**Title:** The cumulative effect of reducing environments: Instance memory and representational

change

**Abstract:** Pronunciation variation in speech has been widely studied as a tool for understanding language processing and change. The correlates of variation include speech group identity, speech style, and the distributional probabilities of words and constructions, as well as syntactic, lexical, and phonetic forms and contexts. Establishing whether a correlate indeed causes variability depends on identifying the mechanisms by which the potential factor works. One probabilistic factor associated with variability, word frequency, has been claimed to be central to identifying where variation will occur; however, frequency effects are not ubiquitous in language data and across some studies are contradictory. In addition, how frequent use leads to observed variation remains unidentified.

We report here on a series of synchronic and diachronic studies (Brown & Raymond 2012, Raymond & Brown 2012, *inter alia*) using lexical reduction data—a form of variability in which a word’s realization is shorter or less complete than its canonical form. Consistent with other studies (e.g., Erker & Guy, 2012) we conclude that word frequency does not *per se* cause reduction. Rather, reduction is the consequence of the articulation of words in specific reducing environments. The data suggest that a speaker’s cumulative exposure to reduced productions can lead to representational change for more frequent words, resulting in a correlation of word frequency and reduction rates. The effects of reducing environments can be detected synchronically using discrete (segment deletion) and continuous (durational shortening) variables and laboratory measures (relative burst amplitude); it also appears to span the language experiences of bilingual speakers (cognate effects) and can be seen to influence historical changes in lexical organization (Spanish fV- words). The results of our research can be understood within a usage-based and Exemplar models of language processing (e.g.; Bybee 2001, Pierrehumbert 2001), which posit that representations are generalizations over memory instances.

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