

**An articulatory study of /s/-retraction:
How does this change behave across word boundaries?**

[author information redacted]

/s/-retraction is a sound change attested in many varieties of English (Altendorf 2003, Durian 2007, Wilbanks 2017) in which /s/ is produced with a “hushier” [ʃ]-like realisation. This is prototypically found before /tʃ/ clusters, e.g. *street*, and work has often focused on these clusters at the expense of other contexts where the change may occur.

A community-level study by Bailey et al. (2022) shows word-internal /s/-retraction nearing completion in Manchester English and that the change occurs in various other, often overlooked environments: /stj/ (e.g. *student*) and /stʃ/ (e.g. *mischief*). These contexts and /stʃ/ are changing in parallel. The fact that all involve affricated consonants following the /s/ indicates that affrication triggers /s/-retraction rather than long-distance assimilation to /ʃ/ as suggested in other studies (e.g. Shapiro 1995, Baker et al. 2011). This and previous work has shown the importance of considering a wider range of contexts beyond /stʃ/.

Here, we extend the scope of analysis of /s/-retraction in Manchester English further by:

- (1) considering the wider envelope of variation by including additional triggering segments
- (2) investigating whether change occurs across word boundaries and comparing this to word-internal retraction
- (3) examining the behaviour of /z/, which may register a similar change (e.g. *these drinks* v. *this trick*)
- (4) collecting articulatory ultrasound-tongue-imaging and lip-camera recordings for insight into lingual *and* labial gestures

(4) is particularly important given that the change from /s/ to [ʃ] involves not only a more retracted lingual gesture but can also involve other articulatory mechanisms including lip protrusion/rounding and tongue grooving (Rutter 2011). Questions motivating this research include how these various parameters contribute to the acoustics of the change, the extent of inter-speaker variation w.r.t. the magnitude and interaction of these gestures, and how this might develop over the course of the change in both word-internal and post-lexical contexts.

Stimuli take the form of a carrier sentence *I said ___* followed by a determiner ending in the target segments /s/ (*this*) or /z/ (*these*) and a noun starting with the following triggering segments: canonical and derived affricates (/tʃ, dʒ, tʃ, dʒ, tʃ, dʒ/) and post-alveolar fricatives (/ʃ, ʒ/) matched for voicing, as well as /ʃ, ʒ/. Each speaker produces 3 repetitions of the 35 phrases (105 tokens per speaker).

Pilot data have been collected from two speakers with further collection planned for the coming months. Preliminary results reveal how /s/-retraction does take place, though is less advanced, across word boundaries, and that the environments involving affrication largely pattern together in terms of lingual articulation as they do acoustically. Results also show that /s#ʃ/ is more acoustically retracted than /s#j/ but that the lingual gesture is actually more retracted in the latter (see Figure 1), highlighting their indirect relationship and the important contributing factor of the lips in this change (cf. King & Ferragne 2020).

This work contributes to our understanding not only of the mechanisms behind /s/-retraction but also of the roles of post-lexical v. word-level behaviours as well as similarity and generalisation in the spread of a sound change.

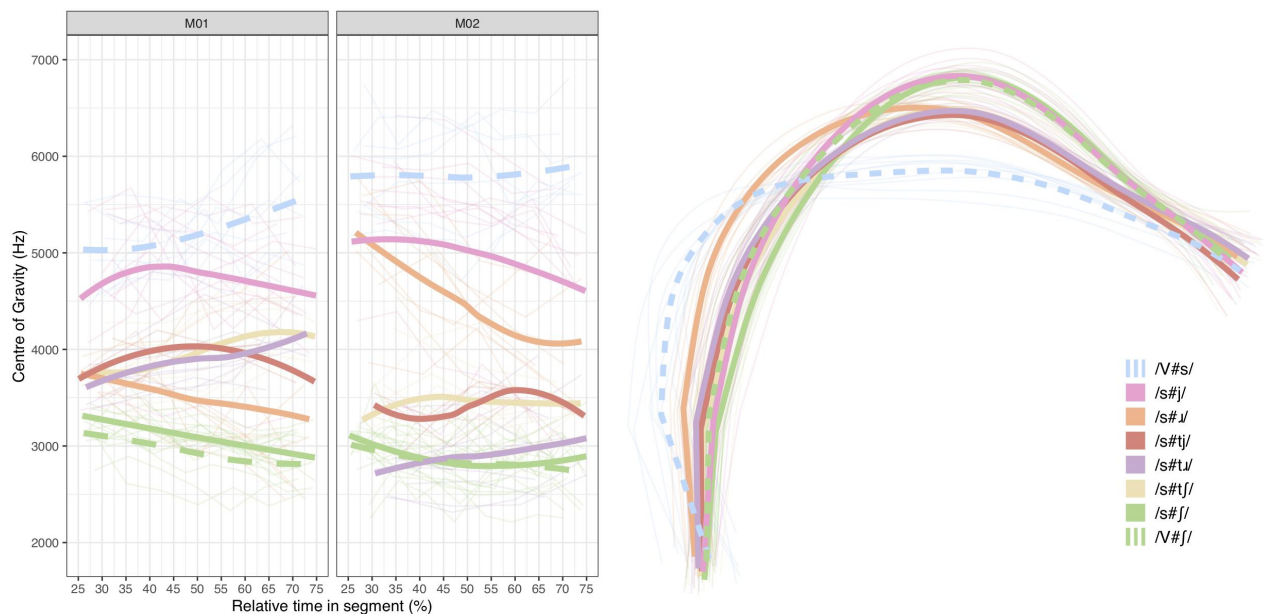


Figure 1: The acoustics (*left*) and average lingual gesture (*right*) of post-lexical /s/-retraction by context; lower Centre of Gravity is more [ʃ]-like; tongue splines show the tongue tip on the right, tongue root on the left

References

- Altendorf, Ulrike. 2003. *Estuary English: Leveling at the interface of RP and South-Eastern British English*. Tübingen: Gunter Narr.
- Baker, Adam, Diana Archangeli & Jeff Mielke. 2011. Variability in American English s-retraction suggests a solution to the actuation problem. *Language Variation and Change* 23(3), 347–74.
- Durian, David. 2007. Getting [ʃ]tronger Every Day?: More on Urbanization and the Sociogeographic Diffusion of (str) in Columbus, OH. *University of Pennsylvania Working Papers in Linguistics* 13(2), 65–79.
- Lawrence, Wayne P. 2000. /str/ → /ʃtr/: Assimilation at a distance? *American Speech* 75, 82–7.
- Rutter, Ben. 2011. Acoustic analysis of a sound change in progress: The consonant cluster /stʃ/ in English. *Journal of the International Phonetic Association* 41(1), 27–40.
- Shapiro, Michael. 1995. A case of distant assimilation: /str/ → /ʃtr/. *American Speech* 70, 101–7.
- Wilbanks, Eric. 2017. Social and Structural Constraints on a Phonetically-Motivated Change in Progress: (str) Retraction in Raleigh, NC. *University of Pennsylvania Working Papers in Linguistics* 23(1), 301–10.