On the Absence of Stress in Inuktitut

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This paper presents an acoustic analysis of word-level prominence in South Baffin Inuktitut (Uqqurmiut). We present acoustic analyses of three potential correlates of stress and prominence: duration, fundamental frequency and intensity. Our findings suggest, in line with previous research on Inuit prosody (Rischel 1974, Massenet 1980, Jacobsen 2000, Pigott 2012, Rose et al. 2012, Arnhold 2014, Arnhold et al. 2018), that while the language regularly utilizes acoustic cues to mark the boundaries of words and other prosodic constituents, there is no indication that South Baffin Inuktitut has stress or another type of word-level prominence. In other words, there is no evidence that there is any syllable in the word that is systematically marked with increased prominence according to its position in the word, nor that there is any alternating rhythm as might be expected in a foot-based metrical system.

The data were obtained with permission from the Pirurvik Centre's online language learning website, Tusaalanga (Pirurvik Centre 2015). Our conclusions are based on an analysis of a set of 19 short dialogues between a male and female native speaker (containing 297 orthographic words), as well as 195 single words taken from the website's glossary section. Each orthographic word in our selected dialogues and words in isolation were segmented at the syllable level using Praat. In the case of the dialogues, the utterances were also hand-annotated for the occurrence of phrase boundaries and H and L pitch targets.

To investigate the acoustic correlates of stress and word-level prominence more generally, we analyzed the duration, fundamental frequency (f0), and the intensity of syllables in all words in the two annotated data sets. We were particularly interested in whether these measures were influenced by each syllable's position in the word, displaying a rhythmical alternation of prominent and less prominent syllables that would establish the presence of a bounded, quantity-insensitive stress system. Moreover, looking for cues of a quantity-sensitive (bounded) stress system, we separately inspected subsets of the data without (extra-)heavy syllables. To the same end, we also investigated whether rhyme type influenced the acoustic measures in a way that would indicate heavy syllables attracting stress, and especially whether rhyme type interacted with syllable position in determining the acoustic prominence of a syllable. Our statistical results are based on linear mixed-effects modelling (Baayen et al. 2008).

Our results show no evidence that any syllabic position within the word can be said to be marked with increased prominence (as indicated by increased F0, intensity or duration), nor that there is any evidence of any alternating or regular patterns of prominence that are found within words, as would be expected if the language were to parse words into binary feet. However, we do find evidence for the prosodic marking of the right edge of words, such that the duration of syllables increased at the end of the word, while fundamental frequency and intensity dropped at the word edge (illustrated for the glossary data set in Fig. 1). We propose that this prosodic edge marking does not fall under the definition of word-level stress or prominence, and rather relates to the intonational marking of prosodic word edges. Our results are thus consistent with the conclusion that Inuktitut lacks stress.

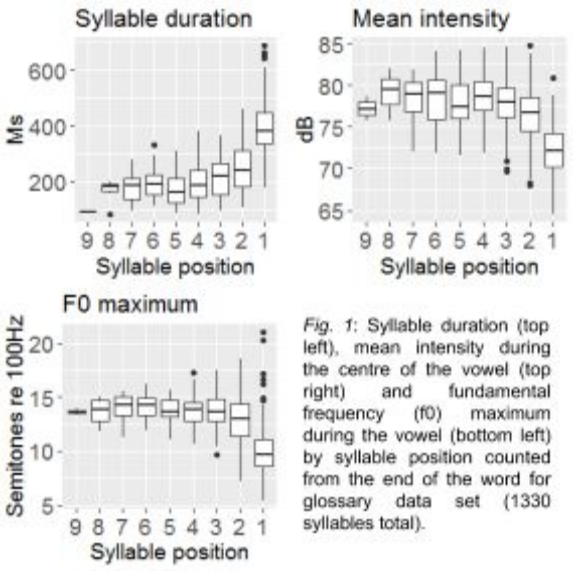

Fig. 1: Syllable duration (top left), mean intensity during the centre of the vowel (top right) and fundamental frequency (f0) maximum during the vowel (bottom left) by syllable position counted from the end of the word for glossary data set (1330 syllables total).

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