Subcategorical contrasts in Korean affricates: Implications for English loanword adaptation

Yongeun Lee and Matthew Goldrick
Chung-Ang University and Northwestern University
yeele@cau.ac.kr

Introduction: Unlike English, Korean lacks the post-alveolar affricates /ʧ,ʤ/; the fricative phase of Korean affricates (lenis /ʦ/, aspirated /ʦʰ/, tense /ʦ*/ ) is primarily alveolar (Kim, 2004). Loanwords containing these English sounds are often orthographically adapted in Korean as a sequence of an alveolar affricate plus a palatal glide (e.g., <ʦjʌtsɨt> “Justin”, Kang, 2013). This is an unexpected adaptation since post-affricate /j/ is systematically not pronounced on the surface in Korean (Kang, 2013). We propose that the use of an affricate-glide sequence in spelling English loanwords reflects a subcategorical phonetic distinction in Korean affricates. We hypothesized that Korean affricates followed by an (unpronounced) glide have a more posterior place of articulation than affricates that are not followed by a glide. The loanword spelling pattern therefore allows speakers to signal that English affricates are more posterior than their Korean counterparts. To support this hypothesis, we examined the phonetic nature of the place contrast between affricates before <j> + /ʌ/ vs. those before /ʌ/. The results revealed that Korean affricates followed by <j> are produced in a small but statistically more posterior position than other Korean affricates, analogous to the English affricates. This suggests that the adaptation of English affricates into Korean could be modulated by a subtle phonetic contrast present in the native language. Such effects are consistent with recent empirical results and theories of loanword adaptation emphasizing the role of the perception of fine-grained phonetic details in adapting nonnative sounds (Wilson, Davidson, & Martin, 2014).

Methods: Acoustic data were collected from sixteen Seoul Korean speakers (8 females, 8 males, age: 20-27). The speakers read 40 target orthographic minimal pairs plus 139 filler items. The target segments appeared in orthographic minimal pairs, both initially and medially flanked by vowels (e.g., glide-less /mits*ʌ/ vs. glide-ful /mits*jʌ/). The relative constriction locations of the affricates were estimated by two spectral moments of the frication noises: center of gravity and skewness.

Results: Linear mixed effects regressions were used to examine whether the presence of a glide significantly affected each of these spectral moments, controlling for effects of prosodic position, speech style, gender, and tenseness of the affricate. Fixed effects were contrast-coded, and the model included a random intercept for speaker and random slopes for the experimental manipulation (presence vs. absence of a glide). Results for both spectral moments suggested that affricates had a more posterior place of articulation when followed by a glide (Figure 1). Consistent with a more posterior place of articulation, the fricative portion of affricates preceding <j> + /ʌ/ had lower centers of gravity than their counterparts preceding /ʌ/ (β = –287.15, s.e. β = 98.31, χ²(1) = 6.85, p < 0.01) and higher skewness values (β = 0.30, s.e. β = 0.08, χ²(1) = 10.18, p < .005).

Discussion: Despite systematic deletion of the post-affricate palatal glide, Korean affricates have a systematically more posterior place of articulation before <j> + /ʌ/ vs. /ʌ/. This sub-categorical distinction may provide a motivation for Korean speakers to utilize the <j> spelling when adapting English loanwords, allowing them to signal that the English palato-alveolar affricates have a more posterior articulation than typical Korean alveolar affricates. A perception study is currently underway to examine the perceptual
consequences of the production differences found here; following work in in other languages (Kharlamov, 2015), we anticipate Korean listeners will be sensitive to these phonetic distinctions. An additional avenue for future work is examining the processes underlying this subcategorical distinction. It is likely related to allophonic variation in Korean fricatives (i.e., [s,s*] ~ [ɕ,ɕ*] before glides). Similar to proposed accounts of incomplete neutralization (e.g., Smolensky, Goldrick, and Mathis, 2014), the affricate pattern could be a sub-categorical manifestation of these categorical allophonic process.

References:


Figure 1. Means of center of gravity (top panel) and skewness (bottom panel) of Seoul Korean affricates as a function of presence vs. absence of a post-affricate orthographic glide (grey vs. dark grey; in the order of lax, aspirated, and tense affricate). Error bars denote standard error.