Perceptual Retuning Targets Features

AMP 2017

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September 15th, 2017

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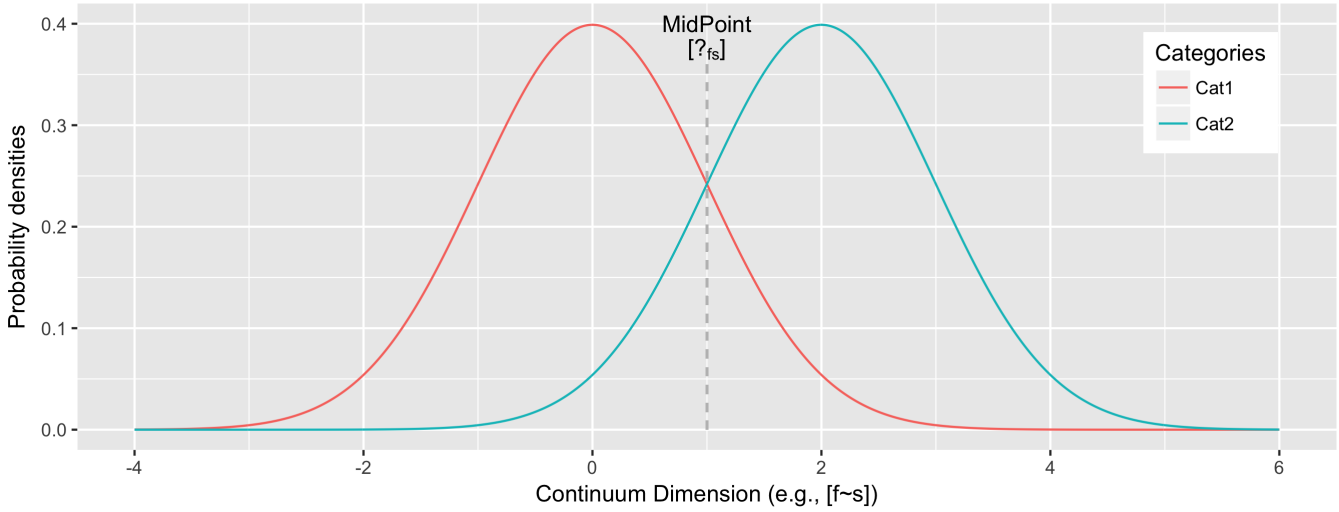
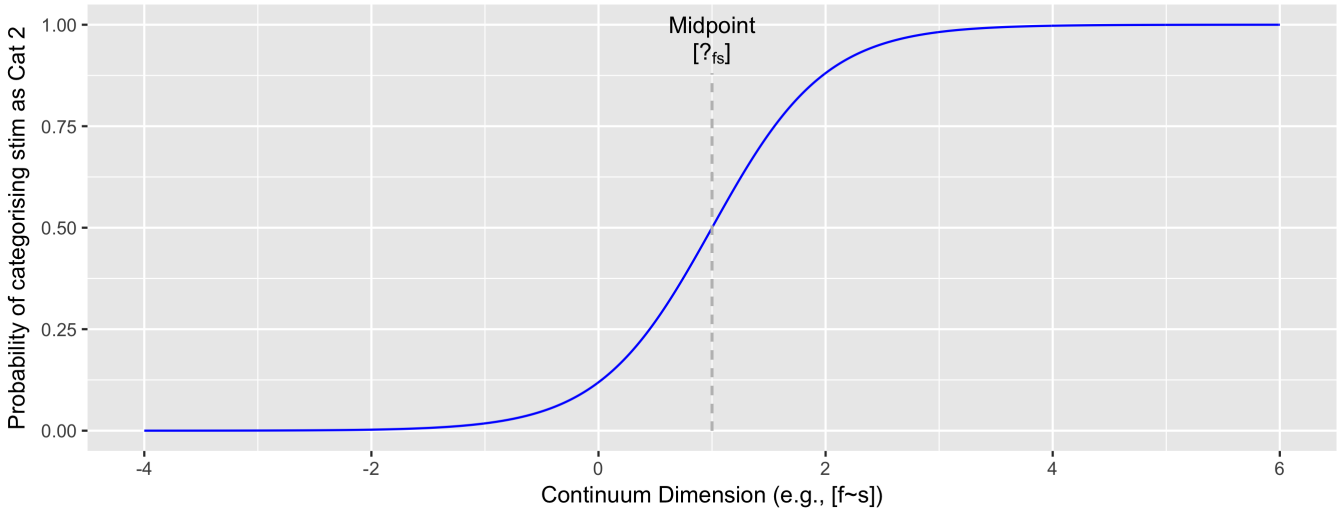
- Listeners must find a way to categorize ambiguous, unclear, or novel pronunciations of segments they hear.
- Listeners retune or shift their categorical boundaries for segments when presented with ambiguous tokens of target items in *lexical* words (Jesse and McQueen, 2011; Norris et al., 2003; McQueen et al., 2006).

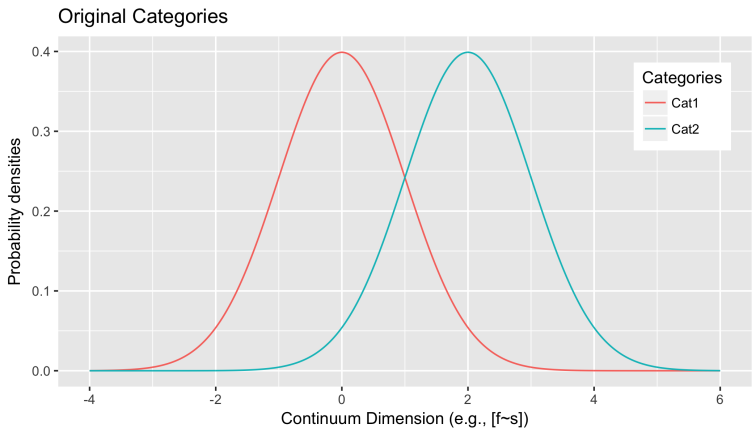
Categorical Boundary





Lexical Retuning

Perceptual shift



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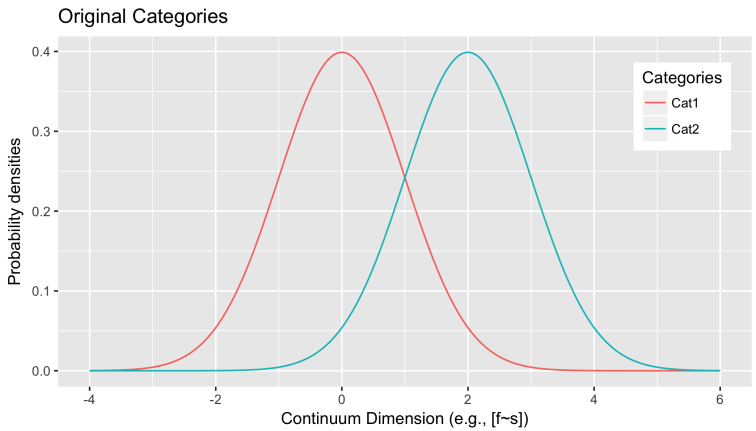

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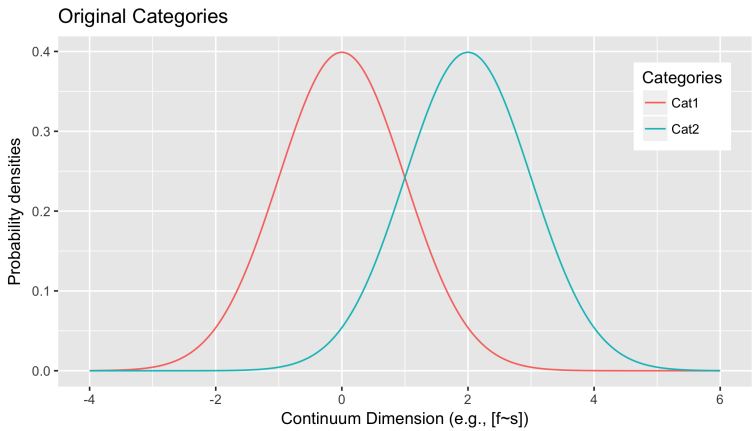

