



Exploring the relationship between turn-taking and children's learning of individual words

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Introduction

Word frequency is one of the most robust predictors of earlier age of acquisition (AoA).¹

Yet, individual instances of word exposure may differentially contribute to learning.²

- Example: child-directed speech > overheard speech^{3,4}

Conversational turns within caregiver-child interactions predict overall vocabulary growth^{5,6}, but this effect has not been tested at the individual word level.

Research question: Does word frequency *within salient turn-taking episodes* predict earlier learning at the word level?

Method

Analysis of timestamped (North American) English CHILDES transcripts^{7,8} from at-home interactions between infants and caregivers

- **Transcript count:** 1,202
- **Utterance count:** 752,853
- **Age range:** 5–36 months (mean = 19.9)

Detection of all content words from the MacArthur-Bates Communicative Development Inventory (MB-CDI)^{9,10}

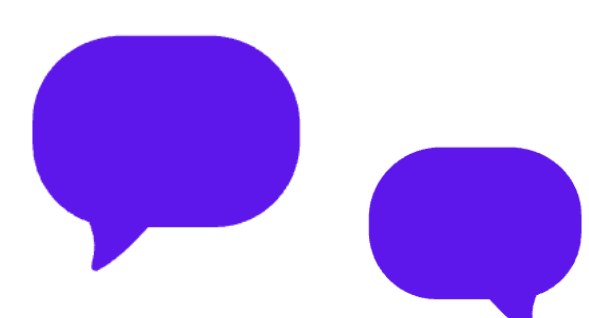


AoA from ~7k administrations

560

MB-CDI words detected in transcripts

Defining *turn-taking*



Temporally contingent responses (within 3 seconds)¹¹ between:

caregiver (MOT or FAT)
and
child (CHI)

Determined by vocalization **onset**
(includes overlaps and gaps)

