A widely shared assumption is that hearing or saying a target word causes other words to be partially activated. Yet, causes and consequences of lexical competition remain controversial. For example, while high neighborhood density (ND; the number of words differing from a target by one phonological segment) impedes word recognition[1], effects of ND on production are elusive: Some studies[e.g.2] find high ND to promote hyperarticulation (greater vowel dispersion, longer duration) and attribute that pattern to speakers’ boosting the intelligibility of difficult recognition targets. Others[3] report the opposite (shortening and reduced vowel dispersion for high-ND words) and attribute that pattern to feedback from neighbors to targets[4]. Here, we show that these findings can be reconciled when auditory confusability is considered as distinct from ND.

We examined the effects of auditory lexical confusability[5], ND, and single-phone and biphone phonotactic probability. Decorrelated measures of ND, confusability, and phonotactic probability were entered as fixed effects in a series of mixed-effects regression models of the data analyzed [2] and [3], along with control variables, such as lexical frequency and speaking rate.

In study 1, we show that the effect observed by [2] is not attributable to ND, but to confusability: After successfully replicating the finding of greater vowel dispersion in high-ND, low-frequency words than in low-ND, high-frequency ones, we show that the observed effect is due to confusability, rather than ND: In models examining the unique contribution of each variable, confusability is associated with greater vowel dispersion (all pMCMC <.01), whereas ND does not account for any variability in dispersion (pMCMC >.3).

In study 2, we turn to the data analyzed in [3]. After successfully replicating [3], we assessed the individual contribution of ND and confusability. Whereas ND was consistently associated with reduced vowel dispersion, confusability did not account for any additional variability in dispersion.

The behavior of the phonotactic probability variables and lexical frequency in both studies further illuminates the role of these variables in single-word production and connected speech.

Taken together, the two sets of models show that some effects previously attributed to ND are due to perceptual confusability, rather than ND; others are likely due to ND, as previously thought, and can be modeled as effects of interactivity[4]. The models further confirm task-dependent effects of lexical competition on single-word naming vs. connected speech.