Effects of Dialect Familiarity on Lexical Processing Efficiency Using the Visual World Paradigm: A Preliminary Investigation

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Background and Motivation

- Children need to recognize words quickly and accurately
- Children who speak a nonmainstream dialect experience the added challenge of recognizing words in both the *familiar* nonmainstream dialect (*home)* and the *unfamiliar* mainstream dialect *(school)*
- Dialect familiarity affects lexical processing efficiency (accuracy and speed) in both children and adults
  - Semantic predictability benefits[2]
  - Spoken language comprehension[1]
  - Word recognition[5]

Aims of this study

- Is there an effect of dialect familiarity on spoken word recognition among speakers of either African American English (AAE) or General American English (GAE)?
- What are the relations among spoken word recognition, dialect familiarity, vocabulary size, and maternal education?

Methods

- 53 preschool children recruited from Madison, WI.

	Native speakers of AAE (n = 20)	Native speakers of GAE (n = 33)
N (girls)	13	15
Age (months) mean (sd)	47.8 (8.1)	50.9 (5.9)
Vocabulary (SS) *EVT-2* mean (sd)	95.5 (11.6) range = 67-121	119.8 (14.7) range = 92-147
Maternal Education Level	High School = 16 Some College = 2 College & Above = 1	High School = 2 Some College = 6 College & Above = 24

[1] Adank, P., Evans, B. G., Stuart-Smith, J., & Scott, S. K. (2009). Comprehension of familiar and unfamiliar native accents under adverse listening conditions. *Journal of Experimental Psychology: Human Perception and Performance*, *35*, 520–529.[2] Clopper, C.G. (2012). Effects of dialect variation on the semantic predictability benefit. *Journal of Language and Cognitive Processes, 27,* 1002-1020. [3] Law, F., Mahr, T., Schneeberg, A., & Edwards, J. (2017). Vocabulary size and auditory word recognition in preschool children. *Applied Psycholinguistics, 38*, 89-125 [4] Mirman, D. (2014). *Growth curve analysis and visualization using R*. Boca Raton, FL: Chapman & Hall.[5] Nathan, L., Wells, B., & Donlan, C. (1998). Children's comprehension of unfamiliar regional dialects: A preliminary investigation. *Journal of Child Language, 24*, 343–365. [6] Williams, K. T. (2007). *Expressive Vocabulary Test* (2nd ed.). Minneapolis, MN: Pearson Assessments.

Lexical Processing Measure: Visual World Paradigm

Procedure

- Children heard a familiar word embedded in a carrier phrase, e.g., "Find the ____"
- Saw a 2x2 grid of photographs including three distractor images
- Measured children's patterns of looking to objects over the course of a trial

Analysis

- Generalized linear mixed effects model of data from 250ms to 1500ms after word onset.[4]

Model 1: Dialect Familiarity

Log odds ~ (1+ $Time^1$ + $Time^2$ + $Time^3$) x Dialect

- Random slopes for child

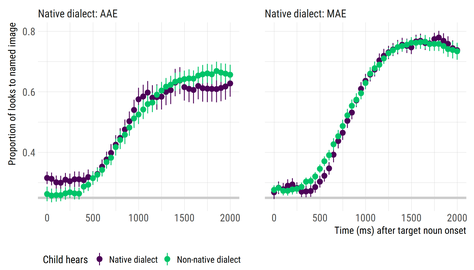
Model 2: Effects of Vocabulary & Maternal Education Level

Log odds ~ (1 + $Time^1$ + $Time^2$ + $Time^3$) x Vocabulary x Maternal Education Level

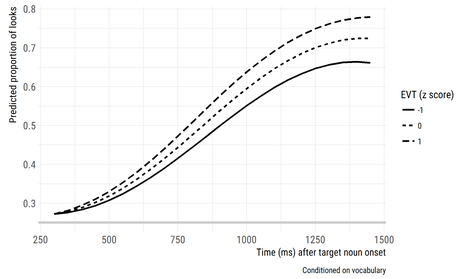
- Random slopes for child & dialect condition

Results

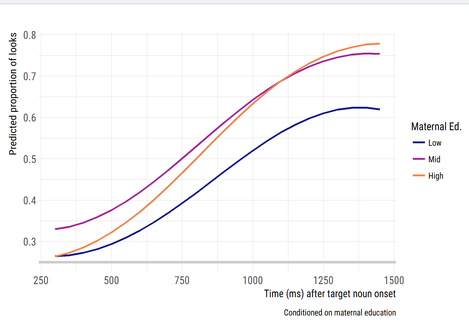
There was no significant effect of dialect familiarity.



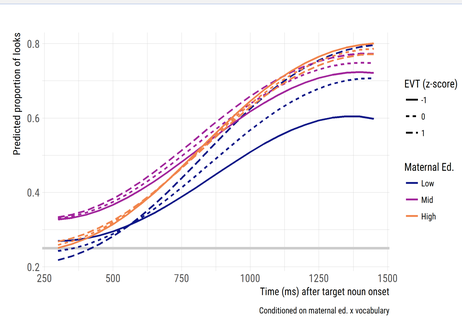
There was a significant effect of vocabulary size.



There was a significant effect of maternal education.



There was a significant interaction between vocabulary size and maternal education.



Discussion

- Nonmainstream and mainstream speakers of English were comparably accurate in recognizing words in both the familiar and the unfamiliar dialect
- There was a complex relationship among spoken word recognition, vocabulary size, and maternal education
  - Children from families with high maternal education recognized familiar words more accurately and quickly than children from families with low maternal education
  - Vocabulary size predicted word recognition for children from families with low levels of maternal education

Future Considerations

- The effect of dialect familiarity depends on
  - Complexity of the linguistic environment or the linguistic structure
  - Magnitude of phonological and morphological deviation from the familiar native dialect

What did we learn?

- Children, as young as age 3, could reliably adapt to some forms of linguistic variation such as dialect
- There is a complex relationship among spoken word recognition, vocabulary size, and maternal education
- Recruiting children from diverse populations is crucial for understanding spoken word recognition

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