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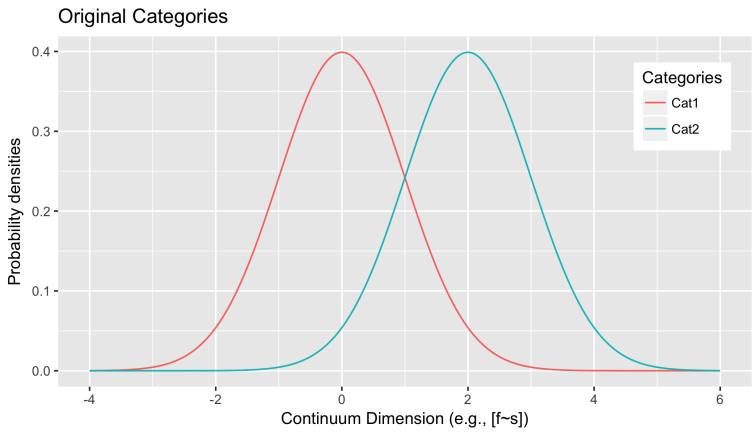

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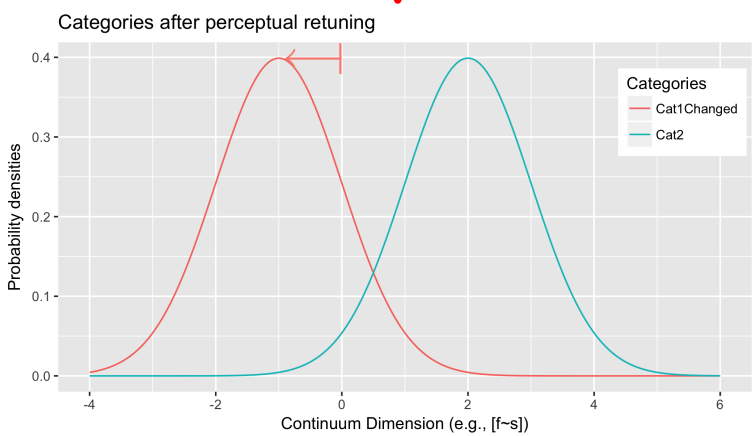

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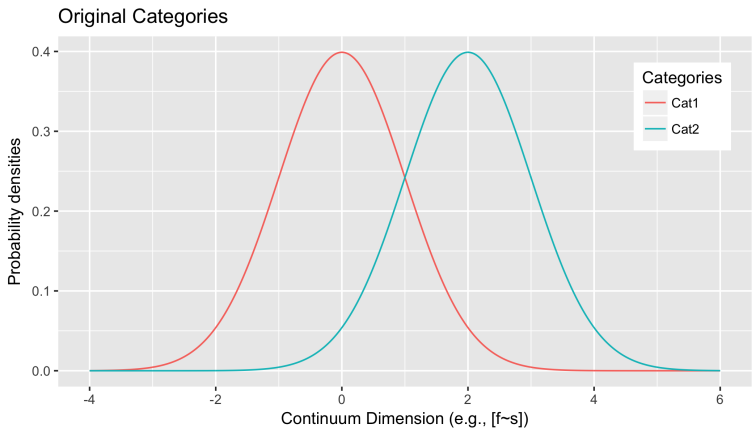

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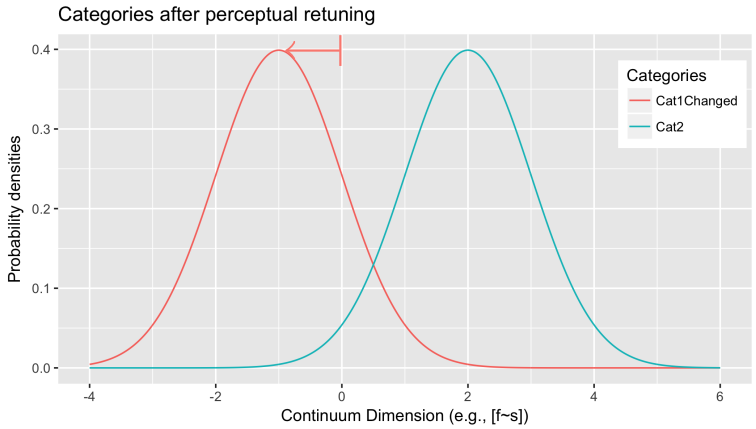

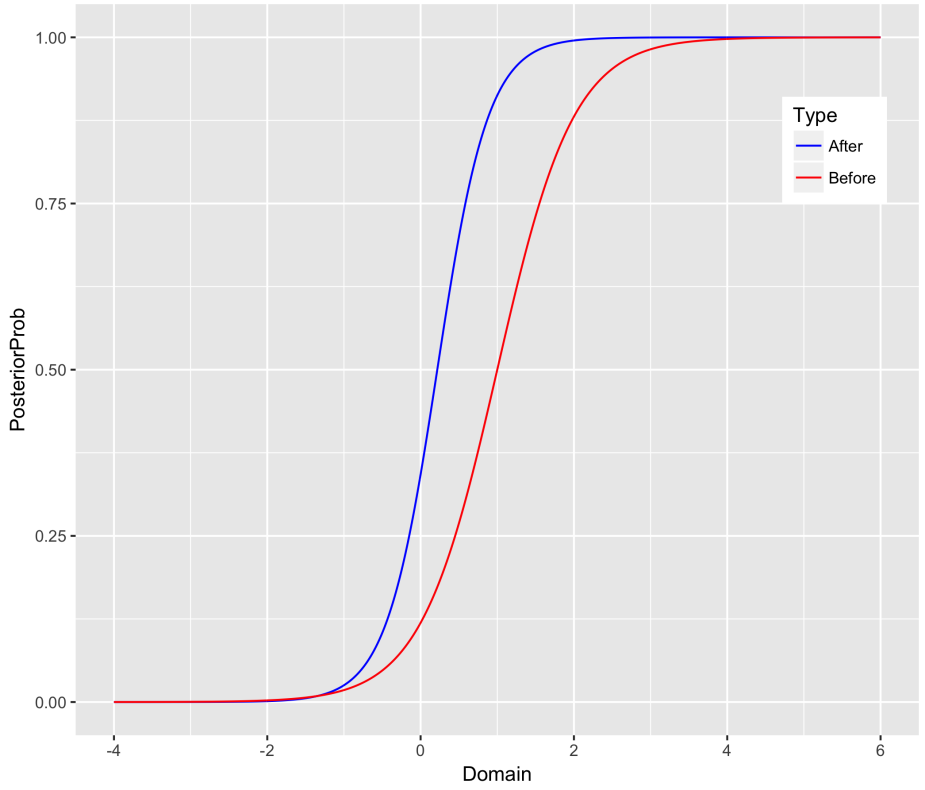

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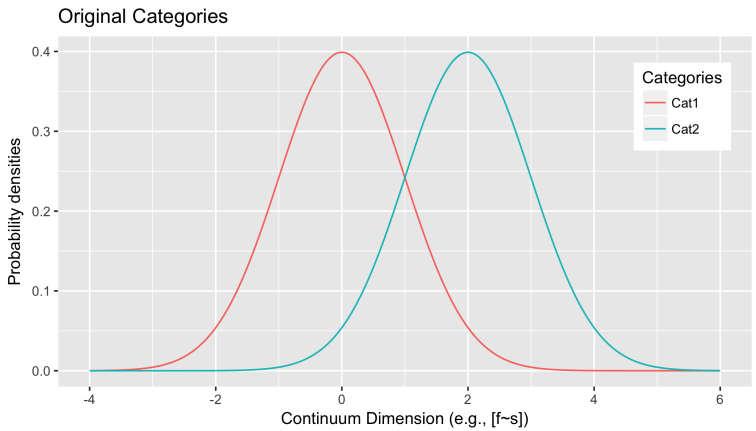

