The effect of orthography on the mapping of L2 allophonic variants to lexical entries

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Previous studies have shown that speech perception can be influenced by orthography (e.g., Ziegler and Ferrand, 1998; Chéreau et al., 1999), and exposure to L2 orthography may facilitate learning a novel vocalic (e.g., Escudero et al., 2008) or tonal (e.g., Showalter and Hayes-Harb, 2013) L2 contrast. Yet it is unclear whether the benefit of orthographic information applies to the learning of L2 words involving allophonic variants.

In this study, we investigated whether exposure to L2 orthography can help L2 learners establish a single lexical representation for words containing allophones. In a word learning experiment with a picture-auditory word matching paradigm, we used an invented language, with word pairs of free variants (in the test condition) involving the vowel alternation [ɔ] and [u], both of which can be spelled as <o>. For example, [fusat] and [fɔsat] had the same meaning— they were associated with the same picture 'shark'— and were both spelled as <fosat>. In the control condition, vowel alternations contrasted word meanings: [gekaf] vs. [gakaf] was a minimal pair.

The experiment consisted of three phases: familiarization, learning and testing. In the familiarization phase, Mandarin speakers were presented with words paired with pictures. They were instructed to repeat aloud each word they heard to familiarize themselves with the pronunciation in this language. They were told that some words may have two different pronunciations (i.e., free variants), and they may observe whether there were any regularities in pronunciation. Then in the learning phase, subjects learned a set of new words where some test and control items were only presented in one form. For example, an item in the test condition [fusat] was paired with the picture 'shark', but another variant for 'shark', [fɔsat], was not presented in the learning phase. In addition, in both familiarization and learning phases, one subgroup of subjects saw the spellings when they heard the words ("Orth+"), while another did not (i.e., auditory only, "Orth-"). Finally in the testing phase - a picture-auditory word matching task - the words they learned in the learning phase were presented as another variant (e.g., [fɔsat] 'shark'). Subjects who learned that the variants were allophonic were expected to link the two variants (e.g., [fusat] and [fɔsat]) to one single picture ('shark') in the test condition only, not in the control condition.

The results showed that, in general, the benefit of orthography in the learning of free variation was limited. However, a possible advantage of orthography in processing was found: the Orth+ group responded significantly faster than the Orth- on the control condition, suggesting that learners were faster at rejecting minimal pairs as a single word when orthography was available. Finally, learners with longer experience with Roman alphabet (measured as Length of Residence in English-speaking countries) tended to use orthography more to learn the vowel alternations.

References

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