

# Examining the Relation Between Language Input and Infant Body Position Across the Entire Day

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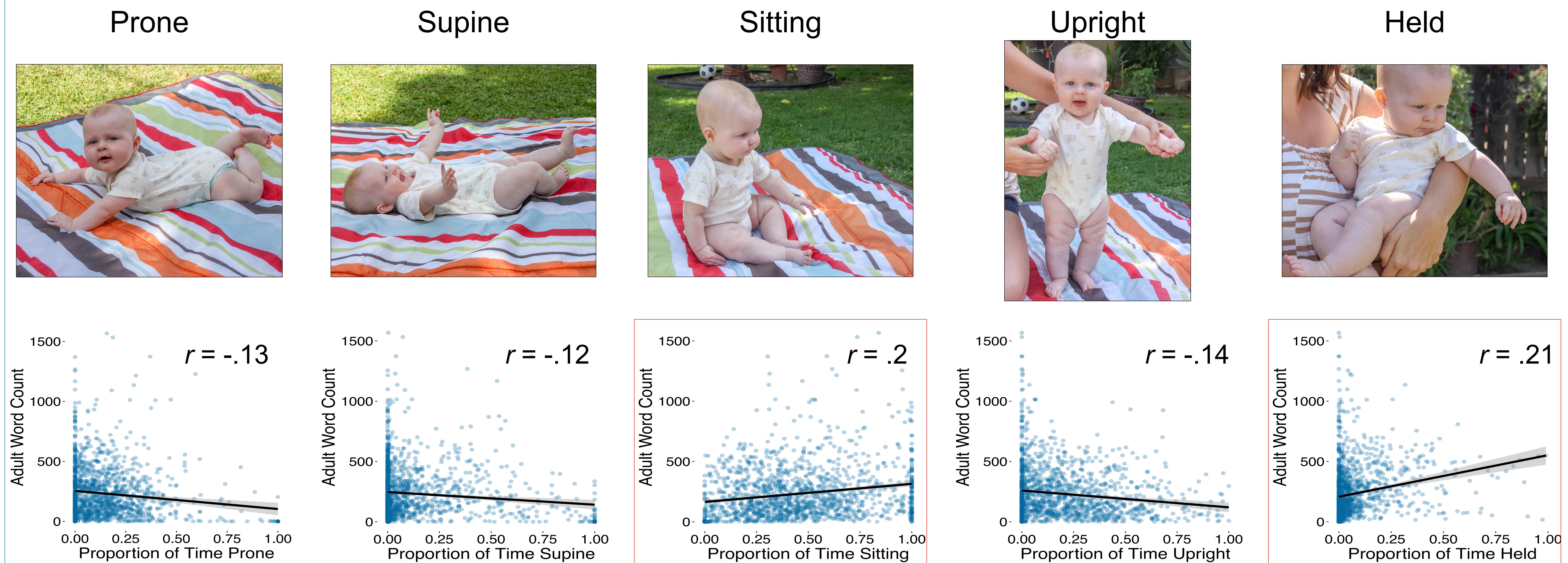
## Introduction

- Acquiring one skill can have an impact on infants' development of other skills, known as a developmental cascade
- Language proficiency has been found to be impacted by locomotor development, with the acquisition of walking being associated with a growth in vocabulary even when controlling for age (Walle & Campos, 2013)
- Karasik et al. (2014) found that walking infants elicited different types of parental verbal responses compared to crawling infants
- Research examining the relation between infant motor behavior and adult linguistic input has never been measured across a full day

### Hypothesis:

- Variations in the number of words spoken by adults will relate to variations in body position within a day

## Time Spent Sitting and Held Correlates with Number of Adult Words Heard



- Separate linear mixed models and correlations were calculated using R to predict adult word count from the amount of time infants spent in different body positions
- There was a positive relationship between adult words heard and sitting/held time, meaning that the more time spent in these two positions was associated with an increase in adult words heard
- There were no significant associations for prone, supine, or upright time

## Methods

### Participants:

- 20 sessions from 8 participants (5 males)
- 11-, 12-, 13-, and 14-month-olds

### Procedure:

- Materials were dropped off at the participant's house the morning of the visit
- 4 inertial movement unit sensors (IMUs) embedded in a pair of leggings
- LENA® recording device in a shirt pocket
- The infant wore the IMUs and LENA® until their bedtime

### Body Position Annotation:

- The first three hours were annotated by human coders for infant body position – supine, prone, sitting, upright, or held – to train a machine learning model which was used to predict body position categories throughout the day (Franchak et al. 2021)
- Adult word count was automatically generated by LENA® algorithms
- 10-minute bins were analyzed to examine how body position and adult word count relate

## Conclusions

- There are various non-linguistic influences that impact language development, with the current study suggesting infant body position to be one such influence
- Infants heard increased adult speech when sitting and held compared to other positions, perhaps because of the increase in social proximity between infants and caregivers
- A future direction is to examine the impact of parents' own motor behavior on infant-directed speech