

Durational differences of homophonous suffixes emerge from the lexicon: Evidence from nonce words

Recent research has shown that seemingly identical suffixes such as word-final /s/ in English show systematic differences in their phonetic realization (e.g. Plag et al., 2017; Tomaschek et al., 2019). Most recently, Schmitz et al. (2020) have demonstrated that the durational differences between different types of /s/ also hold for nonce words: the duration of /s/ is longest in non-morphemic contexts, shorter with suffixes, and shortest in clitics.

At the theoretical level such systematic differences are unexpected and unaccounted for in current theories of speech production (e.g. Roelofs & Ferreira, 2019). Most recently, Tomaschek et al. (2019) applied principles of discriminative learning theory (Rescorla & Wagner, 1972) and found that measurements derived from their discriminative network are able to predict the patterning of the /s/ durations. The discriminative learning approach has been extended to investigate the behaviour of nonce words in Chuang et al. (2020). In their study, they successfully predicted nonce word durations, and showed that semantics of inflectional suffixes do emerge for nonce words.

Following this approach, we implemented a Linear Discriminative Learning (LDL, e.g. Baayen et al., 2018) network trained on real word data in order to predict the durations of nonce words and their final /s/ using the data by Schmitz et al. (2020). In our LDL implementation, different types of /s/ emerge as separate inflectional categories with distinct durations.

The present study shows that durations of nonce words and their suffixes can be predicted by LDL networks trained on real word data. That is, durations of nonce words and their suffixes are predicted by their relations to the lexicon. Thus, suffix durations appear to emerge through the support for these morphological functions from the words' sublexical and collocational properties.

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