

Vowel and consonant mutability in English: Evidence from a (new web-based) word reconstruction task

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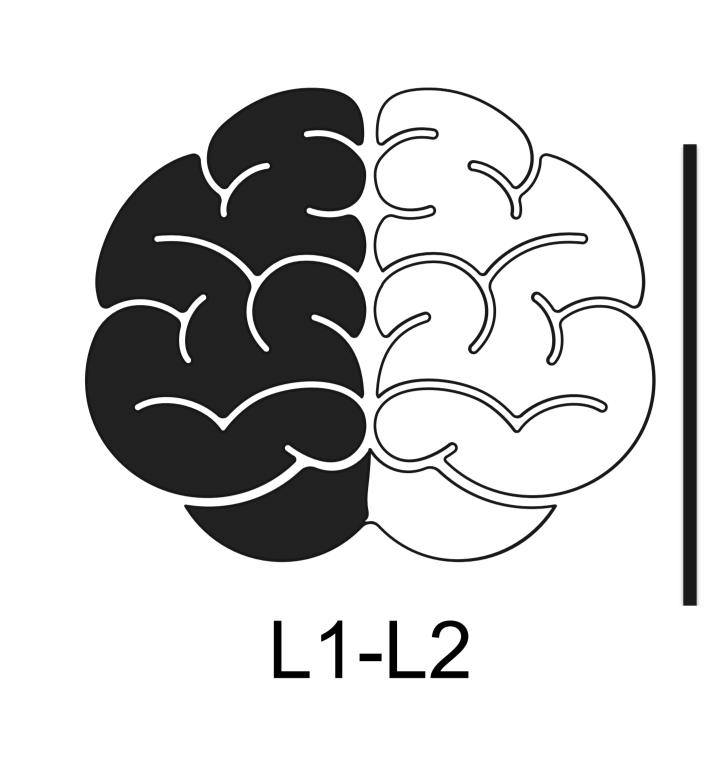
Using Reconstruction to Understand Lexical Access

