Articulation and Neutralization: Inherent and Derived Palatals in Korean

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Korean exhibits a lexicalized palatalization process in which an alveolar noncontinuant obstruent (/t, tʰ/) becomes palatalized (i.e., becoming [ʧ] and [ʧʰ] respectively) before a high front vowel or a palatal glide, but only across a morpheme boundary [1,2,3]. As shown in Table 1, /mat+i/ 'the eldest' and /mati/ 'joint, node' show very similar underlying representation in Korean. However, only /mat+i/ 'the eldest' undergoes lexical palatalization because of its morphological structure showing a compound boundary between /mat/ 'eldest' and /i/ (nominalizer), while /mati/ 'joint, node' does not.

Word	Effect	Result
/mat+i/ 'the eldest'	/t/ → [ʧ]	lexical palatalization
/mati/ 'joint, node'	/t/ → [t] or [tʲ]	no lexical palatalization; potential coarticulation

Table.1 Palatalization in Korean.

This lexical palatalization creates a sound change in which the resulting palatals from the palatalization process are perceptually the same as the underlying palatals. This fact raises the question of whether true inherent palatals (i.e., underlyingly /ʧ/ or /ʧʰ/), and apparent, derived palatals (i.e., derived from /t/ or /tʰ/) are truly neutralized in the production of Korean speakers. Given the previous claim that multiple articulations create perceptual neutralization [4], it is possible that inherent and derived palatals in Korean may be articulated differently in a covert fashion, but perceptually indistinguishable. Using ultrasound imaging, our study investigates the articulation of inherent and derived palatals [ʧ] and [ʧʰ] in Korean to see if palatals from the two different sources truly create a phonetic merger. Examples of test words are illustrated in Table 2.

Word	Effect	Result
/pata/ 'sea'	/t/ → [t]	no palatalization (control)
/paʧi/ 'pants'	/ʧ/ → [ʧ]	inherent palatal
/mat+i/ 'the eldest'	/t/ → [ʧ]	derived palatal
/otʰa/ 'typo'	/tʰ/ → [tʰ]	no palatalization (control)
/kaʧʰi/ 'value'	/ʧʰ/ → [ʧʰ]	inherent palatal
/patʰ#i/ 'field+NOM'	/tʰ/ → [ʧʰ]	derived palatal

Table.2 Examples of test words.

Representative tongue contours from 11 native speakers of Korean (shown in Figures 1 and 2) were compared using SSANOVA [5,6]. The results show that although speakers show individual variation in the relationship between their non-palatal and palatal/palatalized tongue contours, the majority of speakers do maintain distinction between inherent and derived palatals. The results reported here provide articulatory evidence of contrast between two types of palatals.
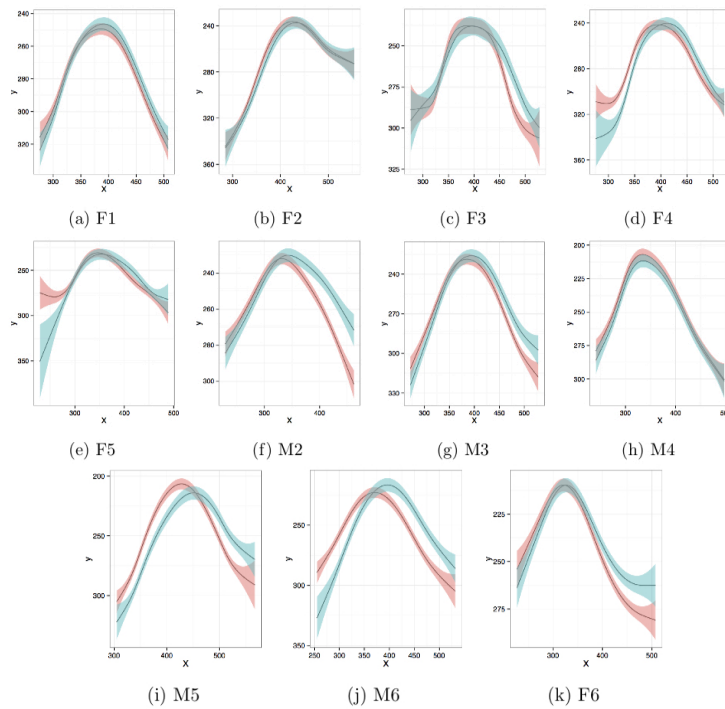
Fig.1 Ultrasound tongue contours: inherent (red) and derived (blue) [ʧ]; Tongue tip is to the right, and shares represent 95% confidence interval. Axis values correspond to pixels.
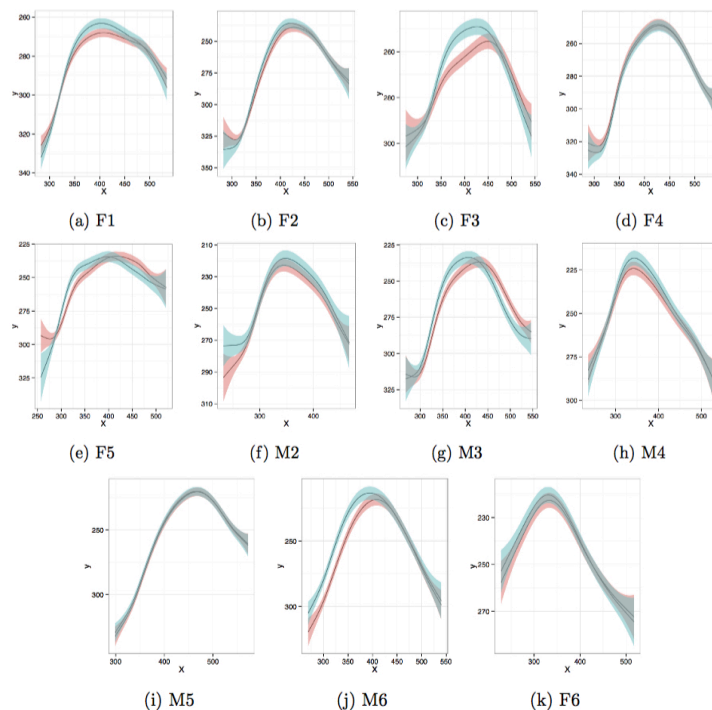

Fig.2 Ultrasound tongue contours : inherent (red) and derived (blue) [ʧʰ].

References

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