Title: Effect of L1 phonological patterns in cross-language perception: Korean coda neutralization in English obstruent perception.

Hanyong Park and Kenneth de Jong
Indiana University
paper only

Current theoretical models of cross-language perception refer to a native language (L1) speech system to predict the perception of second language (L2) speech sounds. For example, Best's perceptual assimilation model predicts discrimination levels for L2 contrasts based on the presence of L1 sounds. Flege's speech learning model also predicts the difficulty of producing segments in L2 based on the similarity of segments in L1. These models, however, often overlook phonological entities generalizing across segments, such as L1 phonological rules or prosodic constraints on segmental distribution.

Our study on the perception of Korean acquirers of English demonstrates the active role of L1 phonological constraints in cross-language perception. We develop a methodology for investigating cross-language similarity and its role in perception, and we use this methodology to determine how the neutralization of Korean obstruent contrasts in post-vocalic position affects their perception of English obstruents in pre- and post-vocalic position. 20 recently immigrated Korean subjects performed two consonant identification tasks, one with English labels and one with Korean labels. We used the probability of the same Korean label being applied to two English sounds to predict the probability of identification errors in English. For example, both /b/ and /v/ were usually labeled as Korean tense or lax /p/; these common L1 mappings would predict high confusion rates between /b/ and /v/ in English labeling.

Observed English identification errors correlated well with predicted errors in general. There were, however, two classes of deviation from the predictions. First, stop – fricative errors were consistently fewer than predicted, indicating that the listeners were systematically acquiring a new (English) set of fricative categories. Second, errors in voicing between these new categories (e.g. /f/ vs. /v/) were systematically more than predicted, indicating that the glottal contrasts in the new fricative categories were not based on old (Korean tense/lax & aspirated) contrasts. The general pattern observed, thus, was that the listeners showed increased English skills distinguishing new from old segments, and decreased skills distinguishing new segments from each other. One systematic exception to this pattern was that glottal contrasts (e.g. /p/ vs. /b/) in post-vocalic position were consistently worse than predicted from Korean labeling, even though one of the segments corresponds to an L1 segment. This exception appears to be due to the active influence of a coda neutralization effect that makes the neutralized contrast harder to acquire. Thus, cross-language perception indicates the importance of cross-segment generalizations, such as phonological rules, in L2 acquisition.