



Spontaneous phonetic imitation as a predictor of perceptual recalibration

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Is flexibility in perception related to flexibility in production?

PERCEPTUAL RECALIBRATION: Listeners' perceptual categories are highly flexible (e.g., Norris et al. 2003, Kraljic et al., 2008; Clayards et al. 2008).

SPEECH ACCOMMODATION: Speakers accommodate to the speech patterns of others, approximating their output to better match the input (e.g., Goldinger 1998).

Both behaviors depend on perceptual analysis, so are they joined by a similar mechanism? Are these behaviors related within an individual?

Perception ≠ Production

There is some evidence that listeners' perceptual abilities can predict aspects of their production (e.g., Ghosh et al. 2010, Hay et al. 2006). At the same time, our perceptual repertoires always exceed the abilities of our production repertoires.

Manipulated Auditory Feedback. Shiller et al. (2009) found a relationship between the adjustments made during the manipulation of auditory feedback and perceptual judgments; they demonstrated that recalibration of perceptual categories occurs when participants' retune their productions.

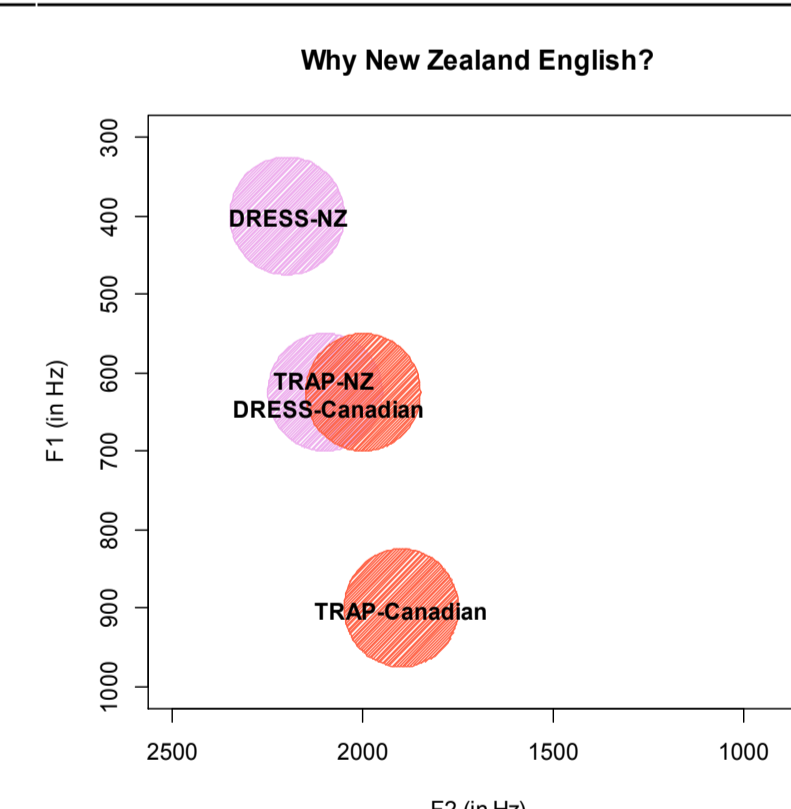
Recalibration through lexical embedding. Kraljic et al. (2008) retuned listeners' perceptual categories of /s/ and /ʃ/ and then examined whether their productions had changed as a result: they found no evidence for changes in participants' productions.

Perceptual learning. Baese-Berk (2010) compared groups that received perception-only training versus both perception+production training on [d] and [t] in CV nonwords. After 2 days of training *production* improved after perception-only or with perception+production training. Those who experienced perception-only training exhibited improvement in both perception and production, but *perception* did not improve in conjunction with production learning for participants who received the perception+production training.

Our goals

We wanted to use real words with natural phonetic variation that was different, but not *too* different.

Using two "automatic" phenomena, we wanted to examine the relationship between perception and production.



Procedure

1. Categorization pre-task. Listeners categorized an 11-step continuum of *bad-bed* synthesized from endpoints from a female speaker of NZE.

2. Learn picture names. These were real words matched with their real life pictures. There were 100 words. Twenty had TRAP in the stressed syllable, and none had DRESS.

3. Name pictures.

4. Auditory exposure to female speaker of NZE. The **Production** Group shadowed these tokens, and the **No Production** Group listened quietly.