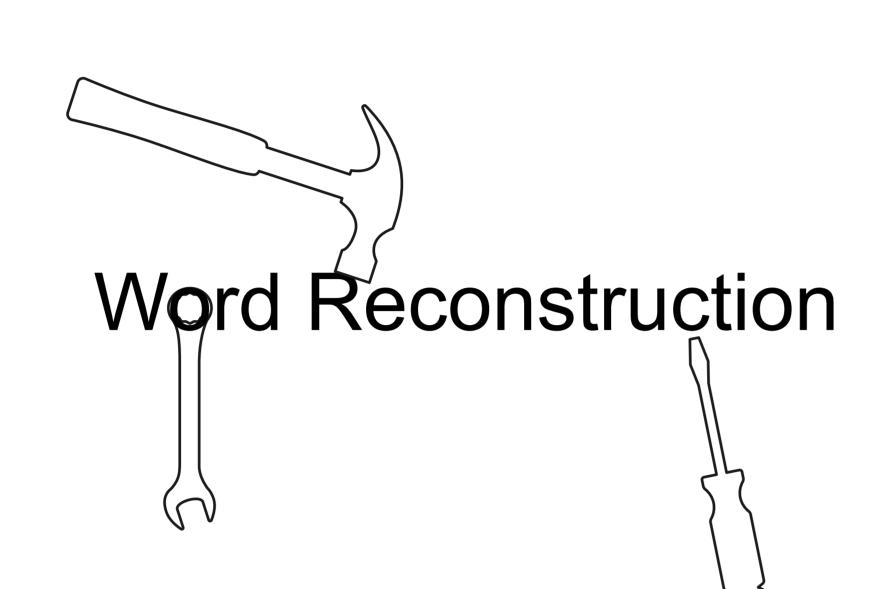


Background

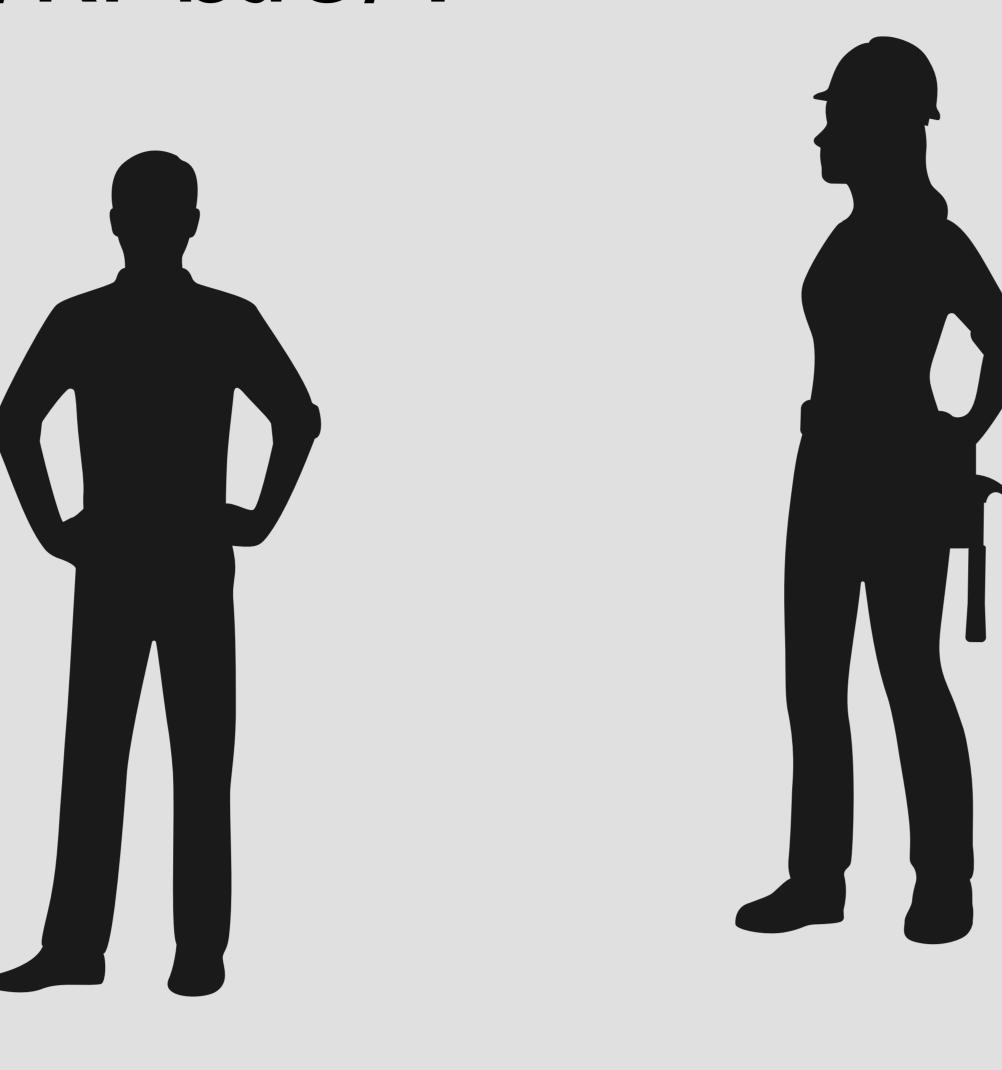
- Listeners are biased to broad phonological categories Consonants and Vowels.
- Biases are language-specific:
- C-bias: English, Dutch, German, Italian, Spanish, Russian, Japanese, Hebrew... [1].
- V-bias: Mandarin, Cantonese, Danish...[1,3,4].
- Biases are due to acoustic-phonetic and/or lexical characteristics of language [1]. Therefore:
 - Infants rapidly acquire an L1 bias [5].
 - Adults can acquire a new L2 bias [6].
 - Proficient bilinguals switch between biases [7].



