

Influence of Orthography on the perception of English *schwa*

Susanne Scheidemantel & Barış Kabak
(University of Würzburg)

The inconsistency between grapheme-to-phoneme correspondences in English has been shown to interfere with the acquisition of *schwa* by Japanese and Korean speakers of English, due to their experience with a transparent transliteration system (Lee et al. 2006). Here we hypothesize that orthography should also modulate the perception of *schwa* by Spanish learners of English since (i) Spanish orthography is transparent, and (ii) *schwa* is not a vowel phoneme in Spanish. The present study examined the effect of orthography on the perception of English *schwa* by native Spanish speakers and compared its effect at different levels of English proficiency.

Experiments: 20 Spanish learners of English (3 proficiency groups) and 9 English controls were tested in 2 experiments. Experiment I measured the ability to discriminate English *schwa* from the full vowels /ʌ/, /ɛ/, /ɪ/, /ɔ/ and /ʊ/ in an auditory AX-discrimination task, followed by Experiment II that involved a multiple-alternative forced-choice identification task to test the effect of orthography. The stimuli were words in which *schwa* was orthographically equivalent to the 5 Spanish vowel letters <a>, <e>, <i>, <o>, and <u>. In Experiment I, the schwa words were contrasted with a version of these words containing a full vowel (/ælbəm/-/ælbʊm/). Experiment II included all the auditory schwa words plus their orthographic representation with the relevant vowel underlined. The task was to identify the underlined letter either as one of the 5 vowels (/a/, /e/, /i/, /o/ /u/), or as "other", when perceived as *schwa* (father "a" vs. stomach "other") or any other phoneme.

Results: Spanish learners discriminated English *schwa* from full vowels significantly above chance level, although not with native-like accuracy. Proficiency was not a factor. However, learners could not identify English *schwa* above chance in any of the orthographic conditions, which we attribute to the influence of the orthographic representation of *schwa* on speech perception. The reliance on orthography was the weakest when *schwa* was spelled with <o> or <u>, suggesting that acoustic/phonetic factors might be at play. In fact, an acoustic analysis of the *schwa* productions used in the study reveals that they were rather front and thus less similar to the back vowels /o/ and /u/. We also found that English native speakers were also affected by orthography. In particular, they were less accurate when schwa corresponded to <a> or <e>, which constitute the most frequent spellings of *schwa* in English (Betts 1979). We conclude that Spanish learners of English are generally capable of discriminating the reduced vowel *schwa* from other English vowels. When presented with orthographic information, however, their perception of *schwa* might be modulated due to enhanced general sensitivity to grapheme-to-phoneme correspondences in their L1. We therefore propose that besides phonetic similarity, the learner's orthographic experience can also affect L2 vowel perception.

References

- Betts, K. P. (1979). Language, Orthography, and the Schwa. *Spelling Progress Bulletin*, 11-16.
Lee, B., Guion, S. G., & Harada, T. (2006). Acoustic Analysis of the Production of Unstressed English Vowels by Early and Late Korean and Japanese Bilinguals. *Studies in Second Language Acquisition*, 28: 487-513.