Punjabi tone and stress (Doabi dialect)
Kiranpreet Nara
University of Toronto
kiranpreet.nara@mail.utoronto.ca

Punjabi is an Indo-Aryan language spoken in the Punjab regions of both Pakistan and India (Lewis, 2015; Shackle, 1972). An interesting characteristic of Punjabi is the development of tone and despite being a language with millions of speakers worldwide (Lewis, 2015), its tone system is not yet fully described. Not much work has been done to shed light on how tone developed and how it works. The present work studies Punjabi stress and tone because first, tone is a rarely studied aspect of Punjabi and this work will shed light on what the tonal contours of the three tones (default, rising, and falling, see (1) in examples below) in various positions within the word look like, see Figure 1 for an example of the tonal contours on monosyllabic words. Second, the stress assignment in Punjabi is described because tone associates with the stressed syllable (Bailey, 1914; Wells and Roach, 1980; Baart, 2003), see (2). Finally, the little available linguistic literature in Punjabi tends to focus mainly on the standard dialect, Majhi, so the present work differs by studying the Doabi dialect of Punjabi.

An acoustic experiment was conducted using five native speakers (2 females & 3 males) of the Doabi dialect. The speakers were recruited from Toronto. They were asked to read a list of 85 words in five random orders. The words were inserted in a frame sentence and the list was written in the Gurmukhi script. The wordlist was controlled for the number of syllables, the type of tone, the placement of stress, and the duration of the vowel. Measurements of rhyme and syllable duration, mean intensity, mean f0, and f0 at five sampling points per rhyme and syllable were made in Praat and analyzed in SPSS. The data was speaker normalized.

The Mixed Models analysis of intensity and duration revealed that the acoustic cue associated with stress is the duration of the rhyme. A similar finding for Hindi is reported in Nair, Abbi, Gupta, and Kidwai (2001). Other factors that also affect the duration of the rhyme are the number of syllables in a word, the position of the syllable, and the type of tone. In tonal words, f0 as well as duration is used as a marker of stress. The following rules of stress were posited: There is only primary stress in the language. The syllable with the longest rhyme, such as a long vowel, receives stress, see (3). If there is no long rhyme then the penultimate syllable is stressed, see (4). Finally, singleton coda consonants do not contribute to the weight of the rhyme, see (5), but homorganic nasal stops and geminate consonants do. In the latter two types of codas, the first part of the geminate or the nasal stop associates with the stressed syllable, see (6) and (7).

As for tone, the default tone has the smallest f0 range whereas the falling tone has the largest f0 range. Falling tone is realized entirely on the stressed syllable whereas for the rising tone, the phenomenon of peak delay is observed unless tone occurs on a word final syllable, suggesting that peak delay is constrained by word boundary. Peak delay is also observed for Mandarin by Xu (2001). Syllables with rising tone have the shortest rhyme duration and those with falling tone have the longest rhyme duration. This is surprising because according to Ohala and Ewan (1973) pitch lowering is faster than pitch raising. One reason for this is that the range of the falling tone is larger than that of the rising tone in Punjabi. Tone association of rising or falling tones occurs when there is an underlying LH or HL tonal contour which associates with the stressed syllable of a word. In the case of no underlying tonal contour, a default low associates with the word and results in a default tonal contour.

This work contributes to a better understanding of the phonological aspects of Punjabi by offering experimental evidence to study its stress and tone systems. How stress is assigned and the types of codas that are relevant in stress assignment is also explored. This work contributes much in regards to the study of tone in Punjabi because the tonal aspects of not only Punjabi, but also other tonal languages spoken in the northwest part of the Indian subcontinent, are severely under-described. For example, Baart (2003) claims that eighteen languages with reported or suspected tone are spoken just in Northern Pakistan and these languages are severely understudied. Some of these languages have only two lexical tones and yet others have more than three tonal contrasts. Therefore, the present work adds to the limited literature

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available on Punjabi language by describing the three tonal contours and shows how the contours associate to words of various lengths.

Examples:

(1) Rising - ʧa ‘tea’
Default - ʧa ‘joy’
Falling - ʧa ‘peek-a-boo!’

(2) o ’dː:r - loan
’brː: mːn dː – cosmic
tː rːː t mː – devotee
kə rː ’aː.l – gong

(3) kə ’jaː.b ‘book’
bo ni ’aː.d ‘foundation’
’naː rː ːl ‘coconut’
go ’vː ’witness’

(4) ’nim bːl ’cloudless sky’
o ’ɾɒn dːa ‘forty-nine’
bo ’neː rː ‘roof’
boundary’

Acute accent = rising
tone
Grave accent = falling
tone

Figure 1: Average normalized F0 (Hz) contours of monosyllables taken at 5 points throughout the word

References


