

Research objective: This study presents novel findings on the acoustic properties of voiceless plosives of two Inuktitut (Inuit) dialects, South Baffin and North Baffin (SNBI). The voiceless plosives in these dialects consists of: bilabial /p/, coronal /t/, velar /k/ and uvular /q/. Previous research focused on phonological patterns, however no study has investigated the phonetic properties of plosives in SNBI. A known property of word-final plosives is that speakers appear to ‘drop’ these plosives (e.g., Allen 1996). In this preliminary study I investigate whether these word-final plosives are completely dropped or significantly reduced. The answer is non-trivial as there are grammatical distinctions indicated by the final plosives. For example, nouns ending in /k/ encodes dual and /-t/ encodes plural. In addition, word-final affixes also differ based on final plosive, i.e. the word-final sequence /-mi/ could represent the locative inflection /-mi/, the modalis inflection /-mik/, or the ablative inflection /-mit/ (Allen 1996 p.39). Relatedly, novel findings for Voice Onset Time, F1/F2/F3 contrasts for these four plosives is presented.

Methodology: Data for this study comes from an online corpus, *tusaalanga.ca* as well as field-work data collected from 12 speakers which consists of dictionary items and dialogues between speakers. All are native speakers of SNBI. Each of the four plosives was analyzed in either a word-medial inter-vocalic position or in a word-final position preceded by a vowel. Each plosive token occurred after either /i/, /a/, /u/, or /i:/, /a:/, /u:/. The recordings were annotated using Praat, and a script that extracted the F1, F2, and F3 value for each vowel preceding the target stop at 50% and 90% of the vowel’s duration, as well as the initial time and end time of both the preceding vowel and the target plosive.

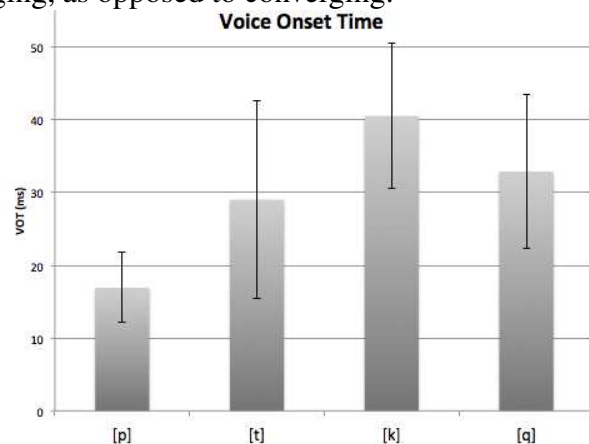
Results: 1) Word-final plosives: A comparison of F1 and F2 of the preceding vowels between the phonetically present plosives and the ‘dropped’ plosives shows similar values, demonstrating articulatory movement to the target, however they are reduced and as a result, unreleased.

2) Place of articulation The analysis of the F1/F2/F3 values of the preceding vowel illustrates four distinct articulatory patterns. The values of the preceding vowel for [p] and [q] behave as predicted, with a high F2 and low F1 value for [p] and a lowering of F1, F2, and F3 for [q]. However, [t] and [k] unexpectedly show evidence of significant posterior movement. The coronal [t] shows evidence of a ‘velar pinch’ with the F2 and F3 values moving together, while for the velar [k], the F2 and F3 values are diverging, as opposed to converging.

3) Voice Onset Time: All four plosives have a positive VOT value, indicating the presence of aspiration. There is also an increase in VOT from [p] to [t] to [k]. However, the VOT of the uvular [q] is lower than that of velar [k]. These results fit cross-linguistics findings from Cho and Ladefoged (1999).

Discussion: It is surprising that speakers of SBNI reduce a word-final plosive, given the grammatical significance this plosive can have. The next step in this research is to conduct a perception test to determine

whether speakers are capable of perceiving the reduced plosive without external grammatical cues. In addition, it is surprising that coronal /t/ shows evidence of a velar pinch while velar /k/ does not, given that in a language with a uvular plosive, one would predict that this presence of a uvular in the phonemic inventory would restrict the likelihood of coronals and velars to show backing so that they do not overlap. Hypotheses for this distribution will be presented.



References

- Allen, S. (1996). *Aspects of argument structure acquisition in Inuktitut*, volume 13. John Benjamins Publishing.
- Cho, T. and Ladefoged, P. (1999). Variation and universals in voicing: evidence from 18 languages. *Journal of phonetics*, 27(2):207–229.