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Research question: This study presents novel research on the acoustic properties of South Baffin voiceless plosives, which consist of: bilabial /p/, coronal /t/, velar /k/ and uvular /q/. Previous research within the Inuktitut dialects has focused primarily on the phonological patterns (e.g. Fortescue 1990; Drescher 1995; Bobaljik 1996; Compton & Drescher 2011), however no study has investigated the phonetic properties of plosives in South Baffin Inuktitut. This study presents novel findings for Voice Onset Time, F1/F2/F3 contrasts, and F1/F2 vowel plots for each of the four plosives, as well as the particular properties of word-final plosives.

Methodology: Data for this study comes from the online corpus, tusaalanga.ca and consists of dictionary items and dialogues between two speakers. All speakers are native speakers of the South Baffin Inuktitut. Each of the four plosives was analyzed in either a word-medial intervocalic position or in a word-final position preceded by a vowel. Each plosive token occurred after either /i/, /a/, /u/, or /i:/, /a:/, /u:/. Each recording was 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) Place of articulation The analysis of the F1/ F2/F3 values of the preceding vowel for each plosives illustrates four distinct patterns for places of articulation. 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, there is the unexpected result where [t] and [k] show evidence of significant posterior movement in the place of articulation. 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. These facts are surprising, 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.

2) 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], which is expected given that this is representative of the distance from anterior to the posterior of the vocal tract. However, the VOT of the uvular [q] is lower than the VOT of the velar [k], despite being further posterior, and therefore a longer distance. That the uvular VOT is shorter than the velar VOT seems at odds with the tendency that the further forward the place of articulation, the shorter the VOT (Fisher-Jorgensen 1954; Peter & Lehiste 1960; Cho & Ladefoged 1999).

3) Word-final plosives: In discourse, speakers of South Baffin Inuktitut drop word-final consonants (Allen 1996). The question that arises is whether the plosive is truly dropped or simply unreleased. The answer is non-trivial as there are word-final affixes that differ in the word-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). A comparison of F1 and F2 values of the preceding vowels at 90% duration between the plosives from the phonetically present tokens and the 'dropped' tokens, showed similar values, demonstrating that the 'dropped' plosives are simply unreleased.

Conclusion: This study presented new findings on the acoustic properties of plosives in South Baffin Inuktitut. It was shown that there is evidence of distinct places of articulation, labial, coronal, velar, and uvular, however there is unexpected backing of [t] and [k]. The VOT time for the plosives demonstrate the presence of aspiration. In addition, as the VOT for uvular stops is shorter than velars, this raises questions about the validity of the general tendency for VOT to increase the longer the vocal tract. Finally, this paper provided evidence showing that word-final stops are unreleased and not dropped.

References

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