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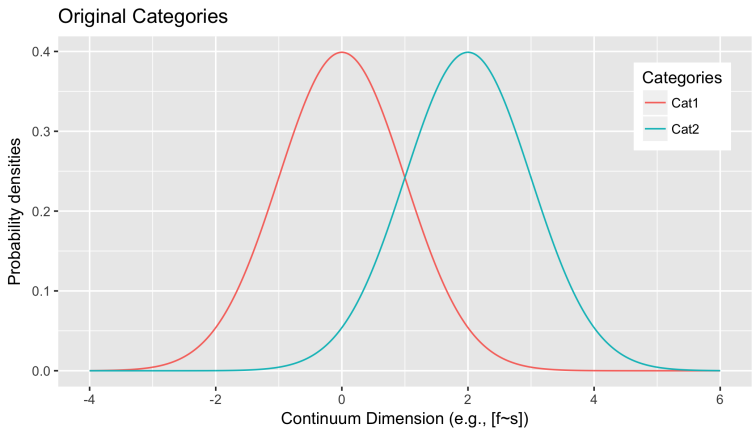

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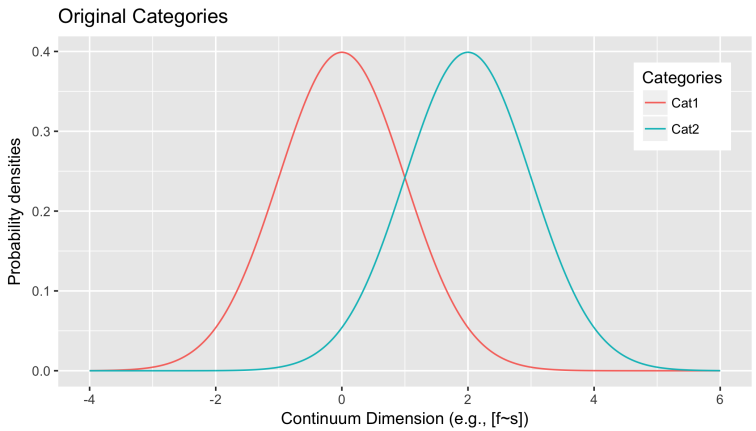

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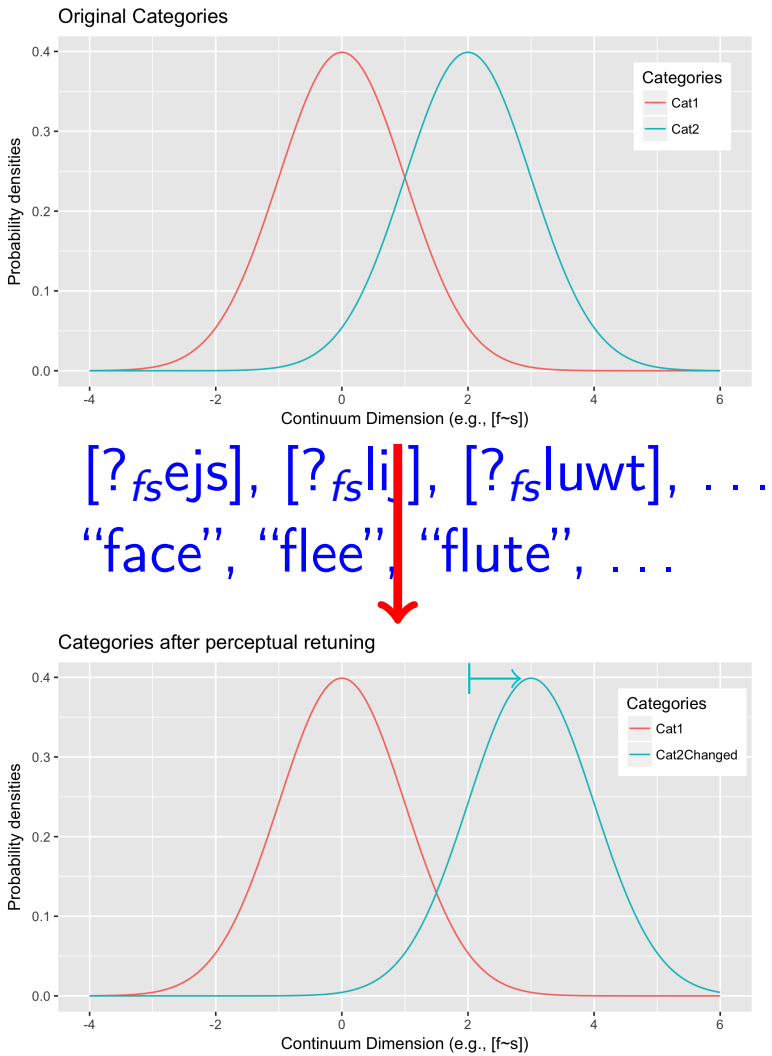

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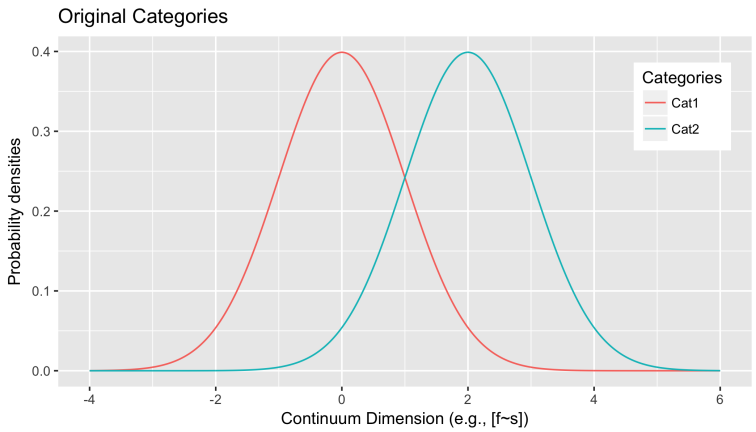

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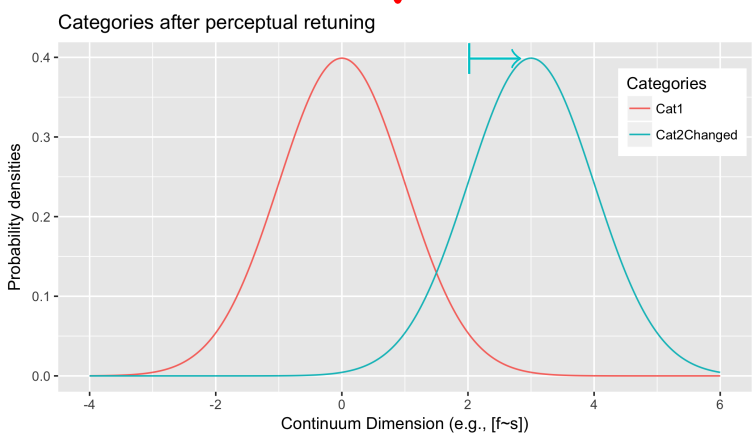

