The Perception-Production Link in Learning Words with Lexical Tone

Tim Laméris and Brechtje Post
Phonetics Lab, University of Cambridge

Although it is commonly agreed that speech acquisition in both perception and production are closely intertwined, performance in one modality may not always mirror performance in another. In this study, we present new evidence for the perception-production link by looking at L2 acquisition of lexical tone. We trained a group of English (n=21) and Mandarin Chinese (n=20) speakers to learn a set of 16 words in a tonal pseudolanguage made up of four segments (/jar/, /jur/, /nɔn/ and /lɔn/) and four lexical tones (rising, falling, mid-level, and low-level). After a two-day training session, subjects were tested on their word identification and word production accuracy to assess word learning in both modalities. Normalised f0 data were obtained to determine tone production accuracy. We also accounted for participants' extralinguistic characteristics, such as musical background and working memory.

We found that accuracy, improvement in their performance, and types of errors in the two modalities were highly correlated. Both in listening and speaking, most word recall errors were purely tonal in nature (i.e. often the words' segmental but not their tonal properties were retained), but Mandarin Chinese participants were much more likely than English participants to confuse level tone contrasts, which do not exist in the Mandarin tone inventory. Crucially, these error patters occurred both in word identification and production, with remarkable similarities between both domains.

This study adds to a currently limited body of work on the perception-production link in second language tone-learning, which has mainly focused on perception and production at the pre-lexical level. We show that the perception-production correlation is largely maintained at the lexical level.