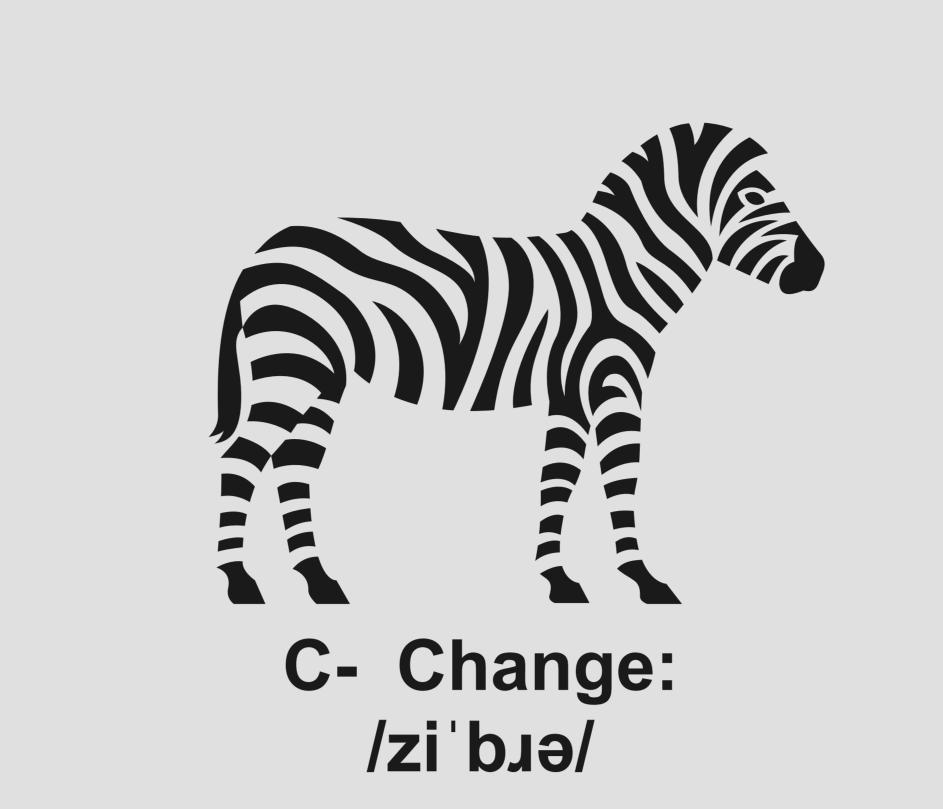


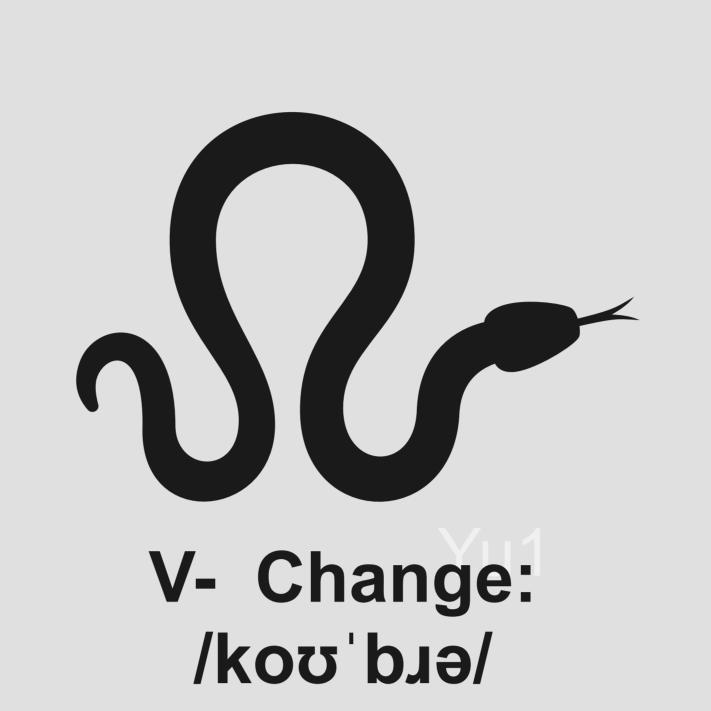


Did you see that /ki'byə/?



Reconstruction paradigm [2] allows for direct comparison of V- and Cwithin same experimental item.





 Non-word serves as perceptual template of multiple real words [2].

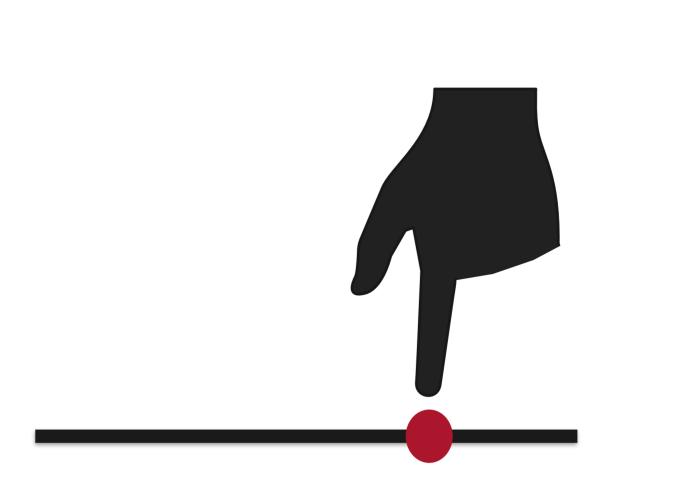
- C-bias: More Vchanges and faster V- changes.
- V-bias: More Cchanges and faster C- changes.