5. Categorization post-task. Again, listeners categorized the *bad-bed* continuum again.



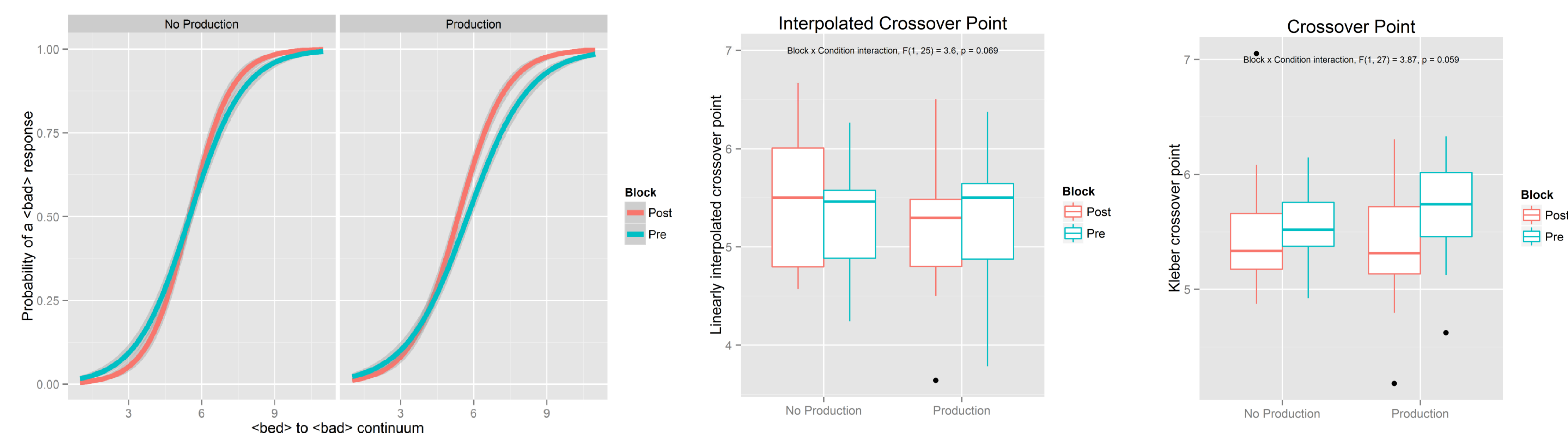
Did listeners recalibrate?

Yes, they did.

Recalibration was calculated 3 different ways.

All three analyses indicated recalibration of *bad* from pre- to post-test.

1. Shift in overall probability of *bad* responses.
2. Linearly interpolated crossover point. Two individuals with multiple crossovers were removed from this analysis.
3. Crossover was calculated using by-subject slopes and intercepts from a mixed effects logistic regression model, following Kleber, Harrington, and Reubold (2012).



Did those in the Production group recalibrate more?

Eh...

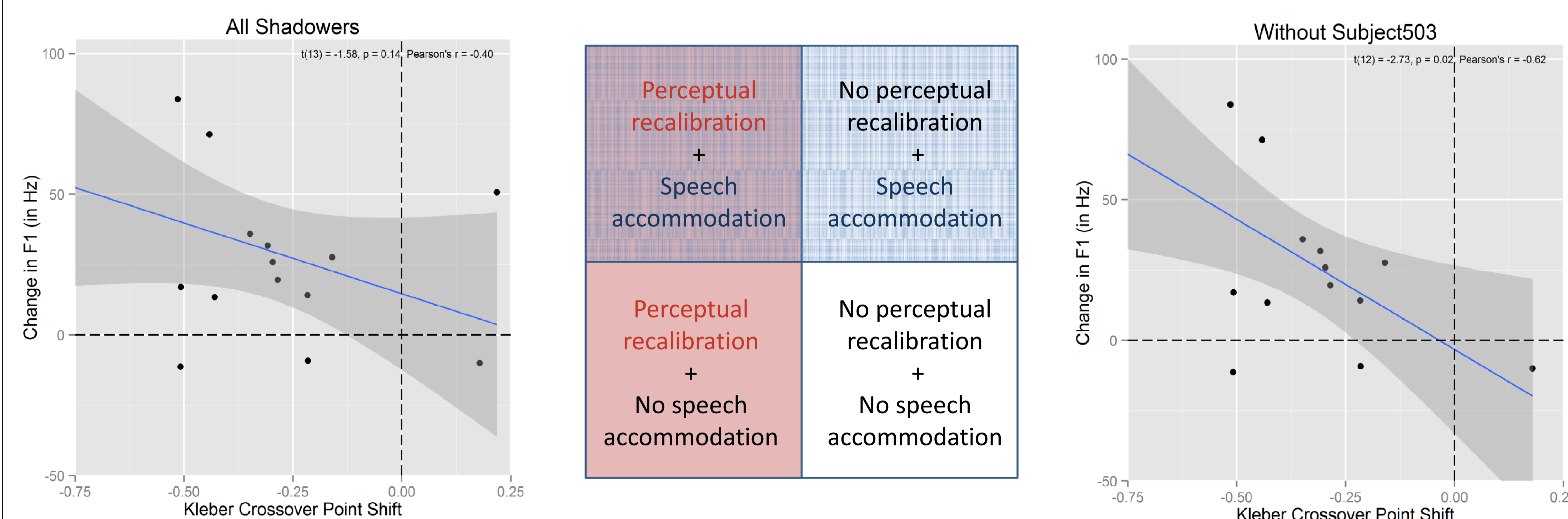
Did talkers accommodate?

Yes, they did.

A repeated-measures ANOVA with F1 measures as the dependent measure and Block (baseline vs shadowed) repeated across participants found a main effect of Block [F(1, 14) = 12.04, p = 0.003]. Participants produced TRAP with a lower F1 when shadowing the model talker (M = 837, SD = 135) compared to their baseline productions (M = 871, SD = 135).

Does recalibration predict accommodation?

No, but maybe?



Acknowledgments

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