

Experimental evidence for perceptual hypercorrection in American r-dissimilation

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Dissimilation is often dismissed as a marginal process: far more rare than assimilation, it tends to be sporadic and unpredictable in its application. Its cause is debated. Ohala 1993 proposes that dissimilation originates from perceptual hypercorrection for assimilation. Certain features, such as rhoticity, have acoustic effects spanning several syllables, potentially causing perceptual masking of similar nearby sounds. For example, in American *surprise* /səˈpɹaɪz/, listeners may misinterpret the rhoticity of the first vowel as anticipatory assimilation to the later rhotic, and posit the representation /səpɹaɪz/. Ohala's proposal has rarely been empirically tested. As Garrett & Johnson 2011:21 note, "there are almost no controlled observations suggesting that listeners hypercorrect in speech perception." It has proven difficult to produce perceptual dissimilation in laboratory settings (Abrego-Collier 2013, Harrington et al. 2016).

Design. We test how perception of American /r/ in nonce words is affected by a) presence of a second /r/ in the same word, and b) presence or absence of /r/-coarticulation on the segments between the two /r/s. Naturally produced syllables were spliced to create 34 sets of 4 stimuli (see Table 1). In each set, a consistent 'target /r/' was followed by syllables with or without /r/-coarticulation, having been extracted from tokens with or without nearby /r/s. The final portion contained either a 2nd /r/, as a potential trigger of perceptual dissimilation, or no /r/, as a control condition. 60 listeners heard the nonce words (one condition per set, counterbalanced across 4 groups of participants) embedded in natural sentences such as 'pass me the [maɪ'ni:kjələ]'. They were asked to type the unfamiliar word, and we coded the presence of each /r/ in the orthographic forms (e.g. *monicular*). We predicted that perceptual masking would cause listeners to miss the first /r/ most often in tokens with two /r/s plus intervening /r/-coarticulation.

Results. Target /r/ showed the highest rates of dropping in words with a 2nd /r/ and *no* intervening /r/-coarticulation. Logistic regression finds that presence of a 2nd /r/ is a significant predictor of dropping the 1st /r/ ($p = .03$), while the presence/absence of /r/-coarticulation is not ($p = .12$). This supports the hypothesis that /r/-dissimilation can be produced through perceptual errors, as Ohala predicted, although the role of /r/-coarticulation remains unclear.

Ongoing follow-up. Unexpectedly, words with two /r/s showed higher rates of /r/-dropping for the 2nd /r/, intended as a trigger of dissimilation, than the 1st /r/, the intended target (47 vs. 28 drops). We cannot be sure whether dropping of 2nd /r/ was dissimilatory, since these /r/s did not appear in a 1-/r/ control condition. To address this, we are currently creating an extended version of this experiment, to be run via Amazon Mechanical Turk. It employs an 8-way (2x2x2) design by including /r/ and no-/r/ conditions for both the first and last section of the word, as well as conditions with and without intervening /r/-coarticulation on the middle portion. This version also adds noise to decrease overall perceptibility, which we hope will increase overall rates of /r/-dropping. Results from this follow-up may clarify the role of /r/-coarticulation in producing perceptual /r/-dissimilation, as well as possible directionality effects.

Tables

Table 1: Structure of spliced stimuli: sample set of 4

Target	Middle	Trigger / control	Stimuli
maɪ	'nɪkjəl (with /r/-coarticulation)	ə	maɪ'nɪkjələ
		əm	maɪ'nɪkjələm
	'nɪkjəl (without /r/-coarticulation)	ə	maɪ'nɪkjələ
		əm	maɪ'nɪkjələm

Table 2: number of /r/-drops by condition

	target /r/ drops	target /r/ does not drop	2 nd /r/ drops
2 r/s, /r/-coarticulation	8	502	27
2 /r/s, no /r/-coarticulation	20	490	20
1 /r/,/r/-coarticulation	8	502	---
1 /r/, no /r/-coarticulation	6	504	---

References

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