

Exploring the Relation Between Infant Body Position and Adult Language Input Across the Day

Hailey Rousey, Maximilian Tang, Sahrai Garcia and John M. Franchak

NSF BCS #1941449

hrouse002@ucr.edu

<https://padlab.ucr.edu>

Introduction

- Earlier sitting/walking onsets are associated with larger receptive vocabularies (Libertus & Violi, 2016; Walle & Campos, 2014)
- One reason might be that speech input varies depending on motor behavior
- Malachowski et al. (2023) found that infants heard less speech while in seating devices compared to placements that do not provide postural support in the home environment
- As infants age, they spend more time in some positions (standing/upright) at the expense of others (supine/held/prone) (Franchak, 2019)

Research Questions

- Does speech input vary according to infants' body position in daily life?
- Does age moderate the relation between body position and speech input?

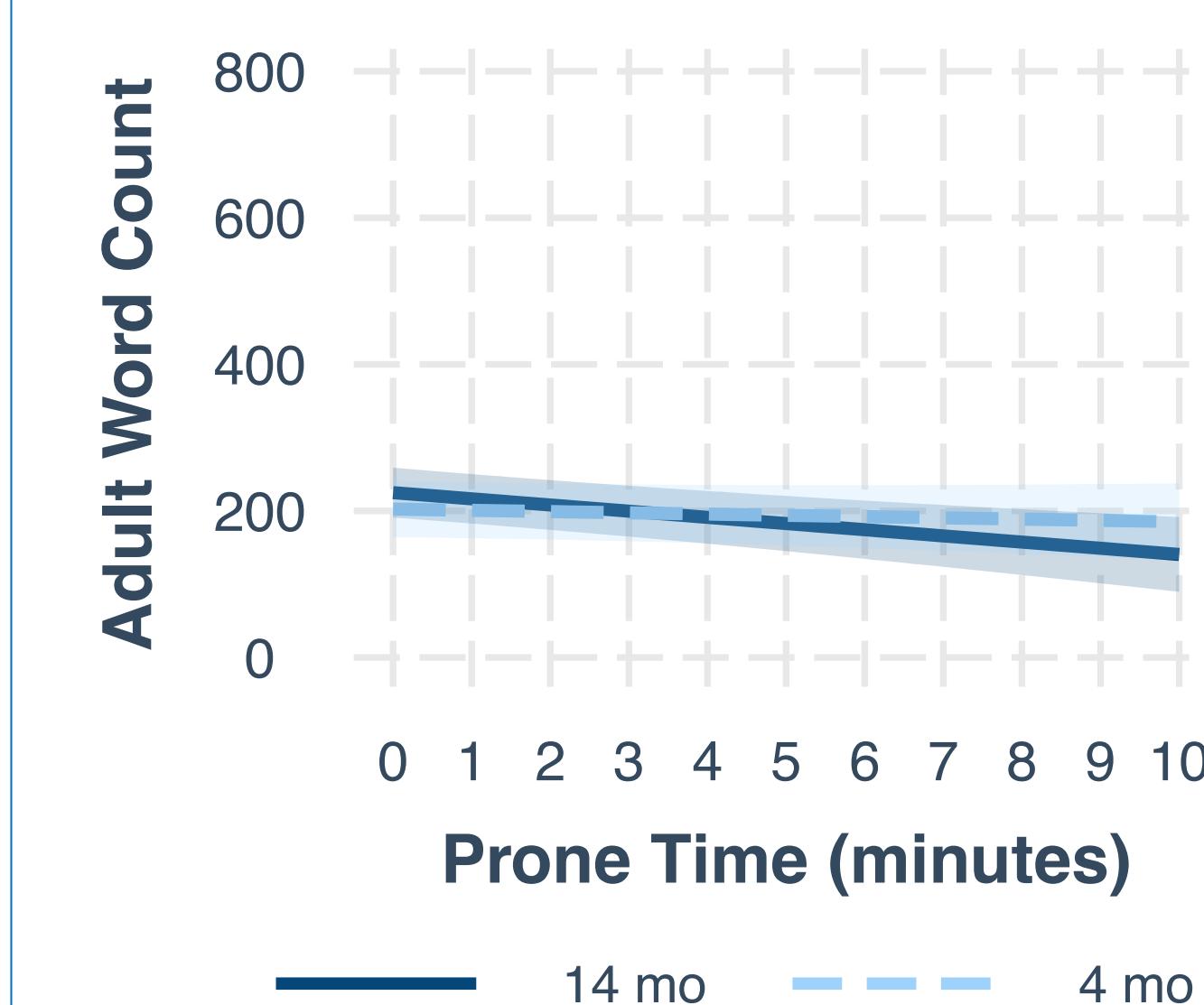
Body Position and Speech Input were...

