

# Larynx height and intraoral pressure in Georgian and German ejectives

Erika Brandt\*, Adrian P. Simpson\*

\*Institute for German linguistics, Jena, Germany

We present a comparative analysis of the articulatory characteristics of phonological ejectives in Georgian and epiphenomenal ejectives in German. Epiphenomenal German ejectives occur when there is an overlap of the gestures for a word-final plosive and the glottalisation of a syllable-initial vowel (Simpson, 2014). In Georgian, ejectives are part of the phoneme system. We focus on Georgian /p', t', k'/ to contrast with German word-final plosives /p, t, k/. German epiphenomenal ejectives are elicited in the target condition described above, while Georgian ejectives are produced in sentence-internal positions. Intraoral pressure (IOP) is tracked using a pressure transducer. Dual-channel electroglottography (Rothenberg, 1992) is employed to detect changes in larynx height, also called larynx trace (LT). Statistical analysis is performed using generalized additive mixed-models (GAMMs) (Wood, 2011, 2017).

IOP and LT trajectory shape of labial ejectives are significantly different in German and Georgian. In Georgian /p'/, IOP increases slowly and drops more rapidly following the peak compared to the faster IOP increase for German target /p/ which is characterized by a slow decrease in IOP following the peak (fig. 1). LT trajectory shape for German /p/ in target condition is characterized by a concave curve, while LT in Georgian /p'/' indicates a slight downwards movement of the larynx. Besides that, there are no significant differences in average IOP or LT between Georgian and German ejectives, neither in IOP movement in alveolar ejectives nor in LT movement in alveolar and velar ejectives. We conclude from LT that vertical larynx displacement is not necessary for ejective production and that both German and Georgian speakers seem to also use other mechanisms to increase intraoral pressure, e.g. pulmonic airstream during the initial phase of plosive closure. We conclude, that despite their different linguistic status, Georgian and German ejectives show similarities in their production mechanisms.

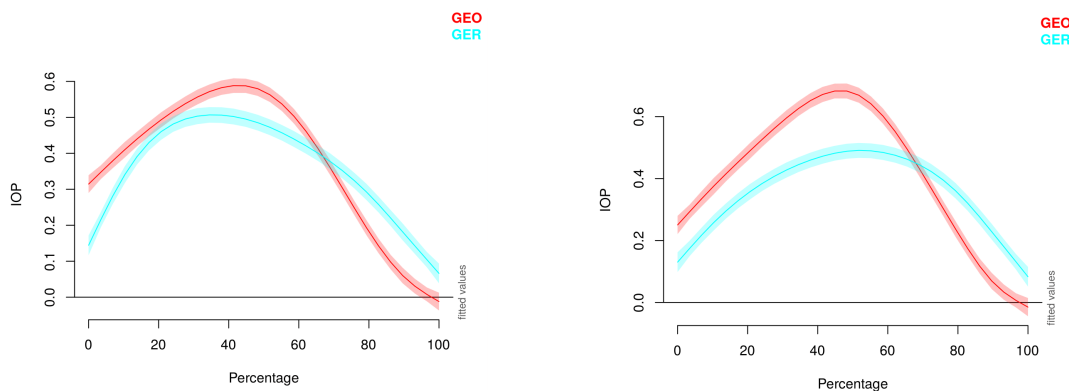


Figure 1: Comparison of IOP trajectories of German and Georgian labial (left) and alveolar (right) ejectives.

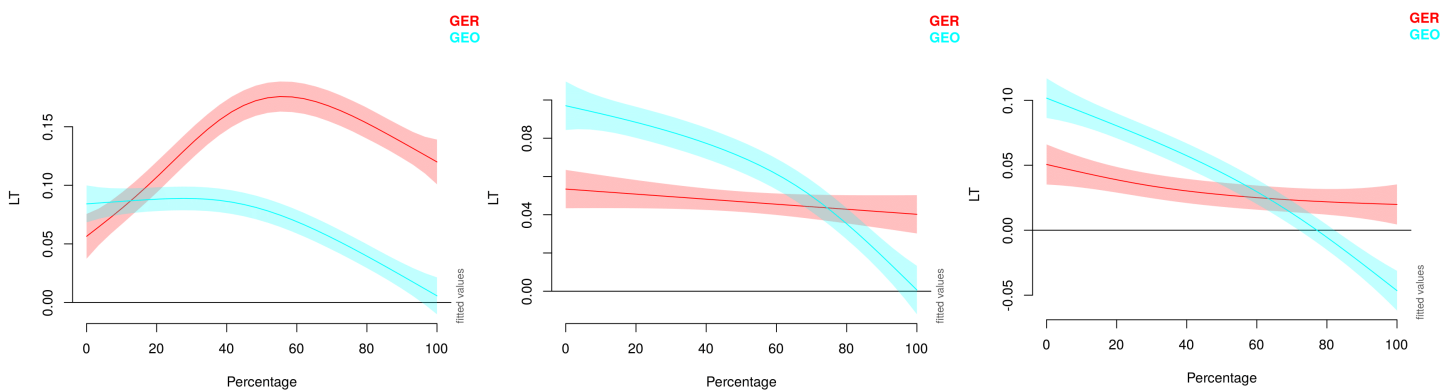


Figure 2: Comparison of LT trajectories of German and Georgian labial (left), alveolar (middle), and velar (right) ejectives.

## References

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