

Tone-intonation interactions in Choguita Rarámuri (Tarahumara)

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Uto-Aztecan (UA) languages have complex prosodic systems that have received a considerable amount of attention in the theoretical and areal literature, but little phonetic documentation has been available to date. Choguita Rarámuri (CR; Tarahumara), a UA language of northern Mexico, has both stress-accent and tone with complex morphological conditioning. Stress and tone are not only phonologically independent systems, but are also acoustically distinct; duration and intensity are correlates of stress, whereas fundamental frequency (F0) is the primary correlate of tone (Caballero & Carroll 2013). In addition to using F0 to mark lexical and morphological distinctions (a three-way contrast between HL, L and M in stressed syllables), CR exploits F0 intonationally. As part of a larger documentation project, this paper examines: i) the basic phonetic and phonological properties of intonational structures in CR, and ii) tone-intonation interactions in this language. Specifically, through examination of acoustic and electroglottographic (EGG) data, we evaluate the roles of register, boundary tones, lengthening and phonation manipulations in the intonational encoding of CR, and the interaction between these properties and lexical tone.

We obtained controlled data with native CR speakers and analyzed fundamental frequency of a corpus of target word forms that were balanced for several phonological characteristics and which appeared in declarative constructions. In terms of F0, declaratives show no indication of declination, due to the presence of high boundary tones at the right edge of utterances. We posit that CR intonation involves at least two phrasal levels: Accentual Phrases (APs) and Intonation Phrases. The AP likely corresponds to a prosodic word (word plus enclitics), and is characterized by the following properties: i) each AP is marked by a left-edge M tone; ii) each AP has a stressed syllable bearing a pitch accent; iii) pitch accents depend on lexical tone (HL has a HL*, L has a L*, and M has a H*); and iv) the last pitch accent of the Intonation Phrase (the nuclear one) has an expanded pitch range. We suggest that the association of H* with M tone does not involve overriding of the lexical M tone, but rather the anchoring of H* to a tonally underspecified TBU. In addition to examining the tonal properties of declarative sentences, we measured laryngeal function using EGG data in order to assess voice quality changes as a function of sentence-level prosody. Our preliminary results suggest that phrase-final lengthening, vowel rearticulation, and phrase-final breathiness occur in CR, but might be associated with specific tones.

As in Stockholm Swedish (Riad 2006) and Curaçao Papiamentu (Remijsen & van Heuven 2005), lexical and morphological tones in CR take precedence and associate with stressed syllables, and post-lexical boundary tones associate with a following (unstressed) syllable if the specified tone conflicts with the boundary tone. The numerous attested tone-intonation interactions in CR may be a result of the type of tonal system it possesses, as it has been suggested that ‘restricted’ or ‘low-density’ tone systems may be more likely than languages with high tonal density to deploy F0 to encode intonational contrasts (Gussenhoven 2004, Michael 2011). Closely related Cahitan languages have stress-dependent privative tonal systems (Demers et al. 1999, Hagberg 1989), but there are no studies of possible intonational uses of F0 in these languages. CR, though not a privative system, is ‘low-density,’ given that a tone’s position depends on stress. Further investigation of post-lexical prosody in these languages might shed light on this potential relationship, as well as the diachronic development of tone in this language family.