

# Onset lenition and coda neutralization in Ukrainian: Implications from an instrumental articulatory analysis for the theory of markedness

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Ukrainian descriptive sources mention two back fricatives: voiceless and voiced. The voiceless one is velar, /x/. The sources differ on the place of articulation of the voiced fricative. It is classified as either laryngeal /h/ or pharyngeal /ħ/ with a possible positional velar variant [ɣ] (Ziżyński 1932; Shevelov 1977, Rusanovskij et al. 1986, Czaplicki 2006). A 3D/4D ultrasound analysis of Ukrainian back fricatives based on articulatory data from 8 participants (24 stimuli each, 192 in total) provides evidence that the voiced fricative is laryngeal in the onset, but uvular in the coda. In addition, both fricatives are uvular in the coda. Linear mixed-effects models were used to test the impact of various factors on tongue height and fronting. Figure 1 demonstrates that the voiced fricative shows raising of the tongue dorsum in the coda, but not in the onset (/x/ coda: 6.888 cm, /ɣ/ coda: 6.830 cm, /x/ onset: 6.874 cm, /ɣ/ onset: 6.62 cm,  $t = -4.027$ ,  $p < .001$ ), which means that it is dorsal in the coda, but laryngeal in the onset. Figure 2 shows that both fricatives show a more front position of the tongue dorsum in the onset than in the coda (coda: 5.32 cm, onset: 5.66 cm,  $t = 4.428$ ,  $p < .001$ ), which indicates that the two fricatives are post-velar or uvular in the coda. These results provide evidence for onset lenition (debuccalization) and non-markedness reducing place neutralization in the coda (neutralization to the uvular place of articulation).

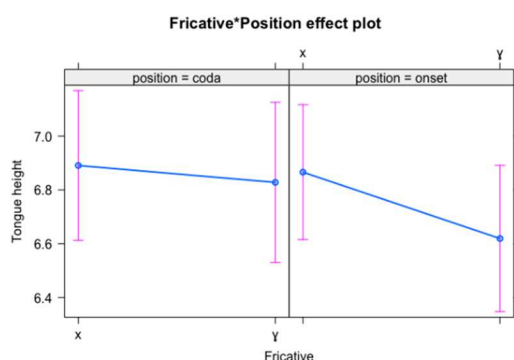


Fig. 1. Tongue height

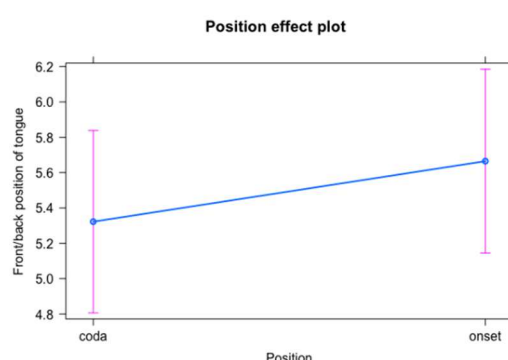


Fig. 2. Tongue fronting

These findings impinge on the role of markedness in predicting synchronic alternations. Analyses that rely on markedness as a motivating factor for synchronic patterns of alternations allow for the possibility of coda lenition, but not of onset lenition (Beckman 1998). However, the analyzed data instantiate debuccalization, a type of lenition, in the onset. Moreover, the observed retraction of place in the coda, resulting in uvular fricatives, is similarly difficult to derive from markedness principles (de Lacy 2006). These findings are not compatible with the view that synchronic alternations must be driven by markedness reduction and suggest instead that models of synchronic phonology must be designed in such a way as to accommodate segmental alternations that are arbitrary from the point of view of markedness principles (Czaplicki & Cavar 2004).

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