Differences in Timing Perception May Not Entail Differences in Timing Use

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Introduction

- Perception of timing, particularly fast or variable-rate signals, has widely been shown to differ between older adults and younger adults (Wearden, 2005)
- This has been a particular focus of study in the language sciences, where older adults have been shown to compensate for challenges in understanding fast speech by relying on context (Pichora-Fuller, 2009)
- Word segmentation provides a particularly interesting test case because of a recently-developed literature on the effects of timing information in non-adjacent contexts on the perception of word segmentation
- Undergraduate listeners rely on what is termed “distal” speech rate more than even some grammatical cues when determining word segmentation (Dilley, Mattys, & Vinke, 2010; Morrill, Baese-Berk, Heffner, Dilley, & Pitt, in preparation)
- Question of Interest: Do older adults differ from younger adults in their relative use of speech rate cues and syntactic cues to word segmentation?

Materials + Methods

- Participants
  - Younger adults (ages 18-25), mostly undergraduates
  - Older adults (ages 55-65) from UMD community
- Audiometry performed to test hearing thresholds
- Rate Manipulation
  - Experiment 1: slowed distal speech rate
  - Experiment 2: compressed entire sentence
- Context Type Manipulation
  - Biased/full-context sentences have syntactic cue to hear a word boundary
  - Neutral/truncated-context sentences have no syntactic cue to hear (or fail to hear) a word boundary
- Participants given unlimited number of repetitions to transcribe entire fragment

Materials

- Experiment 1: slowed distal speech rate
- Context Type
  - Distal
  - Proximal
- Distal Rate
  - Normal
  - Slowed
- Normal
  - Neutral
  - Biased
- Slowed
  - Neutral
  - Biased
- Analyzed: proportion of sentences in which function word reported (indicating perception of word boundary)
- Results: linear mixed-effects models show evidence of syntactic and distal rate effects but, crucially, no differences between age groups
- Need to demonstrate somewhat younger-than-usual participants would show age-related effects for other materials → Experiment 2

Conclusions

- Older adults affected by speech rate compression, replicating previous studies with similar findings (though follow-up with no ability to repeat sentences may be useful)
- Older adults do not seem to use timing information any differently from younger adults with regard to word segmentation, nor do they use grammatical cues more
- Suggests that issues in comprehension are not the result of difficulties with word boundary perception per se
- Extends compression results from ages 65-75 to ages 55-65 and distal prosody results from undergraduates to older adults

References


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