Expectations about a foreign accent influence speech perception even without prior experience

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When listeners are already experienced with a speaker's accent and told to expect that accent, exemplar theory predicts a shift in perception in the direction of experience (Hay & Drager, 2010; Hay et al., 2006). Here we show that perception shifts even when listeners do not have prior experience with the speaker's accent, and that it shifts systematically in the direction of beliefs about that accent. We tested 43 Australian-born listeners who did not have experience with the Vietnamese accent in a vowel categorization task in which they listened to Vietnamese-accented /hVdə/ nonce words and selected a reference word that contained the same vowel as that in the nonce word. We manipulated listener expectations through the absence (Control condition) or presence (Treatment condition) of explicit instruction that the speaker in the stimuli had a Vietnamese accent. Listener expectations about the accented vowels were modelled as priors in a Bayesian framework. Figure 1 considers where the vowels with an increase (black) or decrease (red) in categorization accuracy fit within the Australian English vowel space. The bar graph at the bottom of the figure shows the difference in priors for each vowel across conditions: Negative numbers indicate that the prior probability of choosing the vowel decreased in the Treatment condition relative to Control; positive numbers indicate that the prior increased for that vowel. Positioning these results within the vowel space reveals a clear pattern: Priors for the vowels in the three corners of the vowel space (bead/beard (high, front), bard (low, back), and book/bored (high, back) decreased, while priors for all the other vowels (bid, bed, paired, bad, bird, food, bud, and pod) increased. This indicates that, despite having no prior experience with Vietnamese-accented English, listeners expected more central vowels, suggesting shrinkage of the perceptual space due to beliefs about the accent.

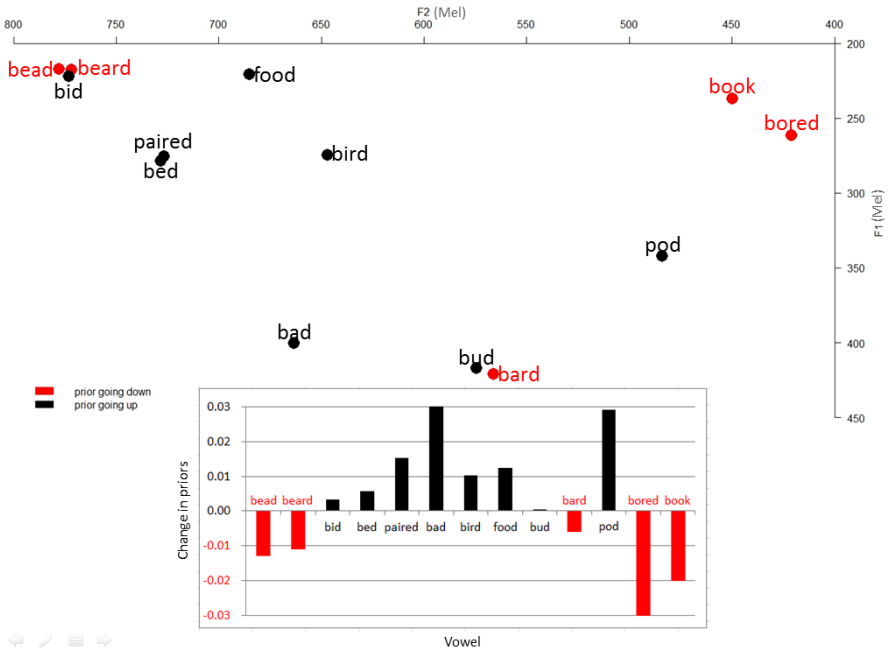

Figure 1: Where the decrease and increase in priors of Treatment group (relative to the priors of Control) are seen within the Australian English vowel space.

REFERENCES

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