

An Acoustic Analysis of Gitxsan Prosody.

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This acoustic analysis provides a much-needed empirical investigation of Gitxsan (G) prosody, including word-level stress and sentence intonation. All data was obtained from three well-established G language consultants, one female (BS), and two males (VG & HH). G is a Tsimshianic language spoken along the Skeena river in Northwestern British Columbia. Crucially, no targeted phonetic study has been done on the acoustic correlates of G prosody. Descriptions of word-level stress and sentence intonation consist of impressionistic analyses confirming observations in Bruce Rigsby’s Grammar (Rigsby, 1986), which is considered to be the primary source on G.

Although Rigsby describes G as “stress-timed” which suggests durational differences between accented and unaccented syllables, Forbes (2015) provides an impressionistic description that G stress is marked by increased intensity and pitch (F0), but not duration. Preliminary results of the present analysis support Forbes’ observation: Stressed syllables were marked by increased F0 and intensity on the stressed syllable, but not increased duration. Table 1 provides the average measurements of mean F0, intensity, and duration, for each token listed in column 1. Measurements were obtained via spectrographic analysis in Praat (Boersma & Weenink, 2019). F0 contours of accented syllables were relatively invariant, suggesting that G employs tonal features to mark accented syllables (Hyman, 2009).

Token	Mean F0 (Hz)	Intensity(dB)	Duration(ms)
a. 'gʷi.la	191 / 161	63 / 56	143 / 140
b. laχ.'ni	192 / 213	74 / 76	335 / 348
c. 'ho:.bix	217 / 195	80 / 78	242 / 356
d. 'ʔo:.tsm	230 / 184	64 / 61	287 / 329
e. 'am.tsʔm	233 / 172	63 / 59	194 / 367
f. 'ixs.da	212 / 175	73 / 68	340 / 198

Table 1: Mean F0 of syllabic nuclei, intensity, and duration for tokens produced by BS

No description of G intonation contours (IC) exists in the literature, however, Rigsby notes that IC remain unchanged between statements and questions. To compare IC between utterance types, 12 minimal sets each containing a declarative, interrogative, and WH-question variant of a sentence were elicited from each speaker. The IC of each sentence was generated using the Prosogram (Mertens, 2004) – an extension to Praat designed for the automatic extraction of IC. ICs were compared within each minimal set. Although declarative statements and WH-questions did not differ, both displaying a falling IC, yes/no questions were marked by a sharp rise in pitch on the final syllable, which is invariably the interrogative suffix /-(y)aa/. Figure 1 below provides comparative prosograms of a declarative sentence (top) and a yes/no sentence (bottom) as produced by VG. The present analysis appears to be the first description of differing IC in G between statements and questions.

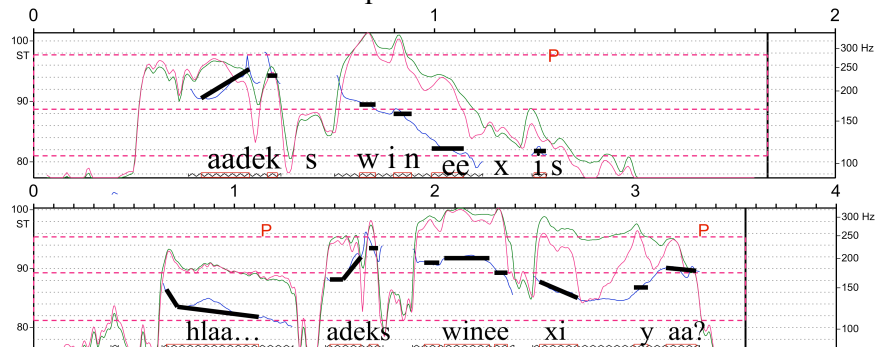


Figure 1: Comparative prosograms of declarative (top) and interrogative (bottom) statements

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