Results

Finding #1: MB-CDI words vary in turn-taking embeddedness

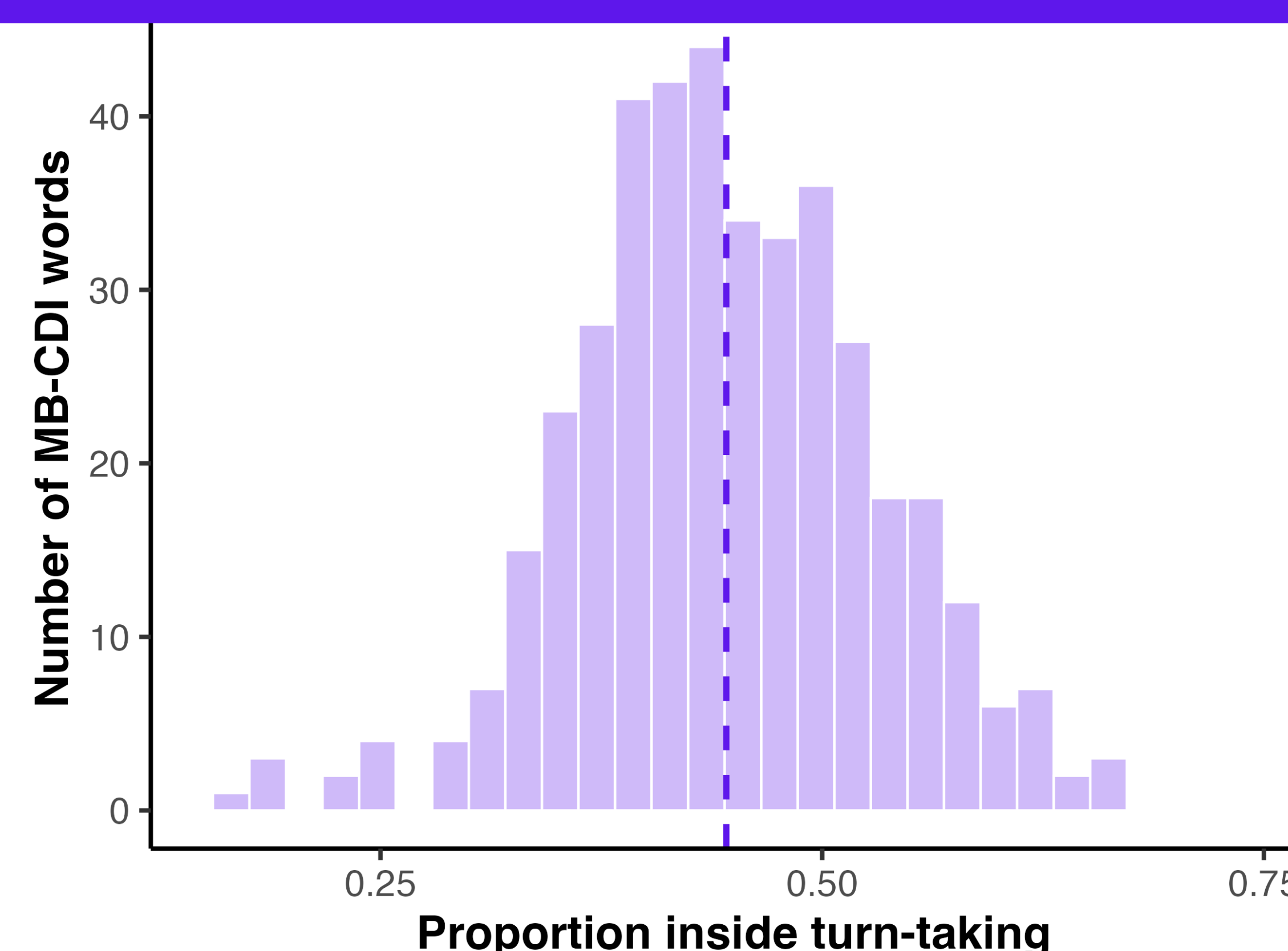


Figure 1. Distribution of turn-taking proportion across MB-CDI words, with dotted mean line.

- Average proportion of word exposures inside turn-taking = 0.45
- Median = 0.44
- Range = 0.17–0.67

Finding #2: Half of word exposures appear inside turn-taking across MB-CDI categories

