More Siblings Means Lower Input Quality in Early Language Development

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**Background**

20% of infants grow up in a household with two or more older siblings  
- US Census Bureau, 2016

**NO SIBLINGS**

(video removed from online presentation)

MOT: Beneath my scarf is a (. ) nose (. )  
MOT: My shirt sleeves hide my (. ) elbows (. )  
MOT: Elbows

**3 SIBLINGS**

(video removed from online presentation)

MOT: **** come inside and, I dunno  
BRO1: [crying] I don’t wanna be with all them, I wanna be by my self  
BRO2: ***** so I’m gonna get my phone  
MOT: Alright
Background

1) Later-borns ‘at a slight disadvantage’ (Fenson et al., 1994) than first-born infants in **productive language skills**:  
   • Less rich lexicon (Berglund et al., 2005; Hoff-Ginsberg, 1998)  
   • Less complex syntax (Hoff-Ginsberg, 1998)

2) Later-borns suffer an **input disadvantage;** first-borns’ input is more tailored to language learning (Oshima-Takane & Robbins, 2003):  
   • Longer MLU  
   • Less speech directed at infant  
   • Less metalingual maternal speech (Jones & Adamson, 1987)
Background

Gaps in literature:

• Consideration of ‘first-borns’ versus ‘later-borns’ (or ‘second-borns’)
• Small-scale observations vs. large-scale questionnaires
The SEEDLingS Corpus (Bergelson, 2016)

- 44 infants recorded at home (+lab experiments), age 6-17 months
- Largely homogenous sample
- Hour-long video and day-long audio recordings
- Monthly CDI questionnaires (Fenson et al., 1994) from 6-18 months
- Recordings coded for:
  - Object word
  - Speaker
  - Utterance type
  - Object presence
Siblings

• Median siblings = 1, Range = 0-4 (Mean = .86, SD = 1.09)
• No younger siblings (yet?) (Mean = 5.04 years, range = 0-18 years)
Results

• Reported productive vocabulary (CDI reports), 10-18 months
• Household input, 10-17 months
• Early-acquired words in input, 10-17 months
• Object presence in input, 10-17 months
Results: Vocabulary growth over time

Overall model: $\chi^2(1)=9.05, p=.01$

Binary factor: $\chi^2(1)=4.06, p=.04$
Results

- Reported productive vocabulary
- Household input, 10-17 months
- Early-acquired words in input, 10-17 months
- Object presence in input, 10-17 months

More siblings $\rightarrow$ Smaller vocabulary ($p=.01$)
Differences in amount of household input

Overall model: $\chi^2(2) = 11.16, p = .003$

Mean words per speaker

- **n.s.**
- ***

Speaker
- FAT
- MOT
- SIBLING

Overall model: $\chi^2(2) = 11.16, p = .003$
Results

- Reported productive vocabulary
- Household input
- Early-acquired words in input
- Object presence in input

More siblings $\rightarrow$ Smaller vocabulary (p=.01)

More siblings $\rightarrow$ Less input (p<.01)
Differences in number of early-acquired words

Overall model: $\chi^2(2) = 11.43$, $p = .003$

Overall model: $\chi^2(2) = 9.6$, $p = .008$

n.s.

***
Results

• Reported productive vocabulary
• Household input
• Early-acquired words in input
• Object presence in input

More siblings $\rightarrow$ Smaller vocabulary ($p=.01$)
More siblings $\rightarrow$ Less input ($p<.01$)
More siblings $\rightarrow$ Fewer CDI words ($p<.01$)
Differences in object presence

Overall model: $\chi^2(2)=16.48$, $p<.001$

Overall model: $\chi^2(2)=24.33$, $p<.001$
Results

- Reported productive vocabulary
- Household input
- Early-acquired words in input
- Object presence in input

More siblings \(\rightarrow\) Smaller vocabulary \((p=.01)\)
More siblings \(\rightarrow\) Less input \((p<.01)\)
More siblings \(\rightarrow\) Fewer CDI words \((p<.01)\)
More siblings \(\rightarrow\) Less object presence \((p<.001)\)
Summary

• ‘Sibling effect’ consistent with reports from the literature (e.g. Berglund et al., 2005; Fenson et al., 1994)
• BUT only when infant has 2 or more siblings
• Effects can be traced to differences in input
• All factors known to aid in language learning (see Bergelson & Swingley, 2012; Hart & Risley, 1995; Laing, 2017; Gleitman et al., 2005)
Discussion

• Long term effects?

• Some advantages for later-borns:

→ Overheard speech (Floor & Akhtar, 2006)
→ Syntactic complexity (Oshima-Takane et al., 1996)
→ Conversational turn-taking (Barton & Tomasello, 1991)

→ Also: variability (Rost & McMurray, 2009, 2010)
Future directions

• Follow up at age 3;0
• Analysis of day-long audio data
Thank you!


