

## Perception of glottalisation in American English: An eye-tracking study

Adam J. Chong<sup>1</sup> & Marc Garellek<sup>2</sup>

1. Queen Mary University of London, 2. University of California, San Diego

1. [a.chong@qmul.ac.uk](mailto:a.chong@qmul.ac.uk), 2. [mgarellek@ucsd.edu](mailto:mgarellek@ucsd.edu)

Voiceless codas /t, p/ in American English are often realised with glottalisation on the preceding vowel. It has previously been claimed that this can serve to facilitate the recognition of /t/, or more generally, of coda voiceless stops (e.g. Stevens & Keyser 1989, Pierrehumbert 1995, Keyser & Stevens 2006). In this study, we test these claims by examining the timecourse of word recognition of voiceless coda stops. Using an eye-tracking task, 60 American English listeners heard synthesised glottalised and non-glottalised versions of CVC English words ending in /p, t, b, d/ while looking at a display with two orthographically presented words. Target words were presented with a minimal pair differing in place of articulation (e.g. *cop-cot*), or voicing (e.g. *bat-bad*, *cap-cab*). Listeners fixated equally often to the target words regardless of the presence of glottalisation on a /t, p/ final word, indicating no advantage for recognition of /t/ words when glottalisation was present. We also found that listeners fixated to the target less for words ending in voiced stops when the preceding vowel was glottalised (Fig. 1). Taken together, our results do not lend support to the hypothesis that glottalisation facilitates the recognition of /t/. Our findings, however, provide evidence that glottalisation is not associated with voiced stops, but is a legal variant of both voiceless stops /t, p/.

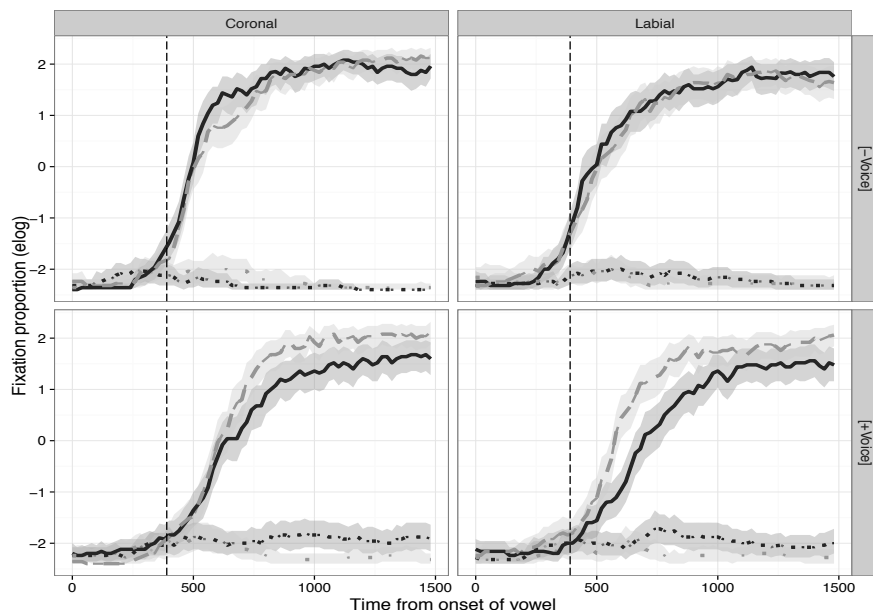


Fig 1. Target fixations for coronal /t, d/ (left) vs. labial /p, b/ (right). Top: Target = /t, p/; Bottom: Target = /b, d/. Darker lines indicate glottalised words. The vertical dashed line indicates the average offset of target words across all experimental groups.

### References

- Keyser, S.J. & Stevens, K.N. (2006). Enhancement and overlap in the speech chain. *Language*, 82, 33-63.
- Pierrehumbert, J. (1995). Prosodic effects on glottal allophones. In O. Fujimura & M. Hirano (eds.), *Vocal fold physiology: voice quality control* (pp. 39-60). San Diego: Singular Pub. Group.
- Stevens, K.N. & Keyser, S.J. (1989). Primary features and their enhancement in consonants. *Language*, 65, 81-106.