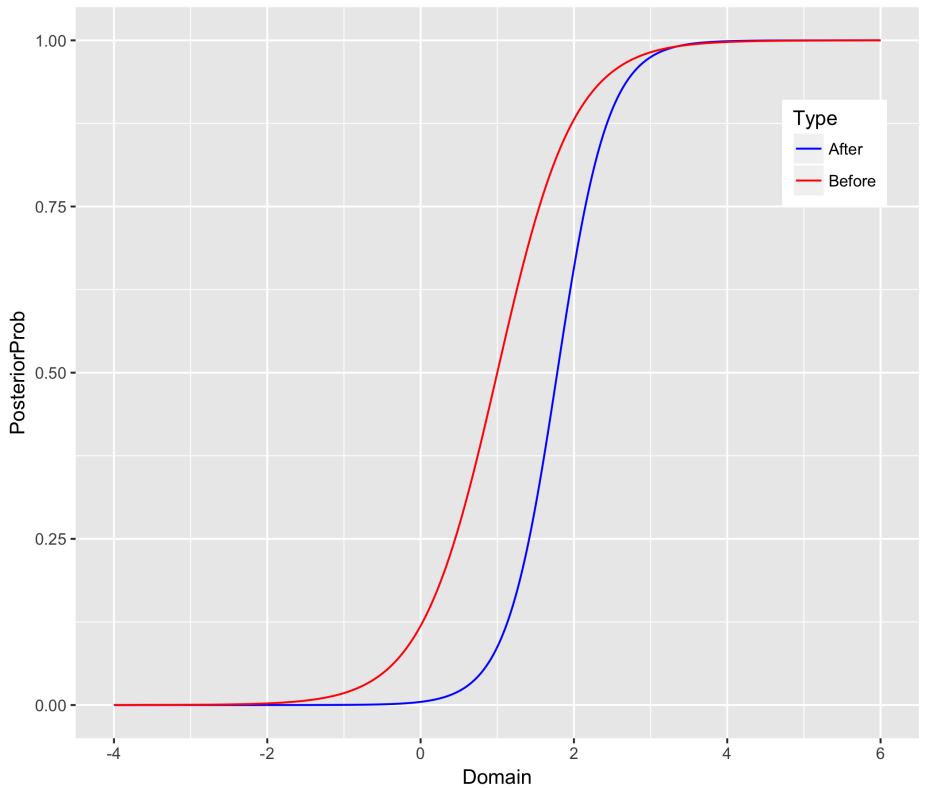

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- When ambiguous segments appear in *real* words it gives the listener a target for what abstract segment to assign the novel pronunciation to.

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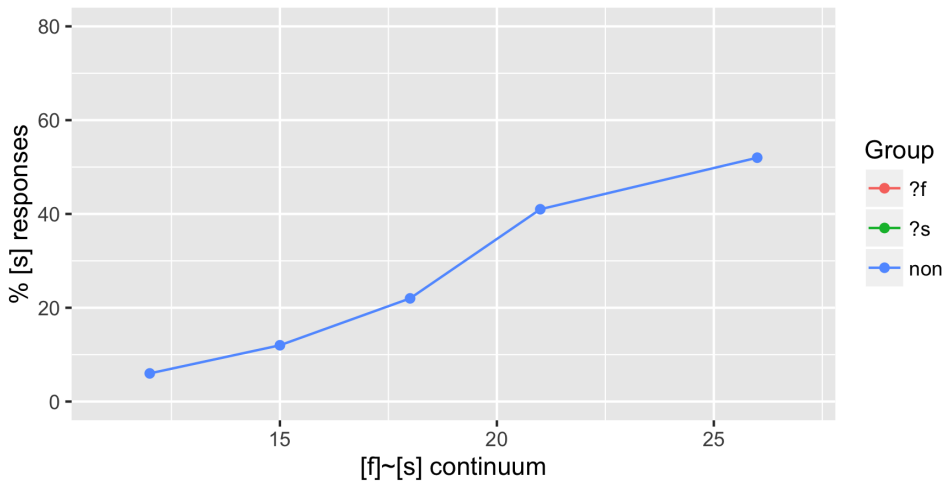

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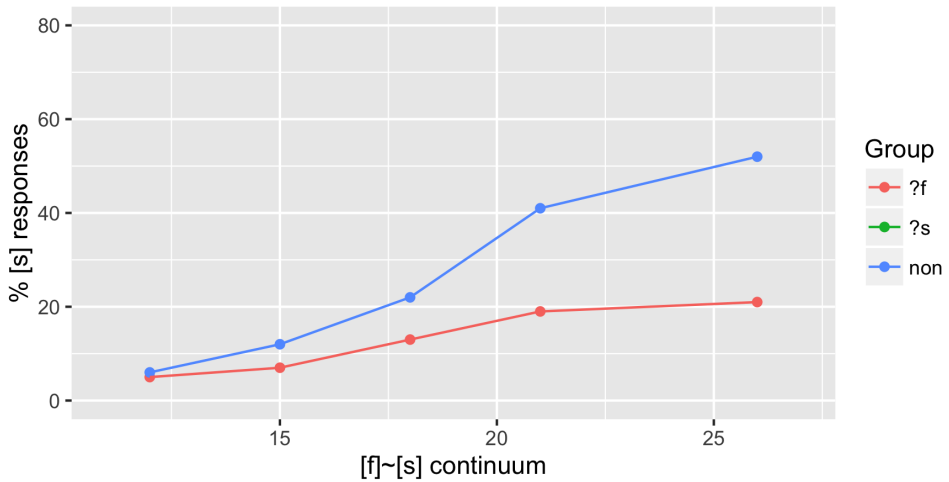

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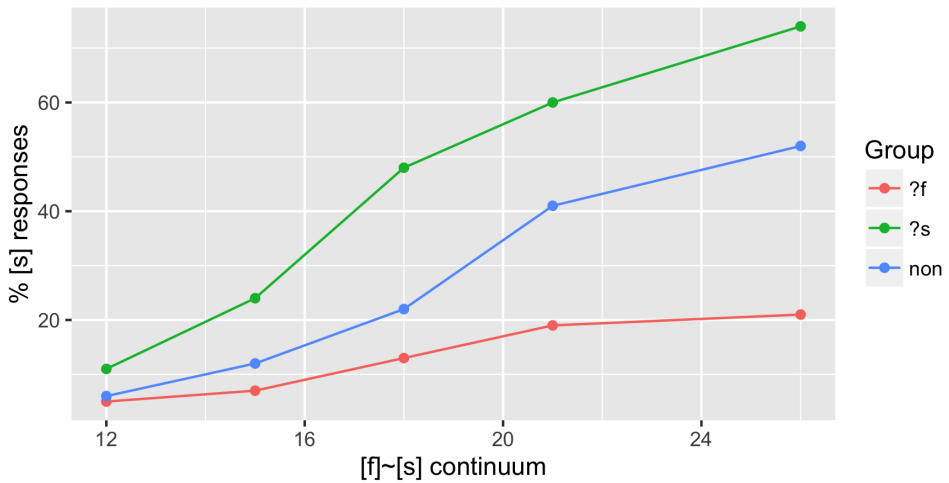

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  - We particularly target the continua [f∼s] and [v∼z].

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- If an ambiguous token appears in [s] words, then more /s/ responses, *and more /z/ responses*.

