Icelandic Consonant Cluster Simplification

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Introduction

This study examines the simplification of a certain type of consonant cluster in Icelandic. Consonant cluster simplification has been reported in many languages, for instance, Québec French and Icelandic (Côté, 2004b, 2004a). In the case of Icelandic, Côté (2004b) suggested a consonant is deleted in some sonorant-obstruent-obstruent clusters in Icelandic on the basis of perceptual judgement from two native speakers of Icelandic. For example, a /lk-t/ sequence is simplified as [lt] by deleting one consonant. However, this deletion phenomenon is not always attested among speakers as the surface form of /lc-t/ is [l̥t] for one speaker but [l̥(x)-t] for another (Côté, 2004b). Browman and Goldstein (1990) proposed that gestures of sounds in casual speech are expected to show reduced magnitudes and increased temporal overlap. Thus, it could be the case that, there would be a reduced magnitude in articulatory gesture when one consonant overlaps with its adjacent consonant. However, no production data unveil the articulatory gesture of the consonant cluster production in Icelandic. The research question of this study is what is the nature of this consonant cluster simplification? Would it be reduction or deletion?

Methods

Stimuli include Icelandic words that contains tri-consonant cluster (/lk-t/) and bi-consonant cluster (/l-t/, /k-t/) in the underlying form. Participants were asked to read target stimuli in carrier phrases while ultrasound imaging video was recorded. The frame that showed the articulatory peak was picked by inspecting the image sequence of the target consonant clusters. Tongue gesture in the chosen frame was traced via EdgeTrak (Li, et al., 2005). The traces were used to illustrate tongue gestures of the production of the cluster of interest were calculated for lingual aperture by taking the minimum Euclidean distance between the peak point of the tongue contour to any point of along the palate.

Results

Preliminary lingual aperture results are presented in Figure 1. The tongue dorsum stays closer to the palate during the production of tri-consonant clusters as it has smaller lingual aperture value.
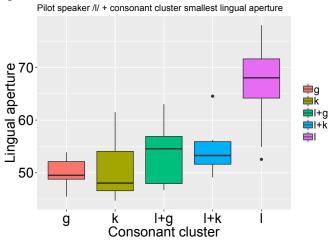

Figure 1 lingual aperture of /l/ in consonant clusters produced by the pilot speaker

The results suggest dorsum gestural feature of the velar obstruent is kept and overlaps with the preceding consonant in the cluster. Hence, the velar obstruent is not deleted from the tri-consonant cluster but overlap with an adjacent consonant, and it's articulatory gesture is reduced.

References

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