Exemplar Averaging of Phonetically Discrete Variants

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Main Idea:
Cognitively-linked exemplars of [ɹ] and [ɾ] are averaged when producing [ɹ]

Background

New Zealand English loanwords from Māori
- NZE: [ɹ]
- Māori: [ɾ]
- Phonetically distinct: [ɹ] has lower F3

Exemplars

"A speaker represents exemplars with detailed phonetic information.. as well as categories"

In production, speaker activates a category and selects an exemplar as basis of phonetic target

Actual phonetic target is "average" of phonetic values of selected exemplar with those of surrounding exemplars

Question: are phonetically-distinct exemplars averaged?

Methods

NZE speakers read passage in English, including some Māori loanwords with medial /r/
- classify as [ɹ] if low F3, no consonant edges
- classify as [ɾ] if have consonant edges

Other variables:
- F3
- Predictability: of [ɹ] given loanword, speaker →IC (information content) is the -$\log_2$ of *p*

Questions/Concerns

- Is it circular to use F3 both as classification criterion AND as dependent variable?
- How phonetically-categorical are [ɹ] and [ɾ]? Is there a grey area?
- Is IC legit? Is it better than just probability?
- I don't understand the stats (see model at right)

Results

Dependent variable: F3
- *IC*(ɹ|Speaker) is significant: [ɹ] is produced with lower F3 when more predictable given the speaker
- *IC*(ɹ|Loanword) is NOT significant: no effect of larger number of loanwords with [ɹ]

Figure 4: Averaging target and adjacent exemplars

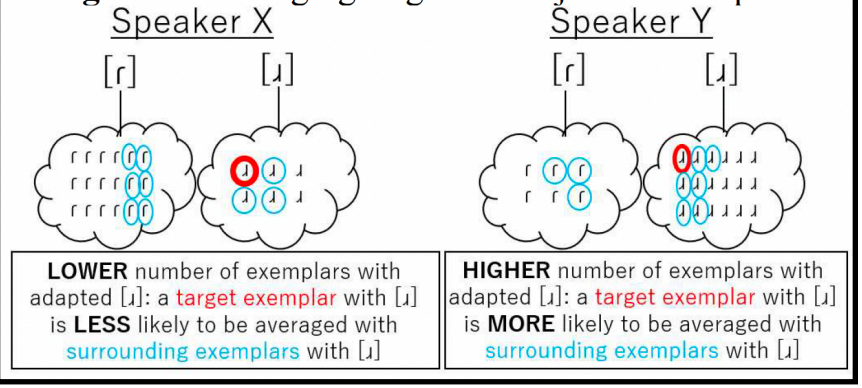

Table 2: Model summary of the best-fitted model

	β	*SE*	*t*	*p*
(intercept)	0.2207	0.0807	2.43	**
IC(ɹ|speaker)	0.1497	0.0567	2.64	*
nativeF3	0.4599	0.0589	7.8	***
gender male	−0.28	0.1255	−2.2	*
NofSegment	0.324	0.0706	4.59	***
wdFreq	−0.053	0.0232	−2.3	*

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