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The following stimuli were used throughout the experiments:

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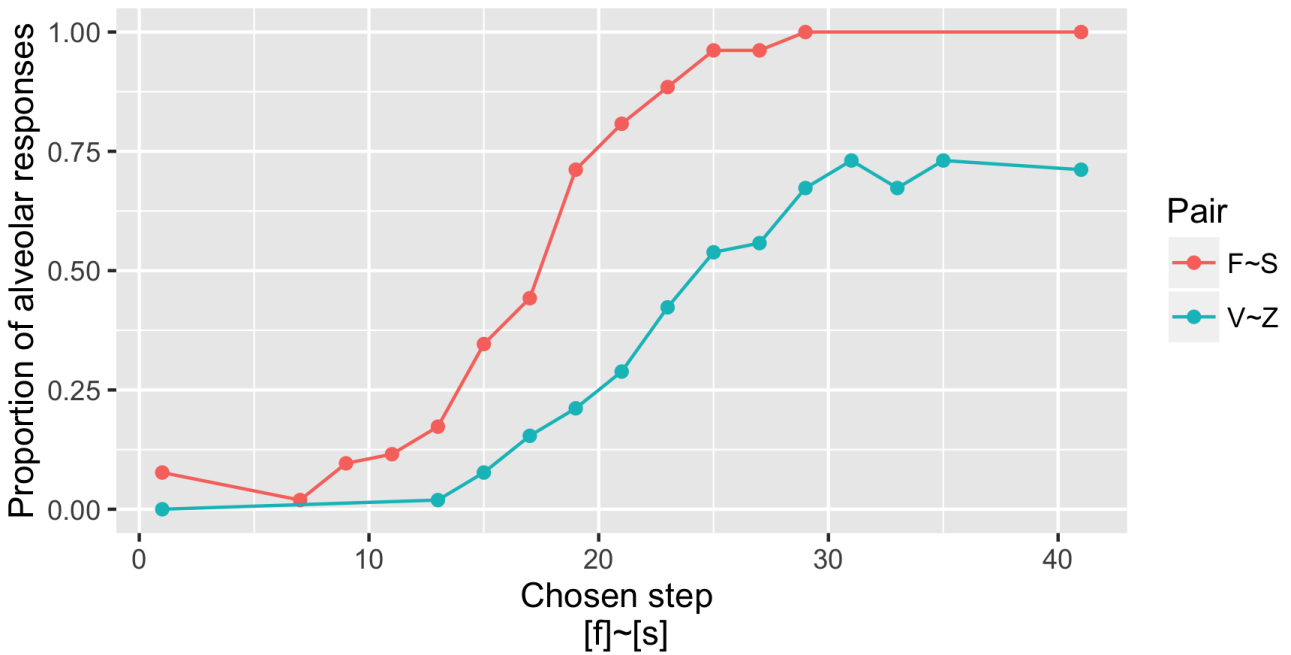

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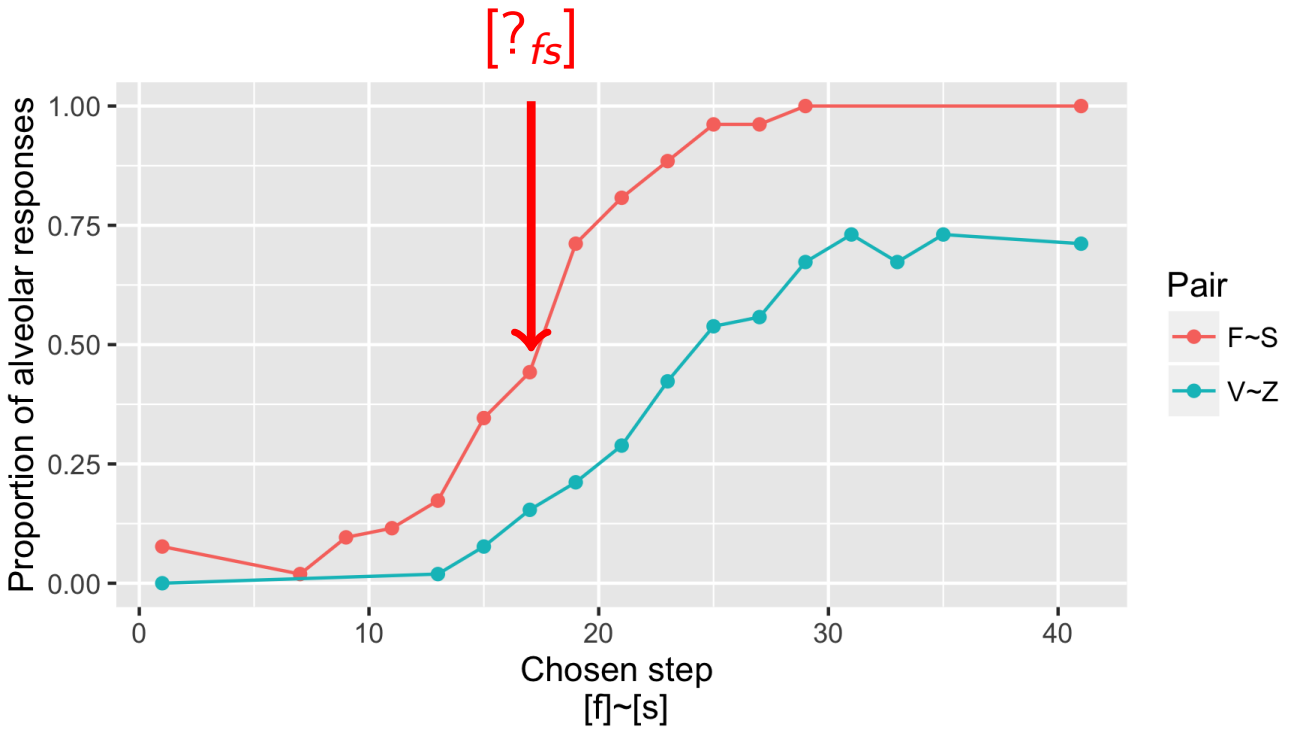

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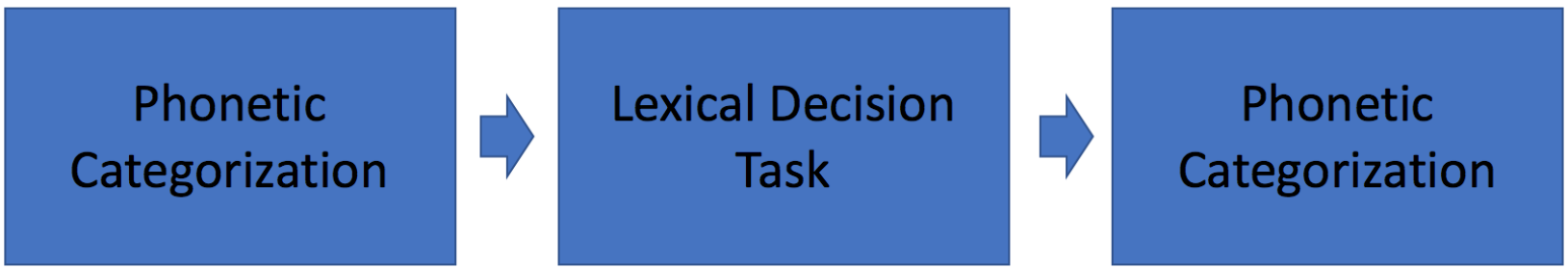

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  - Experiment 1B: Voiced [v∼z] continuum. (36 Participants).

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  - Were asked if the word they heard was a real English word.

