

## Words' cumulative exposure to fast speech predicts reduction

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Language structure emerges from language use. Linguistic production factors such as phonetic context, stress, and speech rate are known to promote reduced pronunciations in predictable ways. Recent studies also demonstrate an effect of *cumulative* exposure to phonetic contexts favoring reduction, with the likelihood of a word's occurrence in reducing contexts predicting reduction independent of the context in which the word is produced. It has been proposed that words' mental representations are shaped by these patterns of use (Raymond, Brown & Healy 2016).

Cumulative context effects may extend beyond phonetic reducing contexts to include parameters of speech production, in particular the local speech rate in which words are produced. Because faster speech contexts promote durational shortening of a word (Gahl 2008) or its segments (File-Muriel & Brown 2011), a word that occurs more often in fast speech may, on average, be more reduced than a word that usually occurs in slow speech, independent of the contextual rate in which that word is produced (Brown & Raymond 2014). This study tests whether there is evidence of an independent effect of a word's cumulative exposure to fast speech contexts on three acoustic measures of variable segment lenition.

To explore potential speech rate effects we examine approximately 1200 tokens of /s/ from spontaneous spoken Colombian Spanish. Variable reduction and deletion of Spanish /s/ has been widely studied and is known to be constrained by structural and social factors. In this study, acoustic measurements of /s/ provide three dependent variables for analyzing lenition; duration, centroid, and percent voicelessness of /s/ (following the methodology of File-Muriel & Brown 2011). In generalized linear mixed-effects models including a word's likelihood of occurring in fast speech, production factors (e.g., speech context rate, phonological contexts), and random effects of words and speakers, we found that tokens more often used in fast speech are more likely to exhibit /s/ lenition. Results suggest speakers are sensitive not only to words' statistical distributions in phonological contexts, but also in other types of contextual variability. Over time cumulative experience with words in reducing contexts shapes lexical representations, leading to language change.

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