Non-referential beat and flip gestures follow distinct developmental trajectories of function.

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INTRODUCTION

- Non-referential gestures, including beats (a.k.a. batons) and flips (a.k.a. “palm-up” gestures), are an important feature of face-to-face communication, directing attention to pragmatic and discourse content (Kendon, 1977; McNeill, 1992).
- Non-ref. beat gestures mark information and discourse structure (Im & Baumann, 2020; Shattuck-Hufnagel et al., 2016) and offer cognitive and linguistic benefits for both speakers and listeners (Blau & Soto-Faraco, 2013; Vilà-Giménez et al., 2021, for a review).
- Both beat and flip gestures are produced in natural social interaction (Beauvois-Hourdé & Debras, 2017). Does the form of non-referential beat and flip gestures dictate developmental trajectory of functional use?

RESEARCH QUESTION

METHODOLOGY

- Spontaneous language and gesture data were collected as part of a larger longitudinal study of language development from the University of Chicago.
- Participants visited in their homes every 4 months (12 sessions) between 14 and 58 months.
- Families video recorded for 90 minutes of unguided interaction every 4 months (12 sessions) between 14 and 58 months.

DATA COLLECTION & ANNOTATION

NON-REFERENTIAL GESTURE FORMS

- Beat gestures
  - Rhythmic, pronounced
  - Palm exposure
  - Wrist rotation; flick/twist
- Flip gestures

- Non-referential gestures were annotated for pragmatic function.
- Beat and flip gestures considered non-referential; see Box A
- Function coded at the level of the communicative act, i.e., co-speech utterance or isolated (no speech) gesture
- Annotation scheme adapted from Ninio et al. (1994) and based on Krifka (2015): see Box C

RESULTS (I): Form Onset

Flops and beats have different developmental onsets; flips produced with and without speech onset simultaneously.

Median onset:
- Flips w/out speech: 26 months
- Flips w/ speech: 30 months
- Beats: 42 months

3-Way ANOVA
- Beat: no speech flip: df=10.80, p<.001
- Beat: co-speech flip: df=.11.56, p<.001

Difference in flip form onsets n.s.

RESULTS (II): Functional Use

Pragmatic functions of gestures.

- Non-referential gesture forms have different functional use:
  - Flips w/out speech: primarily epistemic uncertainty (79.2%) across development
  - Flips w/speech: diverse functions and increased diversity with age
  - Beats: primarily unmarked assertion (68.5%) after onset

Chi-squared test:
- Overall functional independence: $\chi^2=269.24, p<.001$

REFERENCES


- This is the first study that examines the developmental timeline and functions of non-referential gestures.
- Children produce non-referential flip gestures before non-referential beat gestures.
- Different non-referential gesture forms have different developmental trajectories of function. Both form and gesture-speech relation affect gesture function.
- Beats are primarily produced with unmarked assertions and more rarely with biased assertions and questions.
- Flips produced without speech primarily express epistemic uncertainty.
- Flips produced with speech serve a diverse range of pragmatic functions.
- The functional difference between non-referential flips and beats may explain why beats, but not flips, are predictive of later narrative production ability (Vilà-Giménez et al., 2021).
- flips seem to emerge as an ignorance emblem and later complement other communicative acts. Future research should explore ignorance as a potential kernel meaning for the flip gesture. In line with Cooperrider et al. (2016), this may provide a link between the seemingly disparate functions of flips in adult speech.

MAIN CONCLUSIONS

- Non-referential beat and flip gestures serve a diverse range of pragmatic functions.
- Noted are functions such as “explanations, declaratives” or “information responses”.
- Children produce non-referential beat and flip gestures, which may provide a link between the seemingly disparate functions of flips in adult speech.