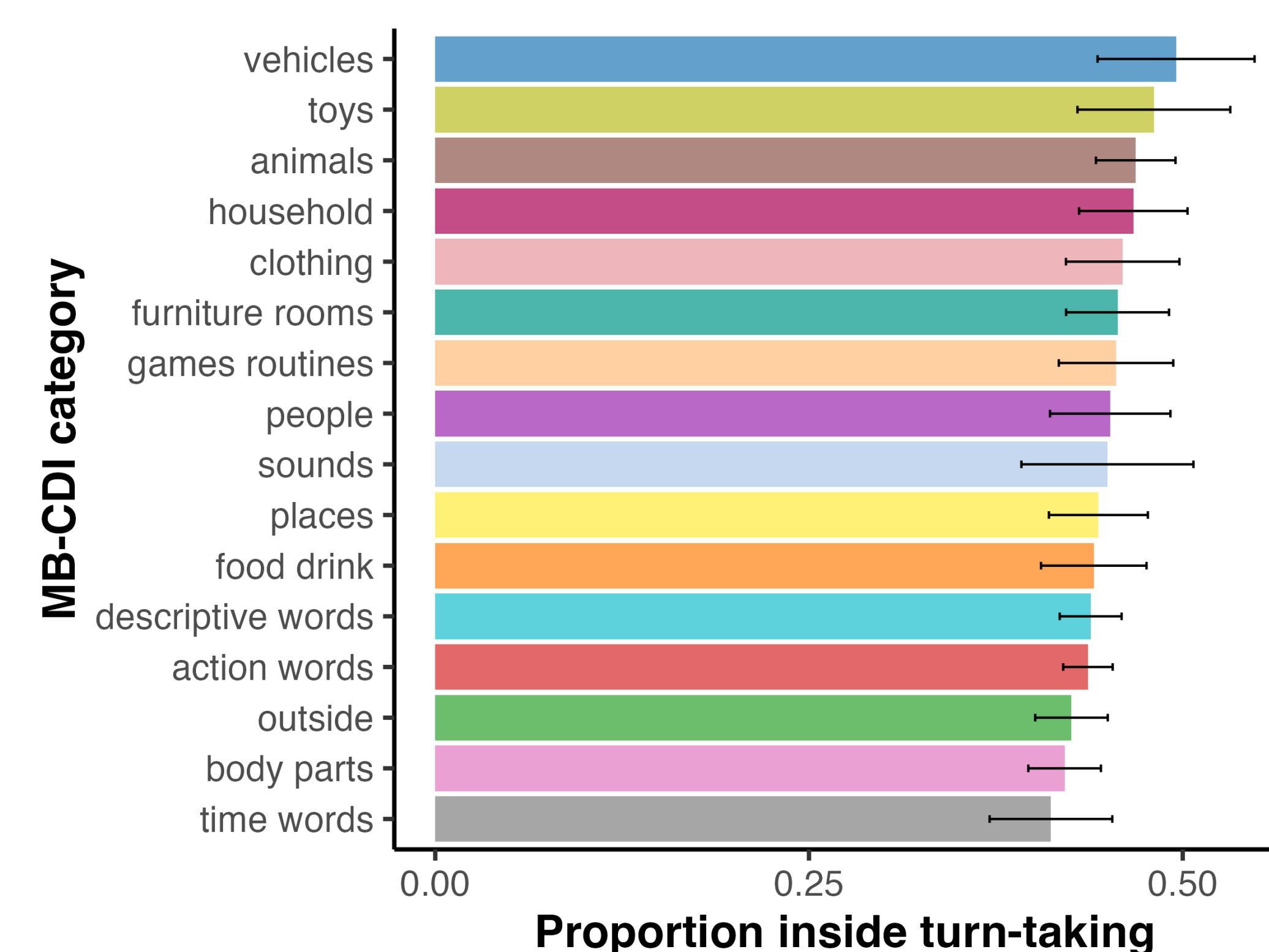


Figure 2. Average turn-taking proportion across MB-CDI categories, with 95% confidence intervals.

- No statistically significant category differences

Finding #3: Greater proportion inside turn-taking correlates with earlier word learning

