

## Effects of orthographic forms on speech production in Japanese speakers of L2 English

Mirjana Sokolović-Perović<sup>1</sup>, Bene Bassetti<sup>2</sup> and Susannah Dillon<sup>1</sup>

<sup>1</sup>University of Reading, <sup>2</sup>University of Warwick

m.sokolovic@reading.ac.uk, b.bassetti@warwick.ac.uk, susannahcdillon@gmail.com

Recent research has shown that L2 orthographic forms can affect L2 speech production. For example, Italian speakers of L2 English produced the same consonant as longer when spelled with two letters than when spelled with one letter, such as in *kitty* vs. *city* (Bassetti, 2017; Bassetti, Sokolović-Perović, Mairano & Cerni, under review). They seem to recode English orthographic forms using grapheme to phoneme correspondences from Italian, in which double consonant letters represents geminates. A similar effect was found in their production of English vowels, for example the vowel was longer in *seen* than in *scene* (Bassetti & Atkinson, 2015; Bassetti et al., under review).

The present study investigated whether the effect of orthography on the production of L2 English is present in native Japanese speakers, who are native users of a non-alphabetic script. Japanese has a phonemic length contrast in both consonants and vowels, which is consistently represented in writing. In the script *kana*, geminates are represented using a *sokuon* symbol: はつと/hatto/ 'hat' vs. はと/hato/ 'dove', and long vowels using an extra vowel symbol: のう/no:/ 'brain' vs. の/no/ 'field'. We predicted that the Japanese speakers of L2 English would produce the same English consonant or vowel as longer when spelled with double letters than when spelled with single letters.

Two groups of participants, native Japanese speakers and native British English speakers (both n=16), performed a delayed word repetition task and a word spelling task. The Japanese speakers had been living in an English-speaking environment for an average of five years. The targets were nine voiceless plosives and seven vowels (each spelled with one or two letters) in minimal or near-minimal pairs of words, produced three times in a carrier sentence. The spelling task tested participants' knowledge of target sound spellings.

Acoustic analysis found systematic differences in consonant and vowel durations produced by Japanese speakers of L2 English. As predicted, the segments were significantly longer when spelled with two letters than when spelled with one letter. There was no difference in the production of native English speakers. Results show that the effects of number of letters on L2 sound duration are found cross-scriptally in native users of a non-alphabetic script, in both consonants and vowels, and after years of residence in an English-speaking country. The implications for research on orthographic effects on L2 phonology are discussed.

### References

- Bassetti, B. (2017, online first). Orthography affects second language speech: Double letters and geminate production in English. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. doi:10.1037/xlm0000417
- Bassetti, B., & Atkinson, N. (2015). Effects of orthographic forms on pronunciation in experienced instructed second language learners. *Applied Psycholinguistics*, 36(1), 67-91.
- Bassetti, B., Sokolović-Perović, M., Mairano, P., & Cerni, T. (under review). Orthography-induced length contrasts in the second language phonological systems of experienced speakers of English as a second language: Evidence from orthographic minimal pairs.