Refining quantitative analysis using Rbrul: random effects and continuous variables

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Data on a phonological variable – the use of coda fricatives in Brazilian Portuguese – were analyzed with Rbrul (Johnson 2008). The program found significant fixed effects of following context and morphological status (morpheme vs. non-morpheme), as well as significant random effects for speaker and word. According to the results, lenition of the fricative to [h] is favored when it is followed by voiced consonants, and when it has no morphological status. The level of lenition depends on the individual speaker, although these 8 lower-class speakers all used more lenition than other social groups in the community (Scherre & Macedo, 2000; Callou & Brandão, 2009). As lenition depended on the identity of the word, a continuous numeric predictor was added, representing the frequency of the words in the corpus. This treatment of word frequency as a continuous variable would not be possible in GoldVarb, which requires carving up a continuous reality into discrete factors. An Rbrul run retained the significant effects observed above and also included the effect of word frequency: the lenited [h] variant occurs more often in frequent words, as might be expected (Bybee 2000). However, the significant random effect of word remains, prompting the search for other relevant word-level predictors while leaving open the possibility that lexical items may individually favor or disfavor this lenition process.

References