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Is frequency effect on phonological and phonetic encoding word-based or syllable-based?

Linguistic predictability is pervasive and has been shown to influence acoustic realization (e.g., Arnon & Cohen-Priva, 2013; Aylett & Turk, 2004). Yet these effects have been mostly focused on a specific linguistic level, rather than across levels. One type of predictability is 'frequency of occurrence', which could occur at the level of word (word frequency) and syllable (syllable frequency). Word frequency effect is assumed to arise from the ease of retrieval, leading to fast response latency (RT). So is syllable frequency effect, arising from a postulated mental syllabary that mediates phonological and phonetic encoding (e.g., Cholin et al., 2006). Although frequency effects manifest in RT and acoustic realization, few studies examine both measures to get a better understanding of the processes that RT and acoustics reflect during phonological and phonetic encoding. To investigate this issue, the current study examined the effect of high vs. low frequently-occurring monosyllabic and disyllabic German words High frequency monosyllabic words were manipulated to have low syllable frequency, whereas high frequency disyllabic words covary with stressed syllable frequency. Twenty monolingual German adults took part in a question-answer generation task. We expect short acoustic duration and fast RT in high frequently-occurring word and syllable. If word and syllable frequency conflict with one another, a serial encoding of phonological/phonetic processes will lead to longer RT for low frequency syllables. Two measures were taken and analysed using lmer (Bates, 2015) in R (R Core, 2022): vowel duration and RT as measured from the beginning of the prompt question to the beginning of the verbal response. While vowel duration revealed significant interaction(s) with Word frequency, RT showed a significant main effect of Word Frequency. These results will be considered in light of serial vs. interactivity in speech production.