

## **Durational differences of word-final /s/ emerge from the lexicon: Evidence from pseudowords**

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; Plag et al., 2020). Most recently, Schmitz et al. (2020) have demonstrated that the durational differences between different types of /s/ also hold for pseudowords: 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; Turk & Shattuk-Hufnagel, 2020). Recently, Tomaschek et al. (2019) applied principles of discriminative learning theory (e.g. Rescorla & Wagner, 1972) and found that measurements derived from their discriminative network are able to predict the patterning of /s/ durations.

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 pseudowords' final /s/ using the production data by Schmitz et al. (2020). Adopting the implementation of pseudowords into LDL networks by Chuang et al. (2020), we find that the durations of different types of /s/ are successfully predicted by measures derived from our discriminative network. That is, different types of /s/ emerge as separate inflectional categories with distinct durations.

The present study shows that durations of pseudowords' suffixes assessed in a production study can be predicted by LDL networks trained on real word data. That is, durations of pseudowords' suffixes can be predicted based on their relations to the lexicon. They emerge through the support for their morphological functions from the pseudowords' sublexical and collocational properties.

## References

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