Negatively Associated for:

Prone



Supine

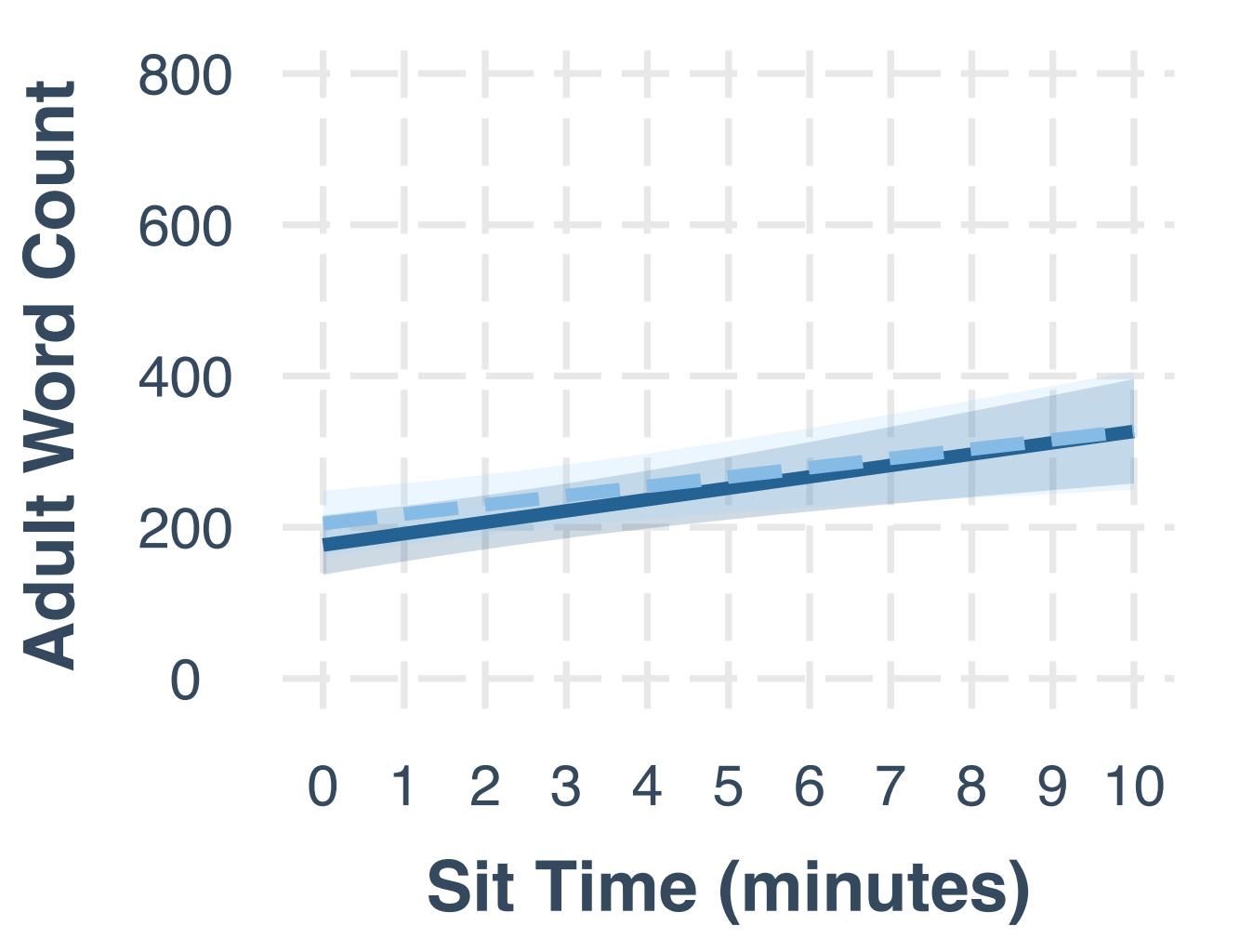


Positively Associated for:

Sitting

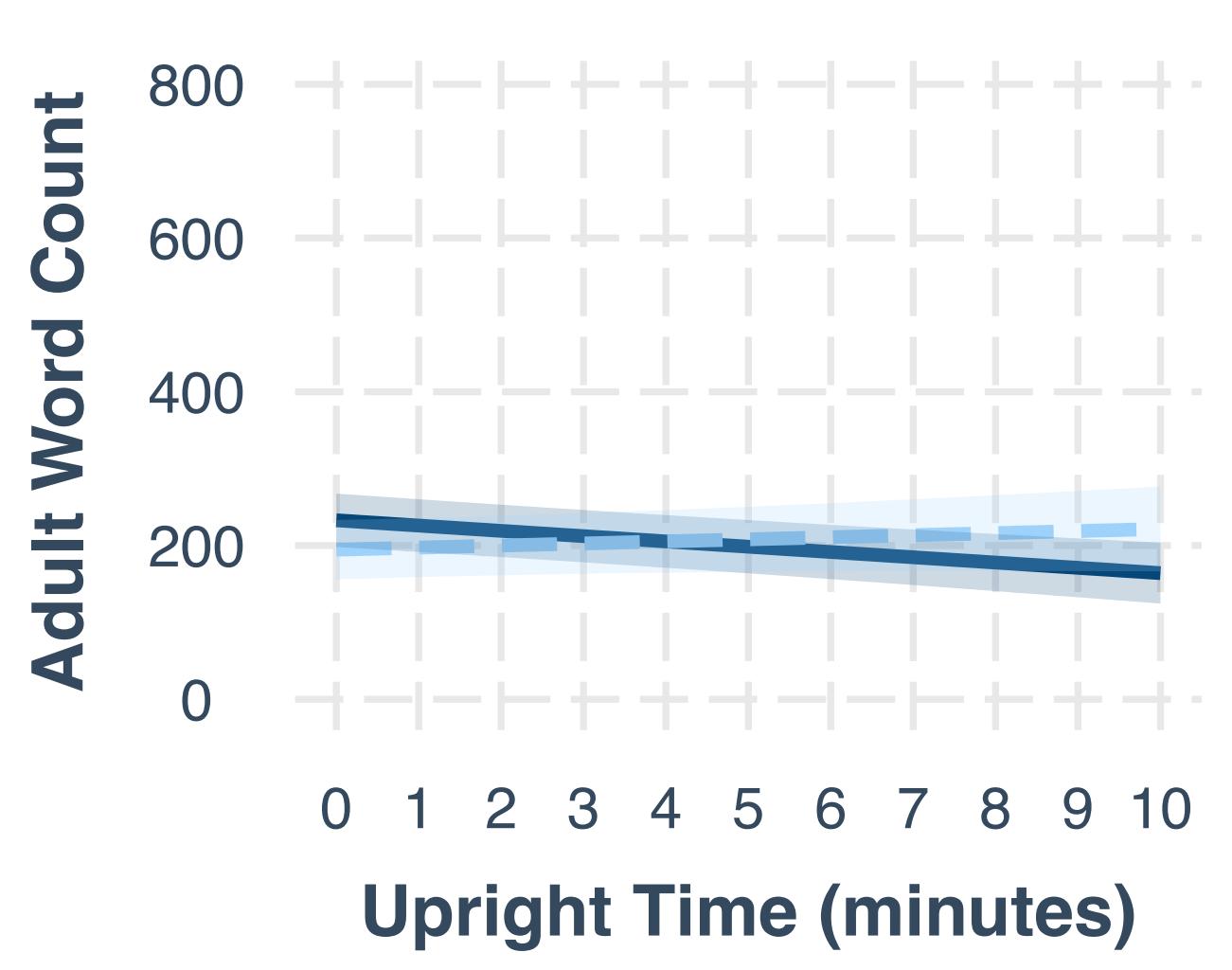


Held



Age Dependent for:

Upright



- Infants heard ~5 fewer words for each 1-minute increase in prone time and ~13 fewer words for each 1-minute increase in supine time

- Infants heard ~14 more words for each 1-minute increase in sitting time
- A significant age × held interaction meant that speech input increased with holding time, but particularly for older infants

- Adult words declined with increasing upright time, but only among older infants

