

Characterizing input from older children in North-American Daylong Recordings

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Introduction

Language development is related to language input
• But most research has focused on input from adult caregivers (e.g. Hart & Risley, 1995)

In the US, 80% of households with children have > 1 child (Census Bureau, 2010)

- Focus on adult caregiver input does not fully capture the experience of the majority of children
- Infants with older siblings exhibit lower language skills (e.g. Havron et al., 2019)
- Thought to be due to resource limitations on behalf of parents (e.g. Blake, 1981)
- But, could also be due to language input received from other children in the home

Goal: quantify infants' experiences with speech from other children

Q1: How accurate is LENA at identifying other child (CXN) speech?

Q2: When and how often do infants hear speech from other children?

Q3: Who are older children talking to?

Dataset

Warlaumont corpus on Homebank (Warlaumont et al., 2016)

9 participants, 2 recording each at 3 and 6 months*

- Such that any words produced by children must be other children and not the target child

All participants marked as having at least 1 older sibling (# sibs1-4)

*Coding and transcription still ongoing

Acknowledgements

We thank the research assistants who aided with data coding and transcriptions. We also thank the families who participated in the original study and shared their recordings on Homebank.

Citations

Hart, B. & Risley, T. R. (1995). Meaningful differences in the everyday experience of young American children. Paul H Brookes Publishing

Havron, N., Ramus, F., Heude, B., Forhan, A., Cristia, A., Peyre, H., & EDEN Mother-Child Cohort Study Group. (2019). The effect of older siblings on language development as a function of age difference and sex. *Psychological Science*, 30(9), 1333-1343.

Blake, J. (1981). Family size and the quality of children. *Demography*, 18(4), 421-442.

Warlaumont, A. S., Pretzer, G. M., Mendoza, S. & Walle, E. A. (2016). Warlaumont HomeBank Corpus. doi:10.21415/T54S3C

Methods and Results

CXN clips (n = 10376, +/- 1 sec)*

Classified as:

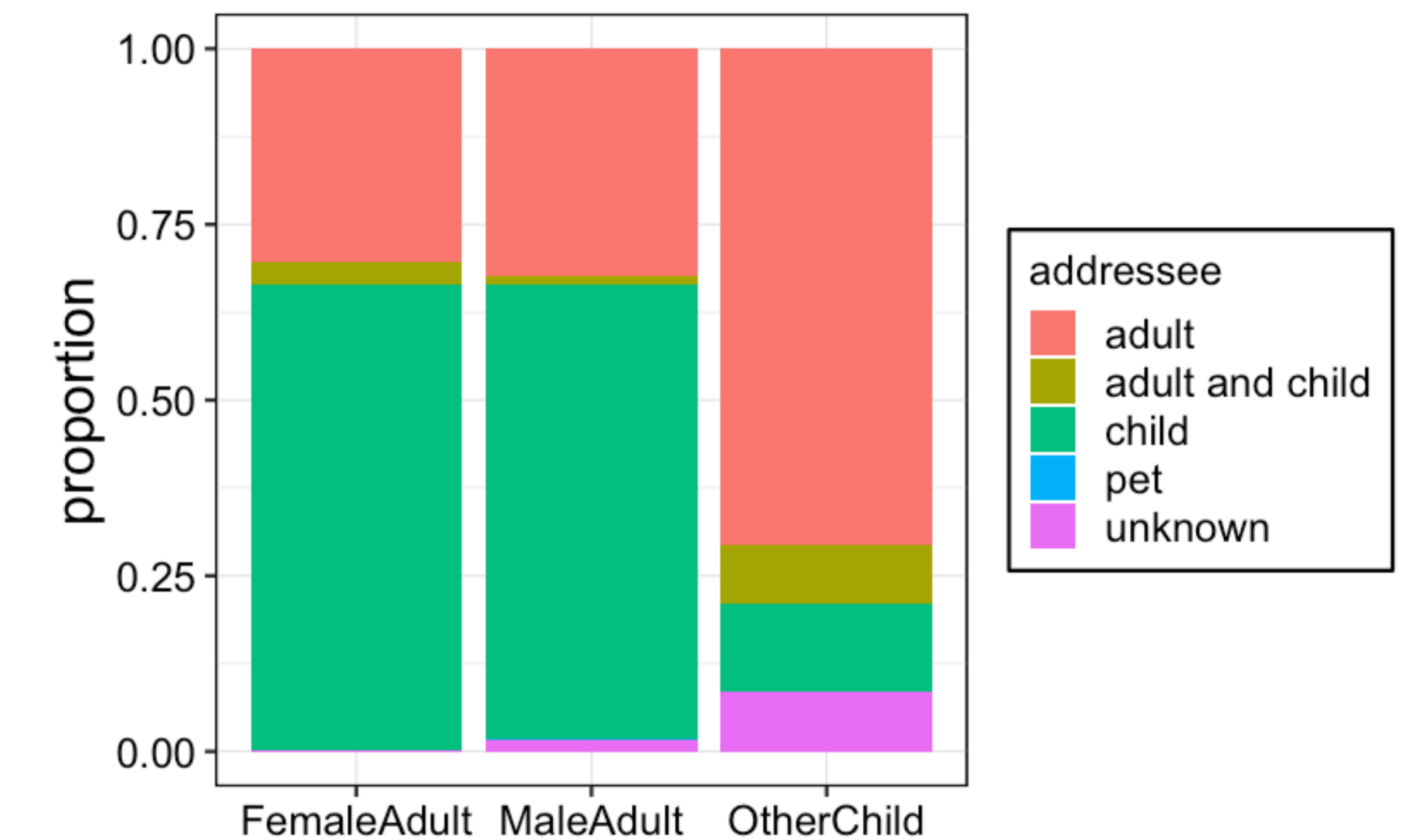
- Adult speech (n = 1296, 12.5%)
- Child speech (n = 4329, 41.7%)**
- Adult and child speech (n = 2245, 21.6%)**
- Baby sounds (n = 1641, 15.8%)
- No speech (n = 864, 8.3%)
- Unsure (n = 1)

30 sec clips containing Child speech (n = 6574)

Transcribed using ACLEW DAS Scheme

- Segmentation
- Transcription
- Addressee tags

Q3: Who are older children talking to?



