Methodology

- 12 speakers of Georgian (8F, 4M, mean age 23.5, all except one from Tbilisi, recorded in US)
- Open medial syllable — to test smaller scale effects
- 3 vowels (a, e, o) × 3 places (labial, alveolar, velar) × 3 laryngeal features (voiceless, voiceless aspirated, ejective)
- 25 frame words, no repetitions:
  - m, n
  - x, y, h
  - f, s

Results

- Fixed effects:
  - Closure duration: voiced stops have shorter intrinsic closure than voiceless stops.
  - Vowels: duration is longer before voiced stops because it takes longer to activate laryngeal features necessary for voicing.
- Interaction: Closure duration × vowel interaction, speaker and frame as random effects
- Significance of the effects:
  - Closure duration is the primary factor influencing vowel duration.
  - Closure duration is the primary factor influencing vowel duration.

Conclusions

- Based on the results from the experiment on Georgian speakers, I propose "ejection effect": vowels are shorter before ejectives than before voiced, and longer before ejectives than before voiceless stops.
- Small effects, perception likely not the primary factor
- Significant interaction: more effect of closure in voiced stops
- Durvasula and Luo (2014): aspiration effect
- Voicing effect, aspiration effect, ejection effect
- Laryngeal features or VOT?
- "Laryngeal effect hypothesis": laryngeal features affect preceding vowel durations
- VOT inversely correlated with stops. But: Hindi data (Durvasula and Luo 2014)
- Future work:
  - What is the articulatory basis for the laryngeal effect?
  - Test effects of VOT

Selected References

Durvasula and Luo (2014): aspiration effect
Butski...k and M. Durvasula and Luo (2014): aspiration effect

Ejection Effect

Vowels are (i) significantly longer before ejective stops than before voiceless stops and (ii) significantly shorter before ejective stops than before voiced stops.