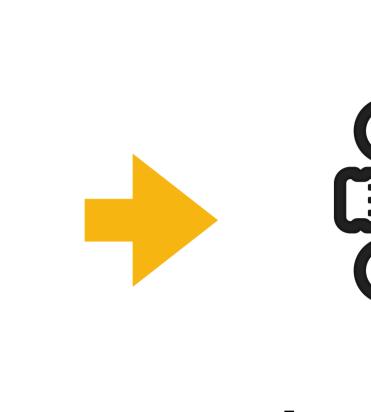
Research Questions

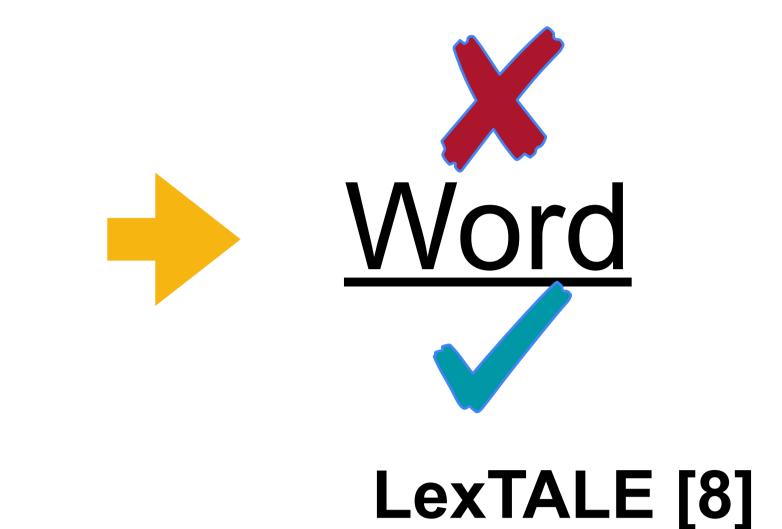
Do L1 English speakers and bilingual L1 Mandarin-L2 English speakers show a C-bias in their

- 1. Preferred reconstruction changes?
- 2. Reconstruction response times?
- 3. VAS responses?

The Current Experiment







Language Visual analog scale background

Participants

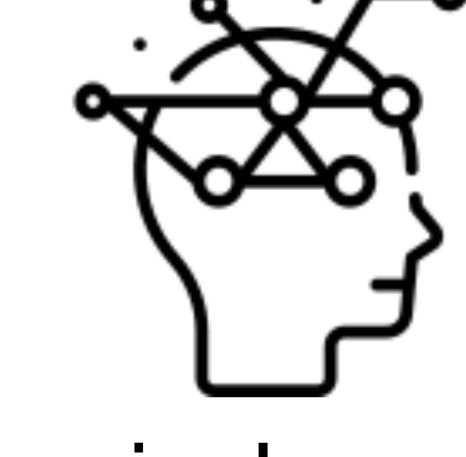
- 60 Participants • L1 Mandarin-L2 English (n=30)
- L1 English (n=30)
- Recruited online and tested with Gorilla

Task

Classic Word Reconstruction [2]



