Why do late talkers not say all the words that they understand?

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Introduction

• During language acquisition, children develop two vocabularies: a receptive vocabulary (the words they understand) and an expressive vocabulary (the words they say).
• Late talkers are children who do not say 200 words or use two-word phrases by the time they are two years old; they have small expressive vocabularies.
• Children may learn words through focusing on words’ phonological (sound) characteristics.
• Previous research into word learning has shown that for typically developing word learners, words that sound less like other words may be easier to learn because words with common sounds may shift attention to similar-sounding, already known words; words with unique sounds tend to stand out more and require less time for recognition.
• Late talkers have been found to use sounds as a word-learining cue for longer than their typically-developing peers (Stokes et al., 2011).
• Sc: late talkers do not say all the words they understand. The purpose of our study is to determine if this may be because of words’ phonological characteristics.

Our question: Is there a difference between the phonological characteristics of the words in late talkers’ expressive and receptive vocabularies?

Our hypothesis: The expressive vocabularies will be of higher PND, PND frequency, PS average, and BP average than the receptive vocabularies.

Methods

1. We collected data on 4 late talkers’ expressive and receptive vocabularies through parent report with the MacArthur–Bates Communicative Development Inventory. 677 commonly used words were included in the study.

2. We used online neighborhood density (Vitevitch & Luce “English (Child Corpus”) and phonotactic probability calculators (Vitevitch & Luce, 2004) to analyze the children’s vocabularies through four phonological characteristics:
   • Phonological neighborhood density
   • Phonological neighborhood density frequency
   • Positional segment average
   • Biphone average

3. Using these values, we compared the 4 late talker’s expressive and receptive vocabularies using Bayesian t-tests.

Terms to know

• Phonological neighborhood density: The number of other words that differ from the word by the addition, deletion, or substitution of one phoneme.

• Neighborhood density frequency: The average of the frequencies of occurrence of a word’s phonological neighbors.

Results

Phonological neighborhood density and frequency

Positional segment average

Bivariate tests show extreme evidence for differences in PND and PND frequency.

Bivariate tests show extreme evidence for differences in positional segment average.

Bivariate tests show extreme evidence for differences in biphone average.

Discussion

• The results aligned with our hypothesis; the average values of all four of the phonological characteristics tested were higher for the late talkers’ expressive vocabularies than their receptive vocabularies.

• This suggests that out of all the words that late talkers understand, they learn to say the words with more common sounds before those with rarer sounds.

• This may be because late talkers need strong phonological representations of speech sounds (i.e., in many different words and in different positions within words) before they are able to produce these speech sounds in words.

• Late talkers also have limited words and speech sounds in their receptive vocabularies; this may explain why words of less common sounds do not “pop” more (and may in fact stand out less) than words of more common sounds during early word learning.

• Our next steps will be to expand our sample size and apply these same analyses to more children.

• Our results may be used by clinicians in therapy settings and families at home to decide what words to use in speech therapy treatment for late talkers to facilitate their word learning and communication skills.

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References

