

Evidence of a mismatch between the perception and production of coarticulation during a sound change in progress.

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This study is concerned with the relationship between the production and perception of coarticulation and the evidence that a misalignment between them is associated with a sound change in progress. The evidence that these two modes are usually aligned derives from various experiments showing that listeners compensate for the effects of coarticulation in production: thus, listeners do not perceive the differences in production that give rise to the marked acoustic differences between the variants of /s/ before rounded and unrounded vowels because the variation, in being attributed to the vowel, is perceptually factored out from the speech signal (Mann & Repp, 1980). At the same time, listeners have been shown to vary in the extent to which they compensate for coarticulation: that is, listeners' judgments of sounds in contexts differ even when they make perceptual judgments to the same synthetic continua (Beddor, 2007; Fowler & Brown, 2000). In a study of the diachronic fronting of tense /u/ (GOOSE) in the Standard accent of England, Harrington et al (2008) showed not only that young and old listeners differed in the extent to which they compensated for the perturbation effects of consonantal context, but also that these age-dependent perceptual differences could be related to those in production: older subjects whose perceptual boundaries varied depending on context also had more distributed /u/ variants in their own production in the same contexts. Thus, in both age groups, the production and perception of coarticulation were aligned, but differently: for the old, the context-dependent /u/ variants were widely spaced in both modes, but narrowly so for the young.

In this talk, I will present evidence on the fronting of the lax vowel /ʊ/ (FOOT) in the same variety which suggests that the two modes are, however, not necessarily aligned during a sound change in progress. Compatibly with the results for tense /u/, young listeners compensated less than older listeners for context effects and they also showed a fronted category boundary in both perception and production compared with older subjects. However, the coarticulatory variation in production in the same contexts was far greater than suggested by their responses in perception: thus, for the young, the perceptual category boundary for /ʊ/ was largely unaffected by context, whereas in production the effect of context was considerable, and certainly greater than for older speakers.

This type of misalignment is consistent with a model of sound change in which changes in perceptual coarticulatory relationships precede those in production. Thus, during the first stage of sound change, listeners' compensation for coarticulation wanes as a result of which the effect of context on perception is smaller than on production, as observed for the lax vowel in this study. The sound change itself comes about when speakers realign their variants in production such that, compatibly with their context-independent perceptual classification, the acoustic distance between them is minimized: this characterizes the diachronic change to tense /u/ in which the difference between the variants in both perception and production is much less for the young than the old. The further evidence that lax vowel fronting is a slightly later sound change in progress than tense vowel fronting is consistent with these interpretations.

Thus, the general conclusion is that the relationship between the perception and production of coarticulation is out of alignment and then potentially realigned during a sound change in progress. This explanation supports Ohala's (1993) model of a link between giving up compensation for coarticulation and hypoarticulation-induced sound changes. It also supports one in which the changes to the coarticulatory relationships in perception precede those in production.

References

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