

The Real Effect of Word Frequency on Phonetic Variation

The claim that high-frequency words tend to undergo regular sound change faster than less frequent words is common in Exemplar Theory literature: where Bybee (2000) cites several studies that show or purport to show high-frequency words undergoing change faster, Pierrehumbert (2002) makes the blanket statement that “high frequency words tend to lead Neogrammarian sound changes.” Labov (2003), however, examines a widespread sound change—the fronting of back upgliding diphthongs in American English—and finds that nearly all variation among words in degree of advancement in the change can be accounted for by purely phonetic effects, with word frequency playing no role. Abramowicz (2006) observes that some of the phenomena cited as examples of frequent words undergoing sound change faster are in fact not sound changes at all but rather stable sociolinguistic variables.

This study examines the effect of word frequency on the frontness or backness of short vowels (/i e æ ʌ u/) in American English of the Northern dialect region, where most of the short vowels are involved in ongoing sound change. The data used are the formant measurements of the Telsur survey, reported in the *Atlas of North American English* (Labov et al. 2006), compared against word-frequency data from the Brown Corpus of Standard American English. F2 measurements for short-vowel tokens were subjected to a multiple-regression analysis against a wide assortment of phonological-environment variables as well as a few variables defined as measures of Brown-corpus frequency.

Word frequency was found to have statistically significant although not robust effects on F2 of short vowels. However, these effects were not consistently in the direction of the sound changes of the Northern Cities Vowel Shift. On the one hand, /i/ and /e/, which are backing in the NCVS, showed backer tokens in more frequent words, agreeing with the hypothesis that frequent words lead sound change. On the other hand, /ʌ/, which is also backing in the NCVS, showed fronter tokens in more frequent words; likewise, /æ/ is backer in more frequent words although under the NCVS it undergoes raising and fronting (which has possibly already gone to completion). Thus the claim that high-frequency words are advanced in sound change is not borne out by these data.

However, the consistent result is that the front short vowels are seen to be backer in more frequent words, and the back short vowels are fronter in more frequent words, irrespective of the direction of sound change—in other words, short vowels in frequent words are **centralized**. This centralization can be interpreted as a kind of **lenition**, inasmuch as a non-peripheral position for a vowel is nearer the default central position of the tongue in the mouth and thus would take less effort to produce. The phonetic character of lenition being independent of the regional dialect or ongoing sound changes among which it takes place, these centralization effects of word frequency are found to survive when data from outside the *Atlas*’s Northern region is added to the analysis.

Based on comparison of this result to several other studies in which word-frequency effects on phonetic variation are found or not found, some in cases of change in progress and some not, I advance the following hypothesis: contrary to Pierrehumbert (2002), more frequent lexical items do not undergo regular sound change faster; but they **do** undergo lenition more often and to a greater degree, whether sound change is in progress or not.

Selected references

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