Corrigendum to “Grammatical constraints on phonological encoding in speech production”

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In a previous article (Heller & Goldrick, 2014), we reported that grammatical encoding constrains phonological and phonetic processing. At both stages of processing, our analyses suggested that neighbors that share a target’s grammatical category exert a significant influence on target processing, particularly when grammatical constraints are strong (i.e., naming within a sentence context vs. bare picture naming). Here, we report an error in the statistical analyses of the acoustic data that undermine our claims regarding phonetic processing. Our conclusions regarding phonological planning (based on reaction time data) are not affected by this error.

The acoustic data for our study included vowel durations and measures of vowel space size. To reduce collinearity, analysis of vowel space sizes included a factor residualizing within-grammatical-category neighborhood density on vowel duration. This residualized factor was accidentally utilized in the analyses of vowel duration as well. Reanalysis with the non-residualized measure of neighborhood density reveal that there was no significant main effect of neighborhood density on vowel duration ($\beta = -0.011$, $SE = 0.007$, $\chi^2(1) = 2.13$, $p = 0.14$) nor an interaction of density by production context (sentence context vs. bare picture naming; $\beta = 0.0002$, $SE = 0.001$, $\chi^2(1) = 0.03$, $p = 0.86$). Thus, based on these data we do not have strong evidence that grammatical encoding constrains phonetic processing. Our reanalysis also revealed significant relationship between reaction times and vowel durations (such that trials with longer reaction times had longer vowels; $\beta = 0.0439$, $SE = 0.0163$, $\chi^2(1) = 7.13$, $p = 0.0076$). This suggests that the phonetic variation in these data is related to variation in phonological planning times.
References