## Durational differences among Japanese homophones as a function of their meanings

## Motoki Saito<sup>1</sup> & Ruben van de Vijver<sup>2</sup>

<sup>1</sup>Eberhard-Karls-Universität Tübingen, <sup>2</sup>Heinrich-Heine-Universität Düsseldorf motoki.saito@uni-tuebingen.de, ruben.vijver@hhu.de

A number of studies have challenged the assumption that homophonous words should be realized phonetically in the same way. These studies, however, were exclusively conducted in English, in which duration is not phonemic. The current study extends research to a language in which duration is phonemic, i.e., Japanese. Based on a spontaneous speech corpus of Japanese, duration of the entire word and duration of constituent moras of the word were found to be significantly different among members of a homophonous group. To investigate a source of systematically different duration among homophonous members, Generalized Additive Mixed-effects Models were fitted with word and mora duration as the dependent variables as a function of semantic support for word-forms with covariates and factor variables, which were speech rate, word frequency, the sum of bi-mora frequency for the word, parts-of-speech, within-utterance positions, and speaker gender, in addition to speaker as a random effect. Semantic support for word-forms was estimated using Linear Discriminative Learning (Baayen et al. 2019) with tri-moras as the basic form unit and with pre-trained fastText word embeddings as semantics. The fitted models indicated that 1) word- and moraduration were positively correlated with the amount of semantic support for the constituents of the word, and 2) mora duration was more sensitive to contextual predictability, while word duration was not. The current findings support the direct relationship between semantics and phonetics (Dingemanse et al., 2016), adding to the literature indicating a positive association between certainty in signals and more careful speech (Kuperman et al. 2007; Gahl & Baayen 2024).

**References.** Baayen, R. H., Y.-Y. Chuang, E. Shafaei-Bajestan & J. P. Blevins (2019). The discriminative lexicon: a unified computational model for the lexicon and lexical processing in comprehension and production grounded not in (de) composition but in linear discriminative learning. *Complexity*, 2019. • Dingemanse, M., W. Schuerman, E. Reinisch, S. Tufvesson & H. Mitterer (2016). What sound symbolism can and cannot do: Testing the iconicity of ideophones from five languages. *Language* 92(2). e117-e133. • Gahl, S. & R. H. Baayen (in press). Time and thyme again: connecting spoken word duration to models of the mental lexicon. *Language*. • Kuperman, V., M. Pluymaekers, M. Ernestus & R. H. Baayen (2007). Morphological predictability and acoustic duration of interfixes in Dutch compounds. *Journal of the Acoustical Society of America* 121(4), 2261-2271.