Phonetic Convergence after Perceptual Exposure towards Native and Nonnative Speakers

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This study explores phonetic convergence by native English speakers after exposure to speech by either a native speaker of English or a high-proficiency Korean learner of English. We recorded two native speakers of English and two Korean nonnative speakers of English as our model speakers, reading two sets of materials that were composed of English low-frequency words (model production). The English words were chosen to reflect possible L1 transfer from Korean to English at the segmental level of monosyllabic words and at the stress level of disyllabic words. Specifically, the first set of words consists of English monosyllabic word pairs that might be hard to distinguish by Korean learners of English because of their native language influence on the realization of a consonant voicing contrast and tense/lax vowel distinction. The second word set consists of English disyllabic words, which might show different patterns between native and Korean speakers of English in terms of the relative prominence of the first and second syllables.

A separate group of participants, who are native speakers of English, 1) read the two sets of English words (pre-exposure production); 2) were then exposed to one of the word sets either through auditory inputs read by one of the model speakers (experimental groups 1 & 2) or visual inputs (control groups 1 & 2) (exposure phase); and 3) finally, read the entire word sets again (post-exposure production). Half of the participants were exposed to one of the native model speakers, and the other half were exposed to one of the Korean nonnative speaker models. Participants also conducted an Implicit Association Test, which measured their implicit attitude towards native and foreign speakers of English. We then did fine-grained acoustic analyses on the recordings, so that we can compare the first (pre-exposure production) and second (post-exposure production) recordings of the test speakers. Specifically, on the monosyllabic words, we measured voice onset time of the initial consonant, fundamental frequency, first and second formant frequencies, and duration of the vowel. On the disyllabic words, we measure intensities of the first and second syllables. If the Euclidian distance of participants' post-exposure production and model production is significantly smaller than the Euclidian distance of participants' pre-exposure production and model production, we consider this as evidence of phonetic convergence.

Preliminary results illustrate that 1) participants exposed to nonnative speakers show greater degree of phonetic change between the pre-exposure and post-exposure productions than participants exposed to native speakers and participants in the control groups; 2) participants converge more towards nonnative speakers than towards native speakers; and 3) some participants generalize phonetic convergence patterns to the word sets they did not hear during the exposure phase.