Variation in English Infant-Directed Speech
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I. Introduction

• Casual adult-directed speech (ADS) has copious phonetic variation [e.g., 4].
• In contrast, infant-directed speech (IDS) has been previously argued to be more canonical (faithful to dictionary pronunciation) [5][6].
• However, recent studies find IDS and ADS to be equally variable [2].

Does the extent of phonetic variation in IDS differ based on segment position in a word?

• IDS from Providence Corpus (longitudinal) [3]
  o 6 monolingual English-speaking 1 to 3-year-olds interacting with parents (usually mothers) at home during everyday activities
  o Data from two age ranges, 16-18 and 22-24-month-olds
  o Utterances with coronal stops and fricatives (/t/, /d/, /n/, /l/, /z/) identified using orthography
  o Forced-alignment [7]
  o Alignment check, phonetic transcription of allophonic variants by 3 phonetically-trained native speakers of English
  o Automated data extraction, problematic tokens (alignment/transcription error) rechecked by 4 phonetically-trained native speakers of English
  o Segments coded for
    • Target segment
    • Phonetic realization
    • Position (initial, medial, final)
    • Preceding segment
    • Following segment
    • Word context
    • Part of speech

• Final corpus: 28,775 segments
• Currently processed: 25,296 segments

II. Methods

III. Results – Variants by position

Onset (7,054 tokens)
• Canonical variant [released stop/fricative] was the most frequent variant for every segment

Medial (7,095 tokens)
• Canonical variant was still the most frequent variant for every segment, but to a lesser degree

Coda (11,147 tokens)
• Canonical variant is not the most frequent variant for either /l/ (13%) or /d/ (31%)
• Large differences by segment

IV. Results - Comparison to ADS

• Comparing a subset of our IDS data in assimilation contexts (word-final /l/, /n/ and /l/, 725 tokens) directly to the ADS study by [4] (4349 tokens)

• Less canonical in current IDS study:
  • /l/ ($\chi^2(2,323, N = 2,324) = 56.77, p < .001$)
  • /d/ ($\chi^2(1,308, N = 1,309) = 33.33, p < .001$)

• Similarly variable in current IDS study: /l/ ($\chi^2(1,117, N = 1,118) = 0.03, p = 0.86$)

V. Summary

• We replicate [2]'s results that IDS is not more canonical than ADS
• Not all segments are equally variable - /l/ and /s/ are produced mostly canonically, /t/ has many more variants
• Variation is mostly limited to coda positions
  o In onsets, the canonical variant is always the most frequent
  o This is no longer true for codas
• There is a positional difference could be beneficial for category learning:
  o Word-initial segments: acquire canonical forms, support word segmentation
  o Word-final segments: variation, learn allophonic variants in connected speech
• Future work more on acoustic properties of phonetic variants

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Selected references