Female and Male Adults produce child-directed speech 66% and 64% of the time, respectively

Children produce child-directed only ~12% of the time

- +8% to both adult and child

Conclusions

Speech from children is

- less frequent than speech from adults, but is nonetheless a common feature of younger siblings' lives
- is more likely to be adult-directed than child-directed

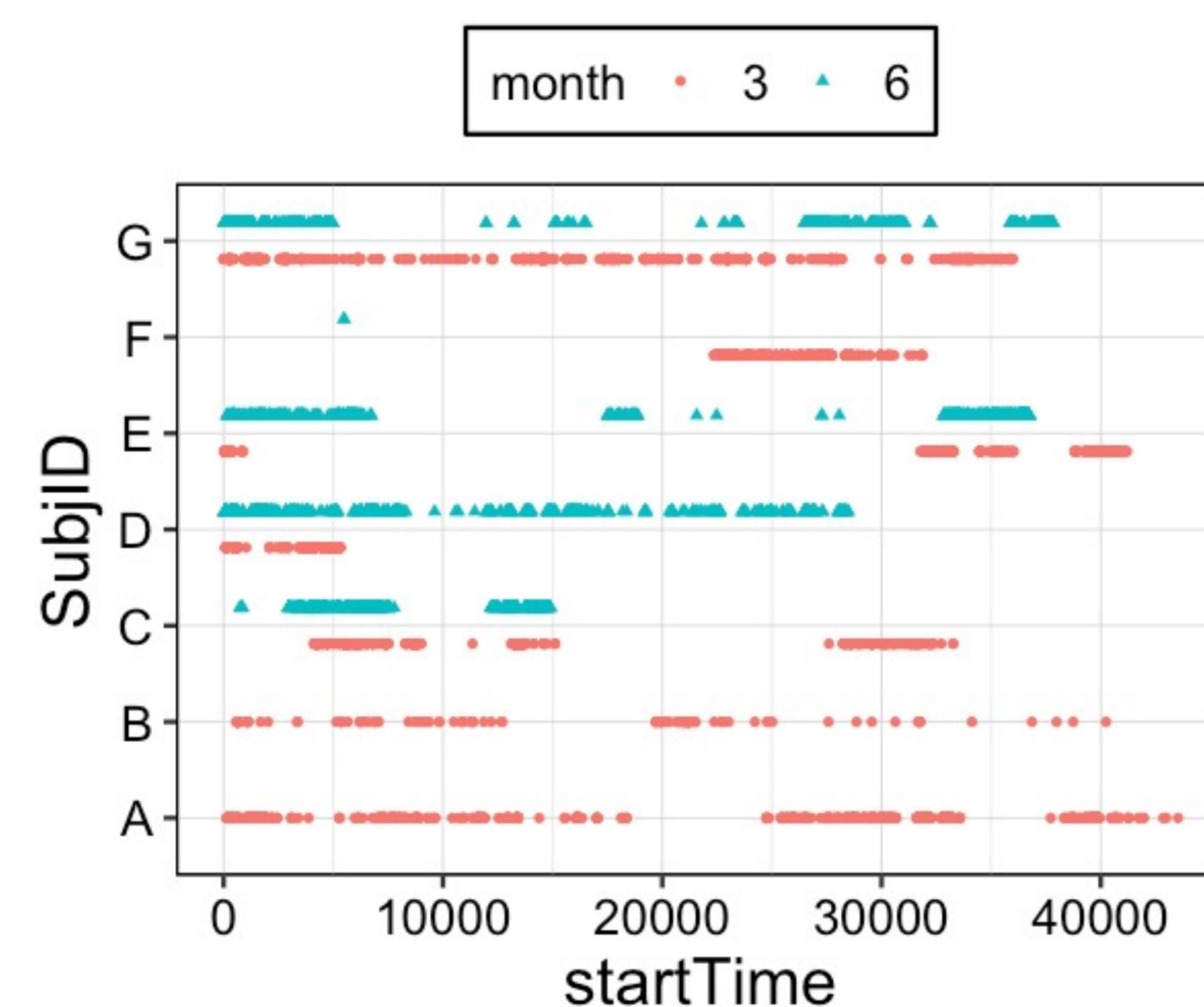
Future directions

- Finish transcription to understand *content* of child-produced speech
- Investigate turn taking between older children and infants

Q1: How accurate is LENA at identifying other child (CXN) speech?

63.3% of CXN clips contained child speech
Non-transcribable baby sounds (coos, cries, babbles) produced by the target child, and speech produced by adults are equally common mistakes.

Q2: When and how often do infants hear speech from other children?



- Adult speech (based on LENA and lab tags) occurred every 23.7s
- Child speech (based on lab tags) occurred every 48.9s, see Figure
- Adult speech occurred more frequently than child speech, $p < .001$

Adult speech:

- ranged from every 9.7s to every 141.64s
- # of Adult segments **correlated** w/ distance ($r = -.66$, $p = .019$)
- More adult speech segments = more frequent adult speech

Child speech:

- ranged from every 4.1s to every 309.9s
- # of CXN segments **not correlated** w/ distance ($r = -.32$, $p = .3$)
- Child speech may be more "bursty" or inconsistent