Do Georgian learners of German differ in their plosive production from German natives?

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Following Russian and English, German is the third most important foreign language in Georgia with around 40,000 learners in the country (DAAD, 2017). This pilot study investigated acoustic and articulatory differences in fortis plosive production between Georgian L2 speakers of German and German native speakers. The data analyzed here was recorded as part of a larger multi-channel production study of German, Georgian and English ejectives. German epiphenomenal ejectives were elicited which result from an overlap of a word-final fortis plosive and a following low, glottalized vowel (Simpson, 2014). Therefore, only fortis plosives were included in the material.

The current analysis was based on 5 Georgian and 5 German native speakers. Voice onset time (VOT), duration of persevering vocal activity during closure, called voicing, as well as mean larynx height, also known as larynx trace (LT) (Rothenberg, 1992), were used as measures. Relative values for VOT and voicing were calculated to account for known differences in speech rate between L1 and L2 speakers (Menke, 2018). We used linear mixed-effects models (Bates et al., 2015; Kuznetsova et al., 2017) for statistical analysis. The model included fixed effects NATIVENESS (levels L1 and L2; treatment-coded) and PLOSIVE (levels /p/, /t/, and /k/; deviation-coded), the interaction of both fixed factors and random intercepts for speaker and word. There were no significant effects in the model for voicing (fig. 1 right). L2 speakers only differed significantly from L1 speakers in shorter VOT for /p/ than the grand mean (fig. 1 left) and higher larynx height for /p/ (fig. 2). Native speakers of German were consistent in their mean larynx height with regard to different places of articulation (fig. 2). Because of the large similarities between both groups, we conclude that Georgian L2 speakers showed relatively high proficiency in German. Future analysis includes the entire available data and non-linear regression models for LT.
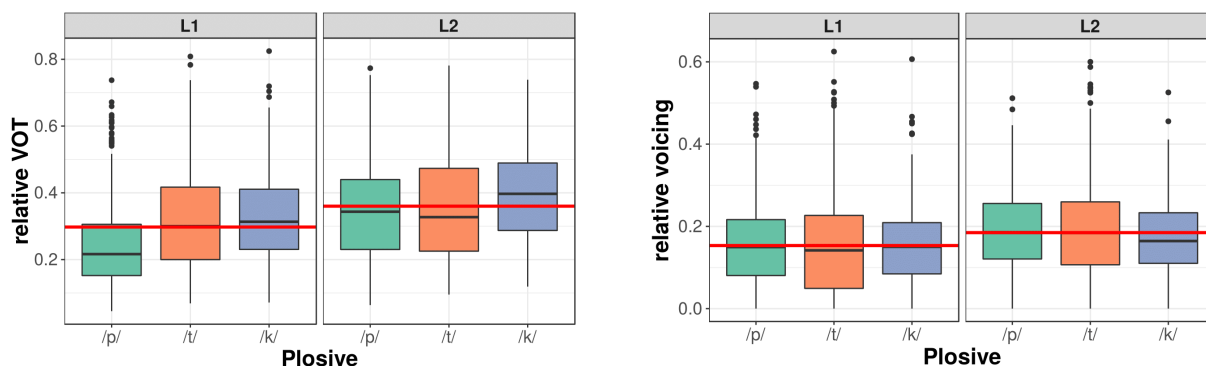

Figure 1: Relative VOT (left) and relative voicing (right) for L1 and L2 speakers of German per plosive phoneme. Horizontal red line indicates grand mean of dependent measure for L1 and L2 speakers.
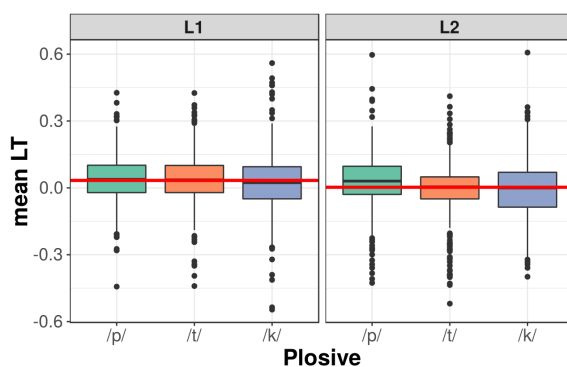

Figure 2: Mean larynx trace (LT) for L1 and L2 speakers of German per plosive phoneme. Horizontal red line indicates grand mean of dependent measure for L1 and L2 speakers.

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