benchmarking of infant-directed speech (IDS) with an open automatic speech recognition (ASR) tool. The results show that error profiles diverge in ways that reflect typological differences in grammatical architecture and have direct implications for how automated transcription tools should be validated and deployed in multilingual developmental research.

Together, these chapters suggest that understanding early social development calls for both the developmental science to know what to look for, and the computational infrastructure to look for it at scale.

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