Methods

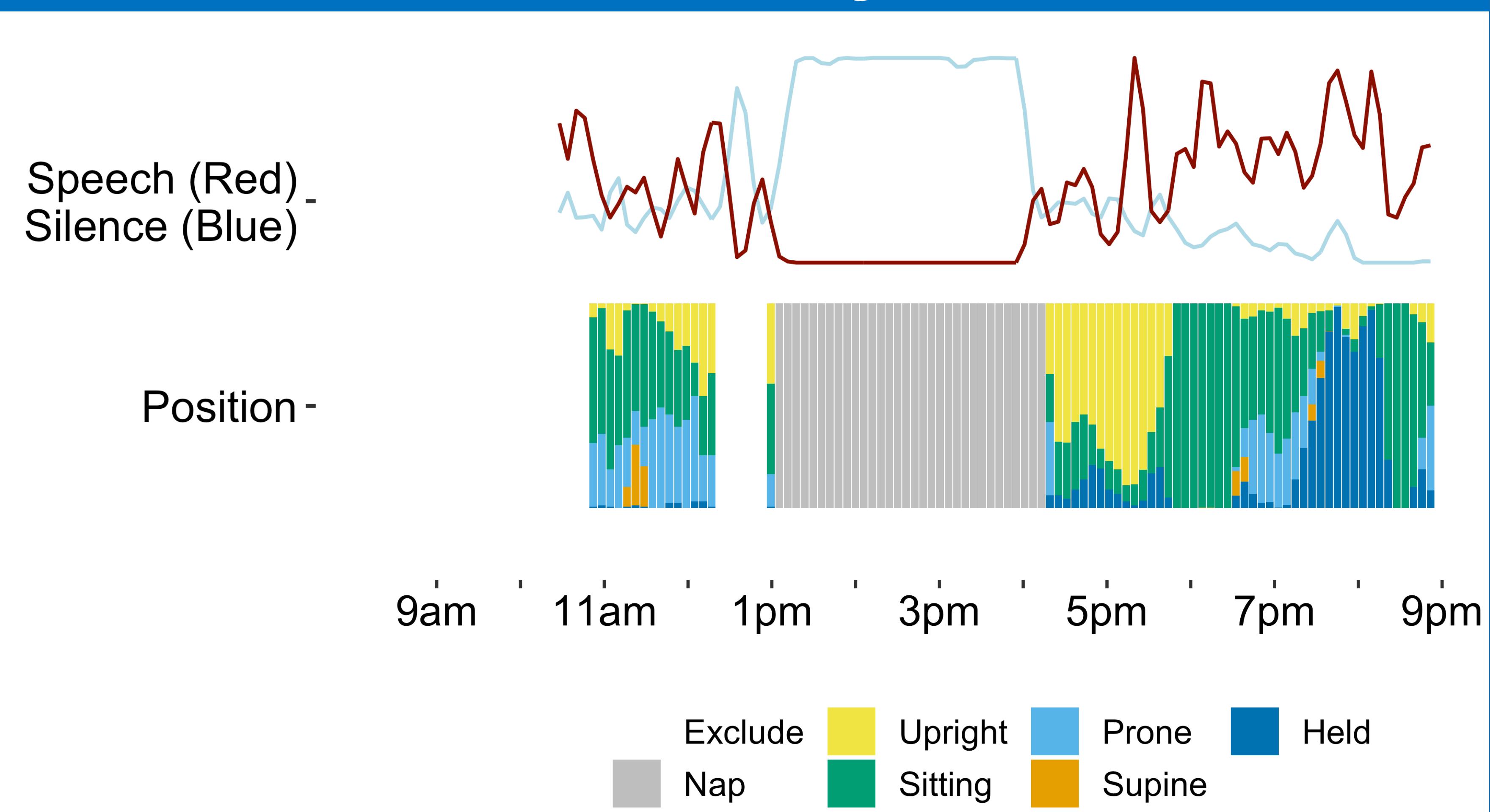
Participants:

- 129 sessions from 61 participants
 - 26 male and 35 females
- 4- and 11-month-olds completed up to 4 monthly sessions, ending by 7 or 14 months of age

Procedure:

- 4 inertial movement unit sensors embedded in a pair of leggings predicted body position throughout the day (Franchak et al., 2021)
- LENA® recording device in a shirt pocket recorded adult word count
- Recordings were ~6 hours long after excluding nap times and excursions out of the house

Data Analysis



- Body position and adult word count were measured in 10-minute bins throughout the day

Conclusions

- Individual differences in everyday body position—and speech input—may impact infants' language development, but more work is needed to understand each association
- Infant-caregiver proximity likely accounts for elevated speech input while held
- Proximity might explain why older but not younger infants' speech input declined while upright—older infants can walk away
- Prone, supine, and sitting positions may offer different social opportunities that explain variations in speech input (e.g., object interactions, joint attention, mutual gaze, mealtimes in highchair).