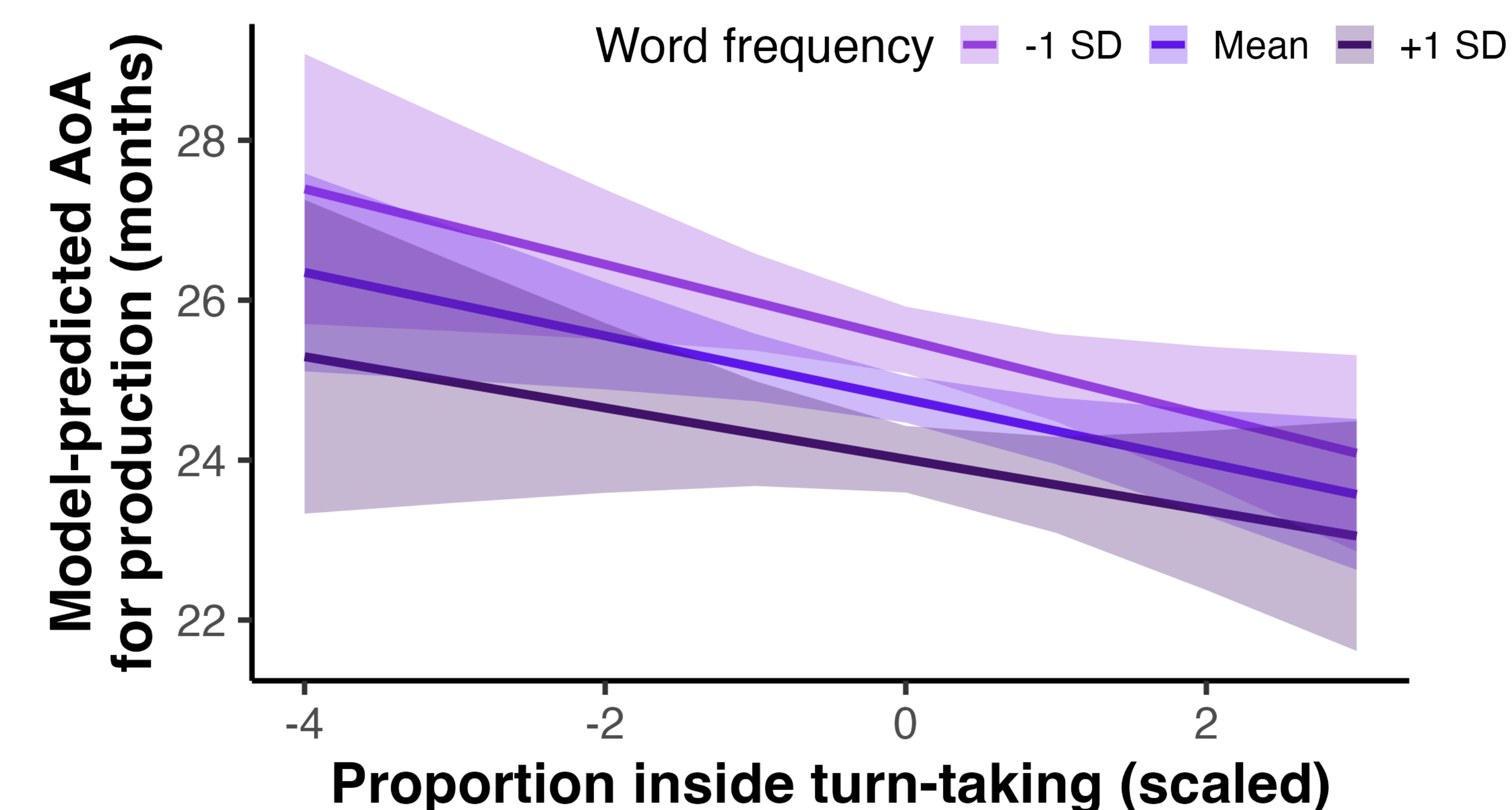


Figure 3. Negative relationship between proportion inside turn-taking and AoA, controlling for overall word frequency. Lines represent model-predicted AoA with shaded 95% confidence intervals.

- Higher proportion inside turn-taking predicts earlier AoA ($b = -0.34$, $SE = 0.11$, $z = -2.98$, $p = 0.003$)
- No interaction with word frequency ($p > 0.05$)

Discussion

Words vary dramatically in how often they appear inside vs. outside caregiver-child turn-taking.

This variability is not explained by differences across MB-CDI categories.

Turn-taking proportion explains unique variance in AoA, above and beyond word frequency.

Future work will examine longitudinal effects of turn-taking embeddedness on children's word learning.

In addition to global measures of vocabulary growth^{5,6}, examining word-level statistics provides new insights about the role of turn-taking in word learning.

References

- [1] Braginsky et al., 2019, *Open Mind*
- [2] Kachergis et al., 2022, *Curr Dir Psychol Sci*
- [3] Shneidman & Goldin-Meadow, 2012, *Dev Sci*
- [4] Weisleder & Fernald, 2013, *Psychol Sci*
- [5] Donnelly & Kidd, 2021, *Child Dev*
- [6] Romeo et al., 2018, *Psychol Sci*
- [7] MacWhinney, 2000, *The CHILDES Project*
- [8] Sanchez et al., 2019, *childesr package*
- [9] Fenson et al., 1994, *Monogr Soc Res Child Dev*
- [10] Frank et al., 2017, *J Child Lang*
- [11] Elmlinger et al., 2025, *Curr Biol*