Predictions slide

If retuning affects features

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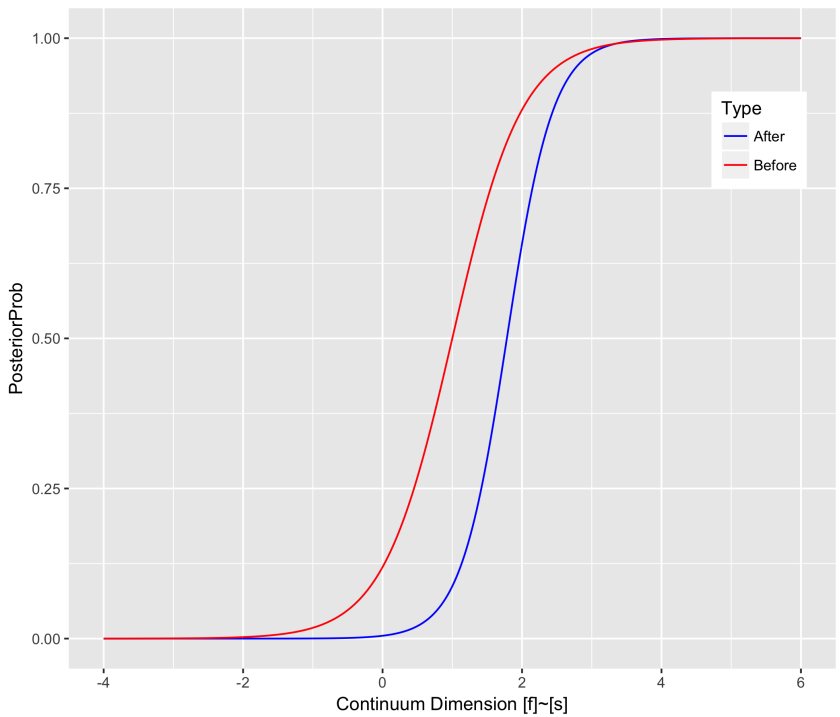

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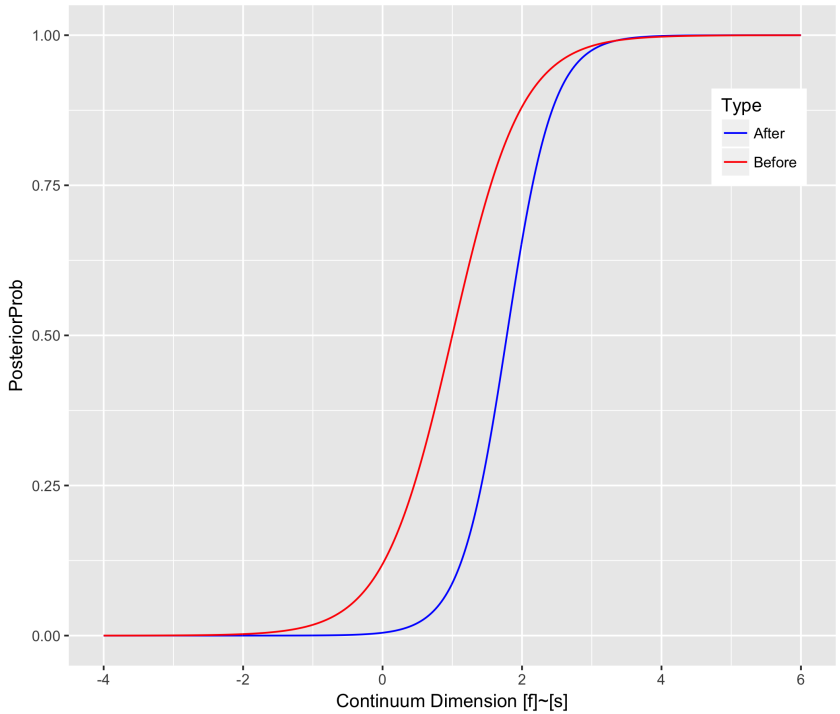

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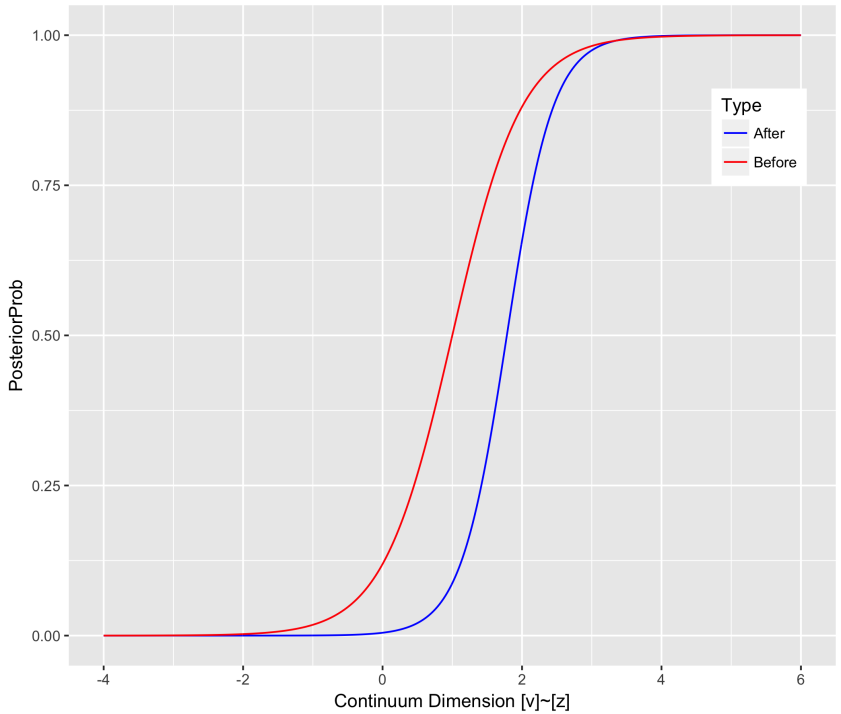

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  - % correct for test words with [?$_{fs}$] = 83.
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- This suggests that participants were willing to accept the modified words as good tokens of f-words.
- Therefore, we should expect phonetic re-tuning.

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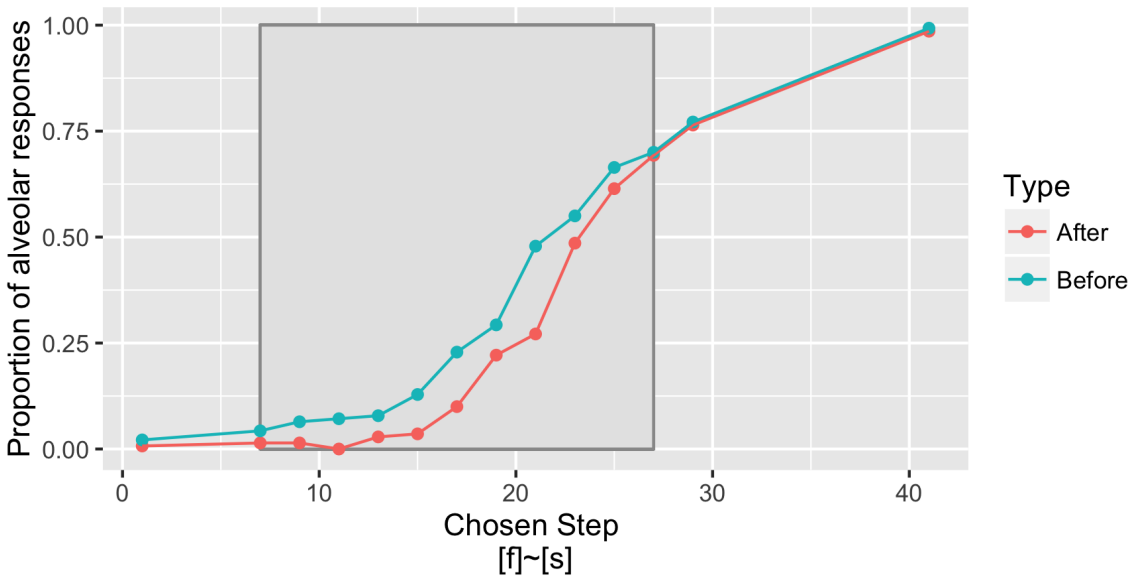

