

The Acoustics of German Vocative Chants: Description and Cross-linguistic Comparison

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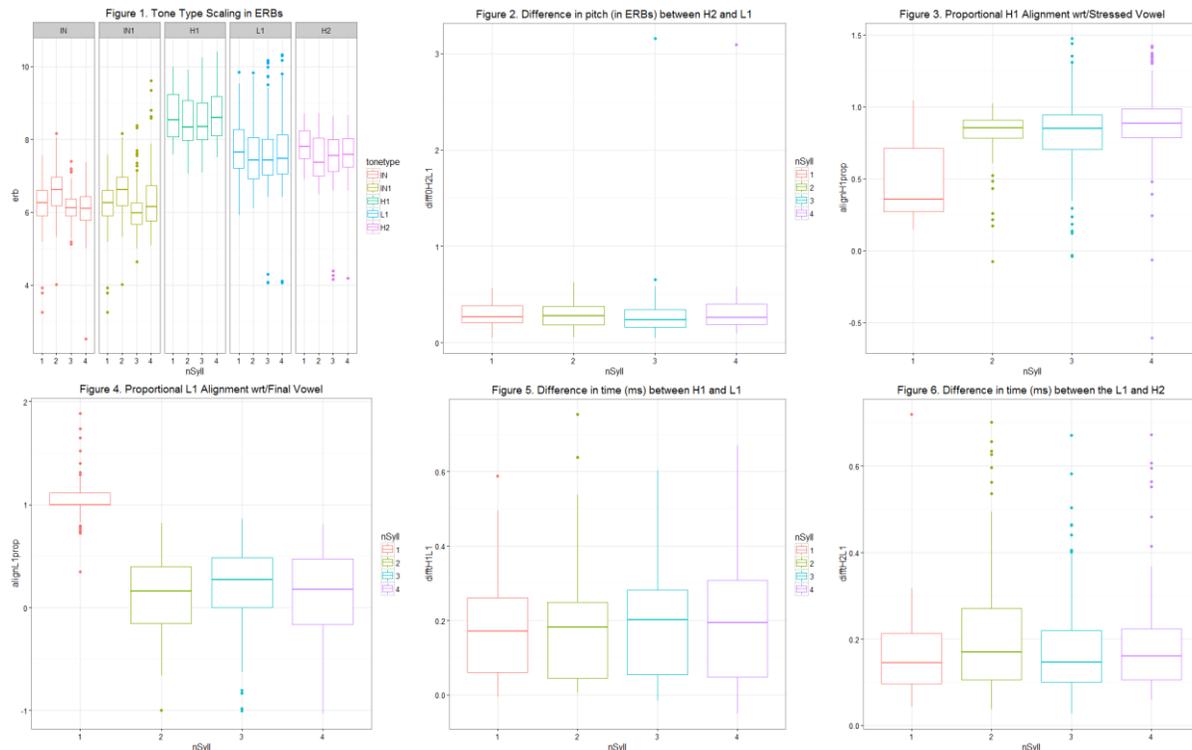
“Miriam, time for dinner!” It is likely you said the name with a vocative chant (Gussenhoven 2004) and, depending on your language, that vocative chant differed (cf. Arvaniti et al. 2015). In the literature these differences are known phonologically, but acoustic information about them is relatively rare. Such information is important for researches interested in cross-linguistic questions such as language interaction or codeswitching. This study’s aims are to: 1. describe the acoustic fingerprint of the vocative chant in German—based on methods and procedures set forth by Arvaniti et al. (to appear); and, 2. by making preliminary comparisons to Arvaniti et al.’s results of Polish, propose how such acoustic information can be useful in cross-linguistic studies of intonation.

In this study a Discourse Completion task was used to elicit vocative chants from twenty German native speakers (Male = 10). They produced chants to call in a child (8 different names) (i) for dinner, or (ii) to chastise him/her. The order of scenarios and names were randomized per speaker. In total, each participant produced 64 tokens each (8 names x 2 scenarios x 4 repetitions). All of the names were matched to the participant’s gender (i.e. male participants saw only male names). Controlling for gender as well as other social and physical variables between the speaker and the fictional interlocutor were based on findings from Borràs-Comes et al. (2015).

The 8 names are divided equally into the categories “sono” (names consisting of (mostly) sonorants) controlled for number of syllables from 1-4; and “VOT” (those including voiceless stops) of either 2 or three syllables. The pitch contour for each “dinner” production was measured (in ERBs) at four points: the start of the contour (IN); the highest point of the contour (H1); the height of a perceivable bump towards the end of the plateau (H2), and the lowest point between H1 and H2. The “chastise” productions varied greatly qualitatively across participants. As such, they will be omitted from this paper and will be further reviewed in another.

R Studio (R Core Team 2015) and *lme4* (Bates et al. 2015) were used to perform a linear mixed effects analysis of the relationship between pitch and tone types and number of syllables. In addition random slopes and intercepts for speaker and item were included. Figure 1 shows an initial analysis summary (N = 9, all Female) of the pitch in terms of number of syllables grouped by tone type. It appears that the overall difference between the H2 (m = 7.69, sd = 0.55) and L1 (m = 7.37, sd = 0.52) is significant ($t(72.5) = 5.094$, $p < .001$) (cf. Fig. 2 for breakdown across syllables). This shows that the calling contours rises in its final part—a finding similar to that of Polish (Arvaniti et al. to appear). The analysis shows that the H1 aligns towards the end of the stressed vowel (2,3,4 syllables: m = 0.85, sd = 0.21) in all but monosyllabic words (m = 0.33, sd = 0.15)—where alignment is in the middle (Fig. 3). Regarding the end of fall after the H* (i.e. L1), in polysyllabic names it tends to align along the start of the last vowel (m = 0.40, sd = 0.24) (Fig. 4)—note that in monosyllabic “Linn” the last pitch-carrying phoneme is not the last vowel. Additionally, it seems that getting to the L1 from the H1 is roughly the same regardless of number of syllables (all syllable counts: m = 0.264 ms, sd = 0.12) (Fig. 5), likewise going from L1 to H2 seems to take the same amount of time (Fig. 6). On average the temporal difference between L1 and H2 is 0.20 ms (sd = 0.14). Data annotation and analysis is still ongoing but will include additional female and male speaker data.

The results from these acoustic metrics are compared with those of Polish and discussed in light of their usefulness for researchers of cross-linguistic issues.



Arvaniti, A., M. Żygiś, & M. Jaskuła (2015). The phonetics and phonology of the Polish vocative chant. In *Proceedings of the 18th International Congress of Phonetic Sciences* (pp. 10-14).

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