

On the delay between phonological and phonetic acquisition of a new contrast: evidence from a longitudinal study of French learners of Korean

Stop consonants have received a lot of attention in the L2 literature, with most studies focused on the L2 acquisition of a two-way stop contrast by L1 speakers of languages with a two-way stop contrast as well (e.g., L1 French of L2 English). Stop contrasts in Korean, however, employ a three-way contrast (lenis, fortis, aspirated) that relies on both Voice Onset Time (VOT) and fundamental frequency (f_0) of the following vowel (e.g., Kim, 2004; Schertz et al., 2015). Specifically, fortis stops have short VOT and high f_0 , lenis have long VOT and low f_0 , and aspirated have long VOT and high f_0 . VOT distinguishes fortis stops from aspirated and lenis stops, while f_0 serves as a primary cue for distinguishing lenis stops from aspirated and fortis stops. French learners of Korean must therefore reorganize their phonological system from a two-way to a three-way contrast while mastering the relative weights of VOT and f_0 cues.

Previous research has shown that French learners use VOT alone to identify aspirated stops from fortis and lenis stops, while using f_0 to distinguish lenis from fortis stops in perception (Lee et al., 2022). Additionally, studies of L1 English, Mandarin, and Spanish learners (Chang et al., 2011; Holliday, 2015) revealed a wide range of variation in the learners' production. Some of the learners were successful in producing three categories using VOT and f_0 , but others failed to do so. Taken together, the studies discussed here reveal that L2 Korean learners are heavily dependent on VOT cue and are combining two or more categories with variable degrees of overlap, indicating a typical example of L2 learners' categorical merger and confusion in phonology due to the influence of the L1 (Best, 1995; Flege, 1995).

This study examines the acquisition of Korean three-way stop contrast by French learners longitudinally and tests Escudero's (2000) four hypothetical stages of contrast development: 1) initial inability to identify the contrast, 2) primarily use of L1 cue, 3) inappropriate use of L2 cues, and 4) finally, native-like cue usage.

Twenty-one French students in their first year of Korean studies participated in monthly word-reading tasks, producing stop-initial words /t/, /t^h/, and /t*/ over eight sessions. Using Linear Discriminant Analysis (LDA), we analyzed the relative weights of VOT and f_0 cues in distinguishing the three contrast pairs (aspirated-fortis, fortis-lenis, lenis-aspirated).

Results revealed developmental patterns of cue weighting, which confirmed partially the developmental stage hypothesis in Escudero (2000). In the first session, learners heavily relied on VOT for all three pairwise contrasts. By the third session, they began using f_0 complementarily with VOT to distinguish fortis-lenis contrasts. By the eighth session, learners showed native-like patterns for aspirated-fortis (primarily using VOT) and fortis-lenis contrast (using both cues). However, they continued to rely primarily on VOT for lenis-aspirated contrast, a different pattern from native Korean speakers who use more f_0 than VOT.

These findings suggest that phonological reorganization precedes accurate phonetic acquisition of cues in L2 stop contrast learning, contributing to our understanding of L2 phonological development.

[Reference]

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