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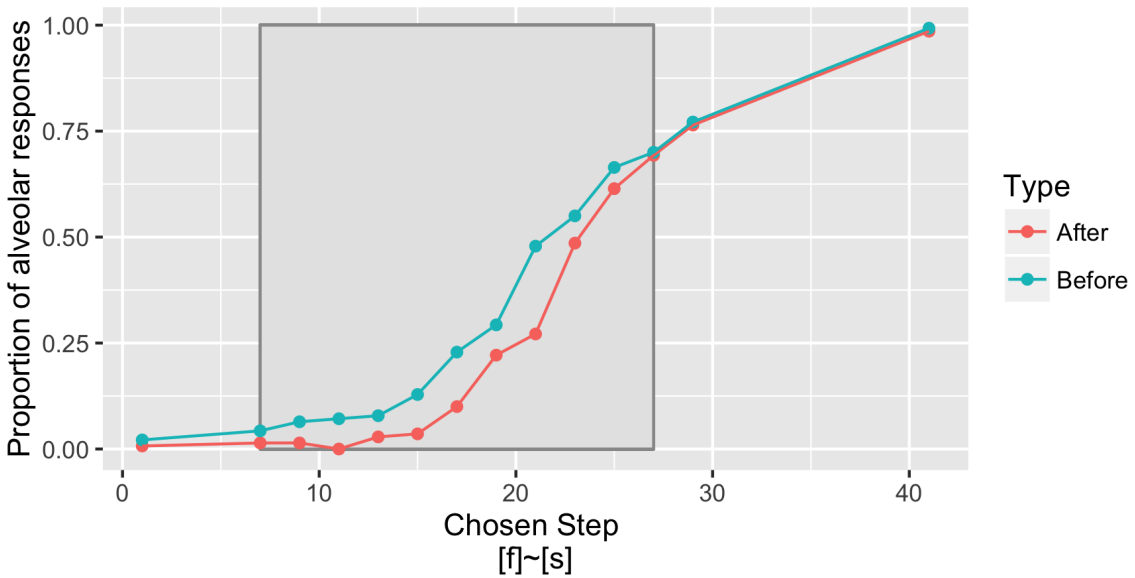
Pre- & Post-LDT: voiceless [f∼s] continuum



- Decrease in alveolar responses.

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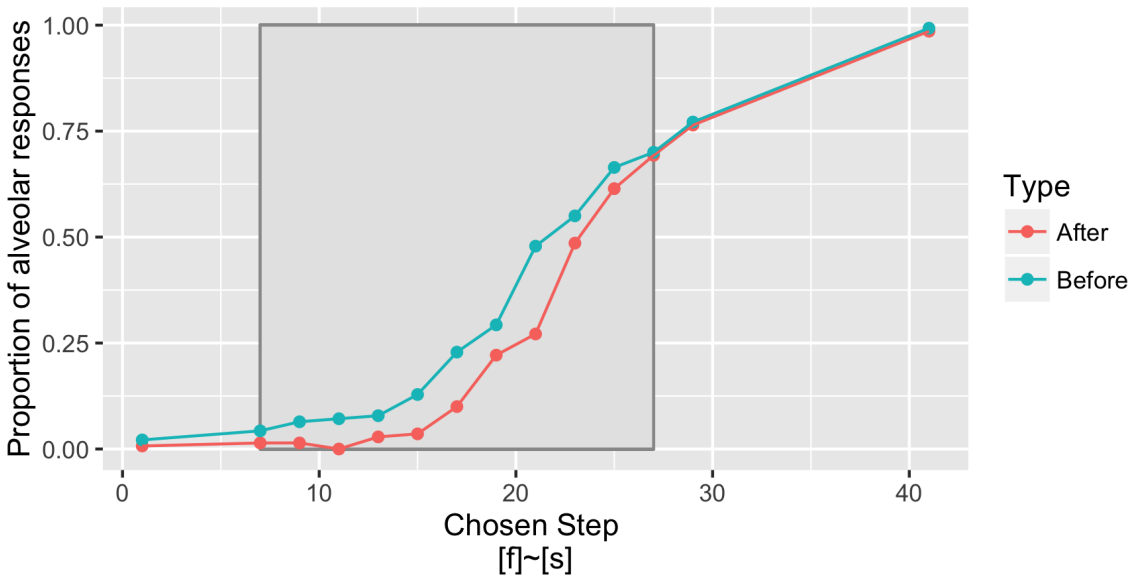

- Decrease in alveolar responses.
- In the 7-27 step region [(t(34)=-4.4, $p < 0.001$].

Experiment 1B

Pre- & Post-LDT: voiced [v∼z] continuum

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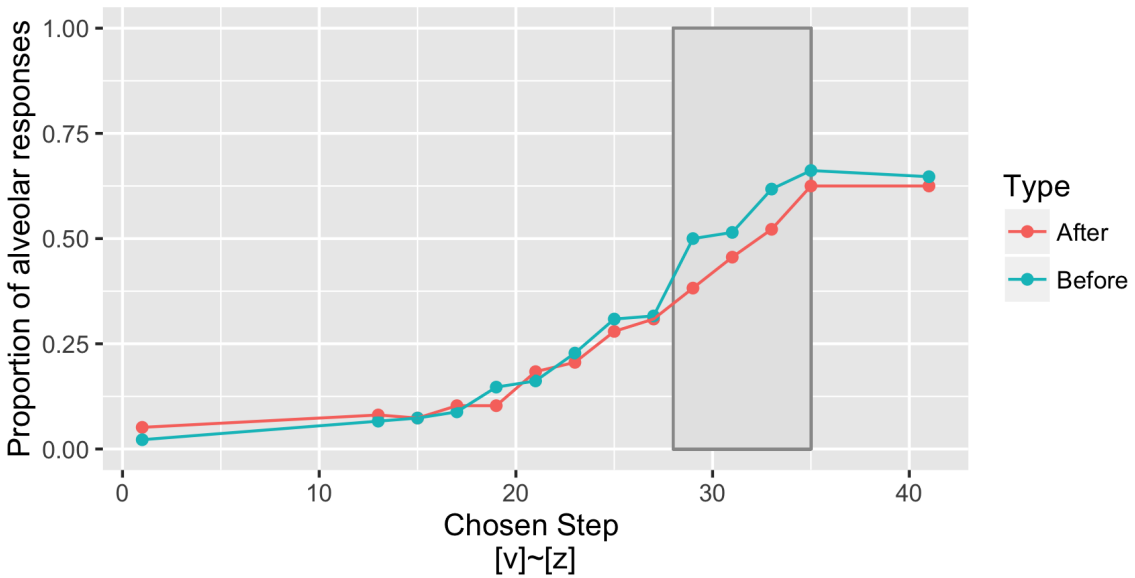
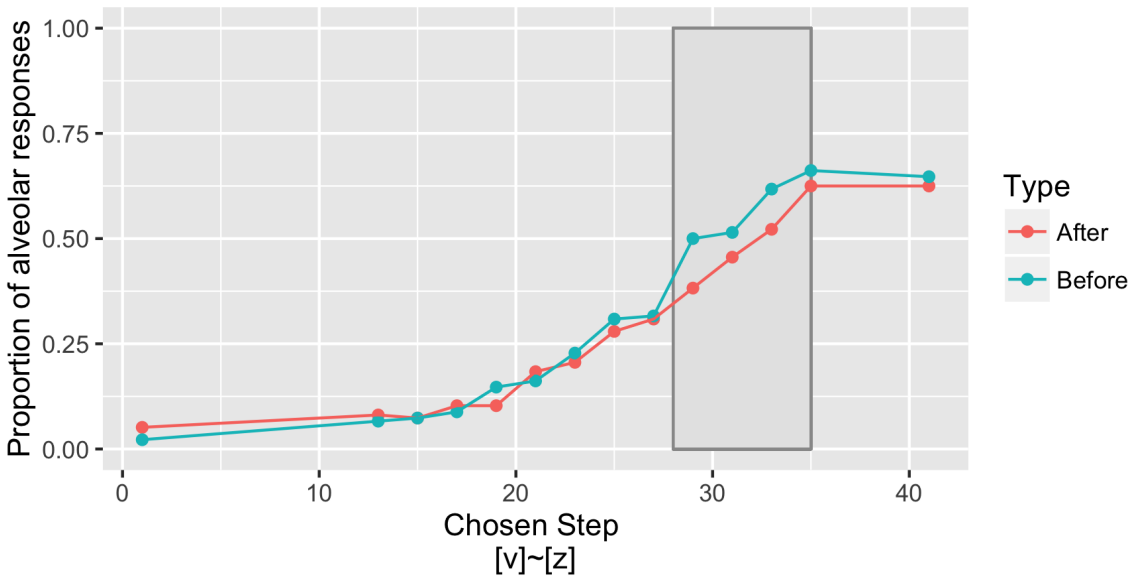
Pre- & Post-LDT: voiced [v∼z] continuum



