STOP COPYING ME: Imitation of Speech Reduction

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Introduction

- Speech reduction occurs when sounds or syllables are omitted from words, or are spoken with less clarity (e.g. fiddle becomes fill; Ernestus et al., 2002)
- Word medial stops, such as /g/ and /d/, are commonly reduced in casual speech (Warner & Tucker, 2011)
- Stop sounds involve momentary blockage of a section of the oral cavity (**Figure 1**), often caused by the lips or tongue blocking air flow, followed by a release, or burst
- Broadly, the purpose of this study is to research how we understand language
  - More specifically, how variability caused by speech reduction impacts how we perceive speech
- Previous studies (Babel, 2012) have shown that to an extent, some vowels are phonetically imitated in lexical shadowing tasks

Research questions

- When a listener hears a reduced word and has to repeat it, do they mimic the reduction?
- When there is a mispronunciation, is there a reasonable explanation for the chosen word that coincides with lexical competition?

Figure 1 Oral cavity during the production of a /d/

Methods

Stimuli

- Naturally produced disyllabic words containing word-medial /d/ and /g/
  - 40 /d/ (e.g. ready)
  - 40 /g/ (e.g. baggy)

Task

- Listen-and-repeat
  - Auditory stimulus followed by 2,500ms pause
  - A 500ms pure tone beep prompted participant to repeat the stimulus

Participants

- 38 Western Canadian English speakers

Data

- Duration of word-medial /d/ and /g/
- Response latency and spoken responses recorded via head-mounted microphone

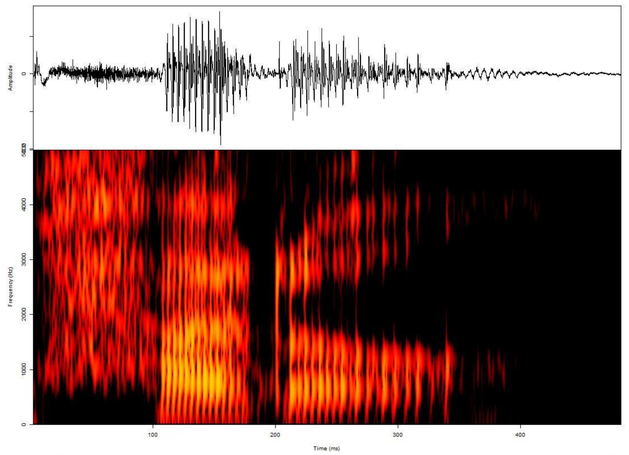

Figure 2 Waveform (top) and spectrogram (bottom) of the unreduced form of the word *puddle*

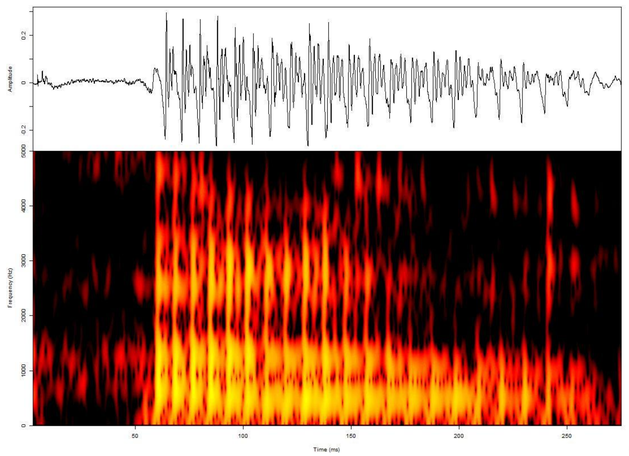

Figure 3 Waveform (top) and spectrogram (bottom) of the reduced form of the word *puddle*

