Gradience and categoricity in *s*-retraction: An ultrasound study of Manchester English

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This study of Manchester English (McrE) uses ultrasound tongue imaging to investigate the articulation of *s*-retraction in /stɹ/ and /stj/ clusters. This constitutes the first such study of this phenomenon in British English, where work has relied exclusively on acoustic data (e.g. Sollgan 2013). The use of ultrasound is required for a more complete picture of the behaviour of /s/ in these contexts, given that the same acoustic signal can be achieved through different articularory means (see e.g. Mielke et al. 2017 on covert articulation of /ɹ/).

In work on American English (AmE), it has been claimed that retraction is triggered non-locally by /ɹ/ (e.g. Shapiro 1995, Lawrence 2000). However, our results suggest that, in McrE, /ɹ/ is not the direct cause of retraction, nor is it the only indirect source due to comparable behaviour in /stj/, a cluster notably absent in AmE. Although we find inter-speaker variation with respect to the gradience/categoricity of retraction, /stɹ/ and /stj/ appear to pattern together.

In this study, articulatory data were collected using ultrasound tongue imaging alongside simultaneous, synchronised audio recordings. Three repetitions of each target word were elicited in a carrier sentence, with a randomised order for each participant. The stimuli were mostly monosyllabic with target segments in word-initial position and were balanced for the following vowel (/iː uː ɒ a/), with the exception of /stj/. Distractors included /s/- and /ʃ/-initial words used to gauge the degree of retraction in target clusters.

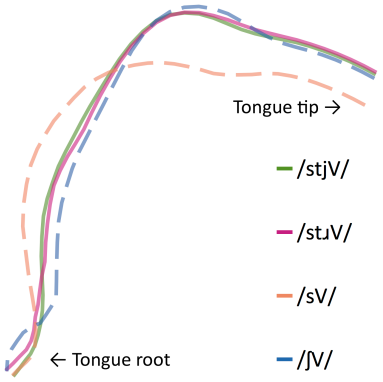

Fig. 1: Avg tongue contours for M01

Results from 3 subjects (2M 1F, aged 25-26) reveal inter-speaker variation: both male speakers show categorical retraction in /stɹ/ and /stj/ and gradient retraction in /st/. The female speaker shows only gradient retraction in /stɹ/ and /stj/, with no retraction at all in /st/; data collection is ongoing in order to investigate the possibility of an implicational hierarchy.

The fact that /stɹ/ and /stj/ show comparable retraction for all speakers, whether gradient or categorical, shows that the explanation for *s*-retraction in AmE is not applicable to McrE. Instead, we suggest that both /ɹ/ and /j/ trigger affrication of the preceding /t/, which in turn causes retraction of /s/, rather than /ɹ/ being the direct trigger (see Baker et al. 2011).

Future work will examine word-internal clusters as well as the effects of word and morpheme boundaries on *s*-retraction in McrE.

References

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