Hear non-word stimulus



Lexical search



RT from onset Accuracy





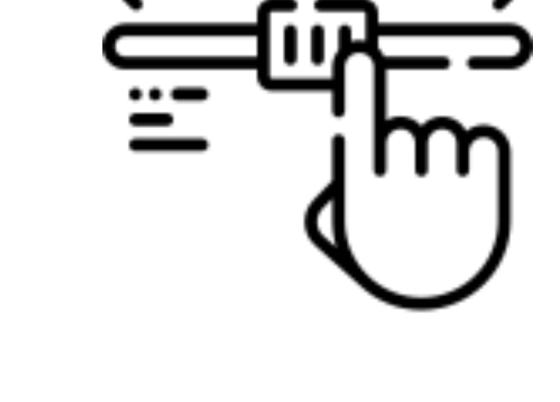


No oral response—mouse click RT

Visual Analog Scale

Web-based Word Reconstruction

Hear non-word stimulus



Adjust VAS Words counterbalanced



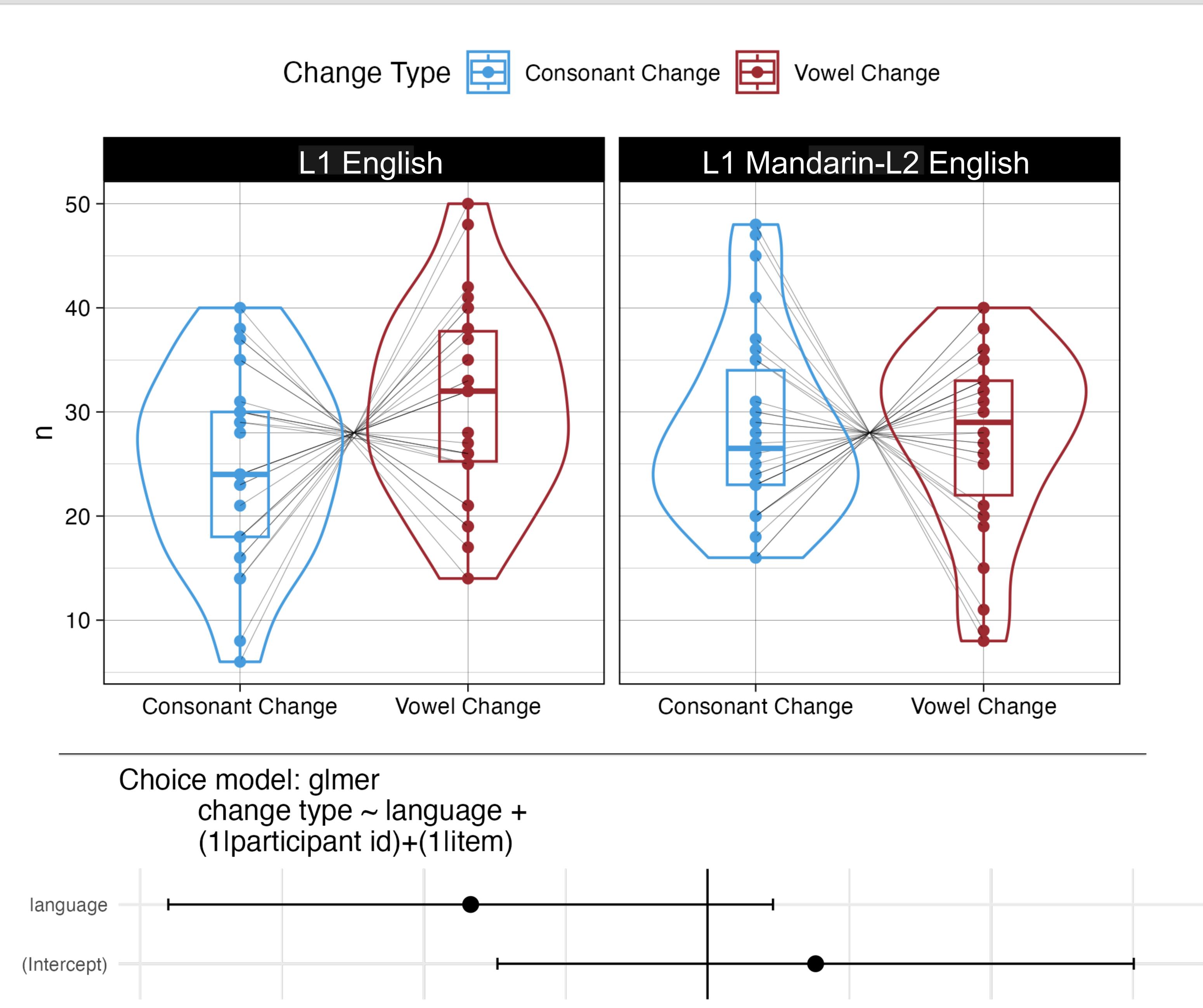
Record RT, VAS value

Eliminates lexical search... potentially highlights acoustic-phonetics

Eliminates human rater... presents all stimuli as "free choice"

Results (following preregistration)

Vowel vs Consonant Count



Log Reaction Time & Visual Analog Scale RT model: Imer log.rt ~ language + change type (1lparticipant_id)+(1litem) L1 English L1 Mandarin-L2 English 250 Consonant choices Vowel choiceslConsonant choices Vowel choices VAS model: Imer VAS ~ language * change type + change type * lexTALE + (1lparticipant id) + (1litem) LexTALE language:change type language change type:LexTALE change type

Findings

• RQ1: Numerically higher overall vowel changes were observed, but this difference was not statistically significant. Does not support prior English reconstruction results [2, 6]. No group difference was found, suggesting acquisition of new bias [6, 7].

Estimate

- RQ2: No difference in RT was observed unlike [2, 6, 7]; RT most likely reflects time for lexical search [1, 2].
- RQ3: VAS behavior showed significant differences: overall preference for vowel changes (C-bias) [2, 6], attenuated C-bias for bilingual L1 Mandarin-L2 English [3, 6, 7], and two-way interaction with LexTALE suggesting larger lexicon may reduce C-bias.

Take aways

(Intercept)

- Reconstruction with a VAS task removes the lexical search, thus rendering RT uninformative.
- Robust C-bias can still be observed with the VAS results, strengthening the validity of the web-based paradigm.

Estimate

• Future work needs to tease apart the role of the acoustic-phonetics and the lexicon.

References

1000

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