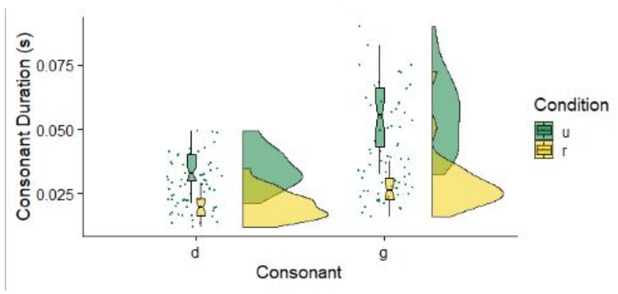

Figure 4 Speaker consonant duration (s) split by consonant

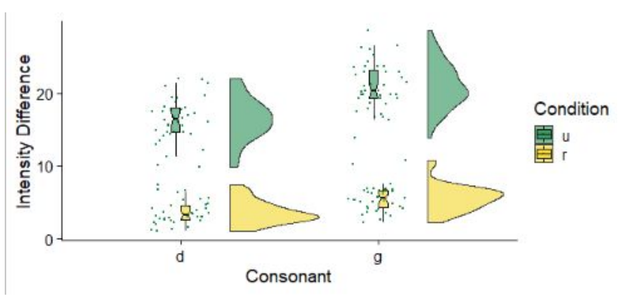

Figure 5 Speaker intensity difference (dB) split by consonant

Results

- There were 331 mispronunciations out of 3016 total items, many of which were lexically confused (tidy-tie and fiddle-fill)
- As indicated by **Figures 4 & 6**, the reduced items are shorter than the unreduced items
- While both /d/ and /g/ follow the same trends, /g/ items are generally produced with a longer duration when compared to /d/ items (**Figures 4 & 6**)
- **Figures 5 & 7** both suggest that reduced items have a smaller intensity difference
- The degree of difference between reduced and unreduced items is larger in both **Figures 4 & 5** when compared to **Figures 6 & 7**

Conclusions

- Reduction—which often increases lexical competition—makes it more difficult to identify words
- Participants do imitate the reduction of the speaker
- The listeners produce a smaller difference between reduced and unreduced items than the difference produced by the speaker
- To communicate more effectively, individuals adjust their speaking patterns to align with their conversation partners (e.g., Babel, 2012)

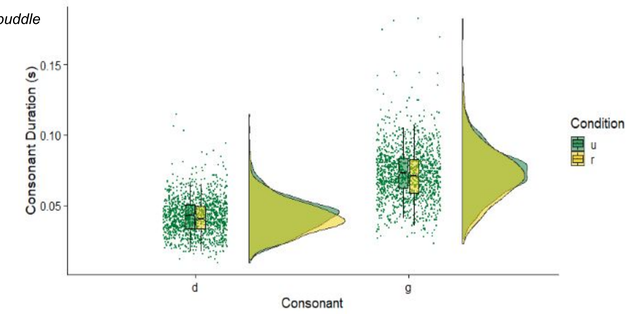

Figure 6 Participant consonant duration (s) split by consonant

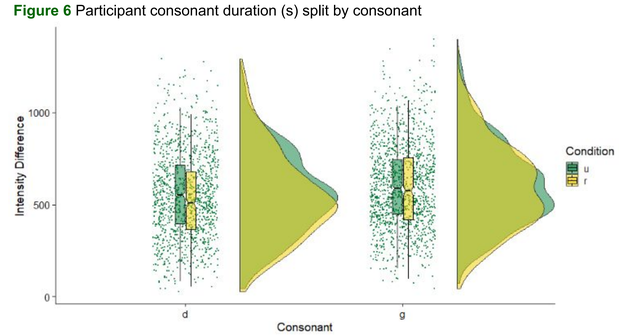

Figure 7 Participant intensity difference (dB) split by consonant

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Acknowledgements:

Enormous thanks to Tyler Schnoor, Jasmine Wegewitz, and everyone at the Alberta Phonetics Laboratory for guiding and helping me this summer. I would also like to thank the Alberta Government and the Faculty of the Arts for sponsoring my position.