Influence of Orthography on the perception of English schwa

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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/, /ɑ/, /ɒ/ 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 (/ælbum/-/ælbum/). 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 (/ʌ/, /ɛ/, /ɑ/, /ɒ/, /ʊ/), 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