Tapping in American English: Context matters
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Background

- How important is context in recognizing phonological variants in online word recognition?
- Three experiments (20 native English participants in each)
- Targets: 30 monosyllabic /t/-final English words, e.g. bot (also 30 monosyllabic /d/-final words, not presented here)
- Visual Stimuli: Visual targets of printed words paired with distractor text of ‘X’s (matched for orthographic length)

Methods

- Stimuli:
  1. Click on the word ___ now! (favours stop variant)
  2. Click on the word ___ again! (favours tap variant)

- Additional conditions (presented in both frames):
  - Mispronunciation: One-feature place mispronunciations (e.g. bab for bat)
  - Novel: Phonologically-dissimilar label for /t/ word (e.g. son for jet)
  - Fillers: Monosyllabic non-/t/-/d/-words (e.g. bin)

- Initial practice block of 3 trials (no feedback)
- Analyses included ANOVAs on accuracy data (Expt. 1) and Growth Curve Analysis (GCA; Mirman et al., 2008) for fixation data (Expt. 2 & 3)

Expt. 1: Word identification

- Listeners asked to click on the word they heard.
- % Word responses:
  - Task condition: Match > Mismatch

Expt. 2 & 3: Eye-tracking

- Listeners asked to look at the word they heard.
- Experiment 2: Only mismatch stimuli were cross-spliced

- Experiment 3: All stimuli were cross-spliced
  - Replicated results from Experiment 2:
  - So context effects & splicing effects

Summary

1) Context does not matter for canonical stop variants
2) Contra Ranbom et al., context matters for non-canonical tap variants
   a) Tap in a mismatch context < tap in match context (contra Ranbom et al. 2009).
   b) A tap in a mismatch context > mispronunciation

   - Recognition is gradient

Implications

Challenge for an account with multiple abstract representations (Ranbom et al., 2009)
- Do we need different representations given context effects?

Necessary components of a single representation account:
- Role for input frequency in context
  - Predicts (2a): Tap in match (70%) > tap in mismatch (17.6%); Ranbom et al., 2009.
  - Predicts (2b): Tap in mismatch > mispronunciation
  - Taps in mismatch context occur more than mispronunciations (-0%)

- Role for perceptual similarity to the representation
  - Predicts (1): No effect of context for canonical variant
  - Stop in mismatch context > mismatch maOer
  - Stop not the most frequent in prevocalic context, but perfect match for lexical representation
  - Explains gradient activation by mispronounced target words (vs. novel) (see also Swingley, 2009)

- Maybe predicts (2b) as well - taps more similar to /t/ than mispronunciations?

Future directions

- Do we see the same context effects with tapped /d/-final words, given how perceptually similar /d/ and tap are (de Jong, 1998; Herd et al., 2010)?
- If listeners are biased to interpret a tap as a /d/, then we should not see any effects of context.

Selected References

- Marslen-Wilson, W., in press. The mental lexicon is fully specified. Evidence from metathesis. JEP: HPP: 11, 599-631.
- Ranbom, U., & Cooper, C. M., & Podusch, E. M. 2009. A phonological context effect used to recognize variant forms in spoken word recognition: The role of variant frequency and context distribution. JEP: HPP, 12, 1299-1309.