Experiment 1B

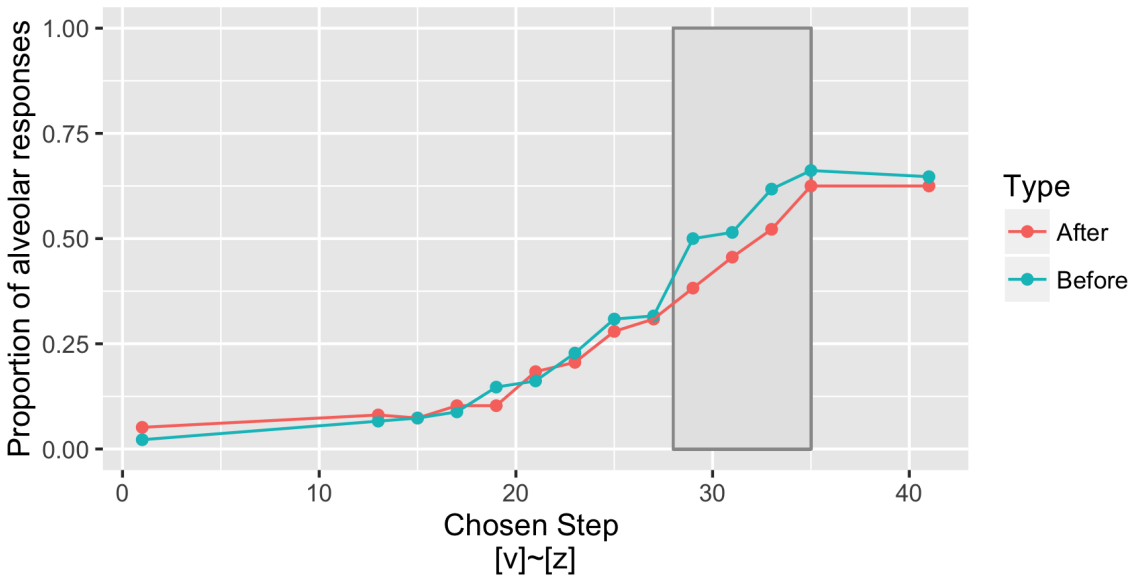
Pre- & Post-LDT: voiced [v∼z] continuum



- Decrease in alveolar responses.

Experiment 1B

Pre- & Post-LDT: voiced [v∼z] continuum



- Decrease in alveolar responses.
- but in a smaller and different region (steps 28-35) [t(35)=-2.402, $p < 0.05$].

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  - Re-tuning was confirmed to have occurred as the categorization space shifted from the *before* categorization task to the *after* categorization task.
- Experiment B shows that there is some evidence that re-tuning targets features.
  - This allows the corresponding *voiced* place features to change despite the listener only ever hearing ambiguous *voiceless* tokens.
- Others have argued that perceivers have categorical boundaries consistent with featural categories, and not segmental categories (Chládková et al., 2015).

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- It is unclear how one could tease them apart easily.
- Would be useful to get some feedback on this.

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- It is possible that feature retuning might be a better probe.
  - Perhaps, it can be used to study/understand cross-linguistic differences.

Acknowledgements

- MSU Phonology & Phonetics Group.
- Bethany Dickerson & Julia Andary.
- CAL Undergraduate Research Initiative.

Selected References

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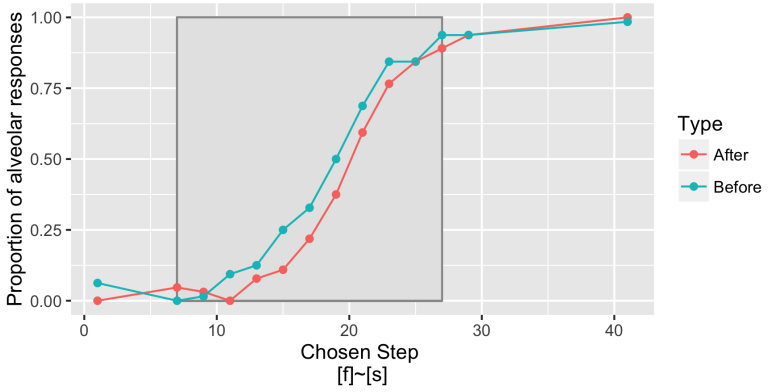
Experiment 2

- Same general design as Experiment 1.
- Pre-LDT & Post-LDT were identical.
  - Experiment 2A: Voiceless [f∼s] continuum. (23 Participants).
  - Experiment 2B: Voiced [v∼z] continuum. (22 Participants).
- LDT changed.
  - LDT now had critical test words containing [s] replaced with [?$_{fs}$] ambiguous token.
- Hypothesis: direction of change should be opposite of that found in Experiment 1.

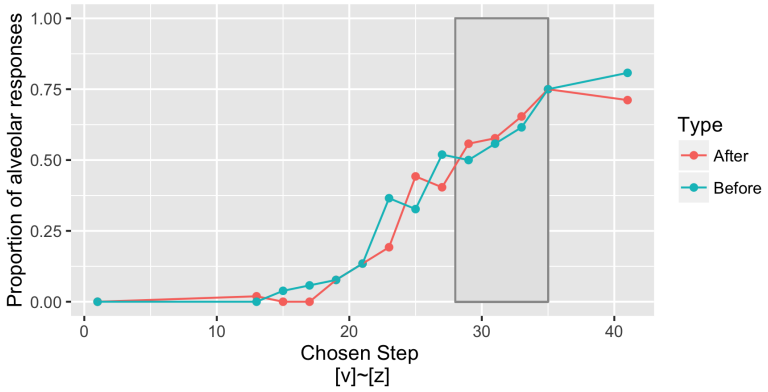
Appendix 1

Experiment 2

Experiment 2A



Experiment 2B



- Experiment 2A has a shift in the same direction as 1A. NOT the opposite as would be expected if there were segment/feature retuning.
- Experiment 2B has no visible shift.

Appendix 1

Experiment 2: Important check isn't satisfied

- Per Norris et al. (2003), 50% accuracy threshold per participant for all the words in the LDT.
  - All participants passed this in Experiment 1.
  - Only 27 overall (out of a total 45 participants) in Experiment 2 (both conditions) had an accuracy threshold greater than 50 (on the LDT).
- Participants in Experiment 2 had an especially low percentage of correct responses for the critical test words.

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- Participants in Experiment 2 had an especially low percentage of correct responses for the critical test words.
  - % correct for test words with [?$_{fs}$] = 83.
  - % correct for test words with [s] = 87.
  - % correct for test words with [?$_{fs}$] = 27.
  - % correct for test words with [f] = 90.

Experiment 2 vs. Experiment 1

- Neither of the results from Experiment 2 showed a shift in the expected direction from before to after.
- Remnant [f]-cues in the vowels following [?$_{fs}$] could be affecting this.
- Does this nullify the results from Experiment 1?