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**Semantic Variations of Punjabi Toneme**

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**Abstract**

This study highlights that Punjabi spoken in the suburbs of Lahore is losing its tonality to mark semantic variations. This study based on numerical data examines: (a) whether or not Punjabi (spoken in Pakistani Punjab) is spoken with its tonal features (level, fall and rise pitch), and (b) Do Punjabi speakers perceive semantic variations of Punjabi tonal words (*Kora*, *Cha* and *Kera*)?

Acoustic and perceptual data were elicited from 20 Punjabi speakers between 20 to 22 years old, belonging to the suburbs of Lahore, the Punjab. Tonal words: *Kora*, *Cha* and *Kera* with their conventional semantic variations were manipulated at three different positions: Phrase Initial, Phrase Medial and Phrase Final in 27 phrases in order to neutralize effects of stress. Similarly, to neutralize effects of intonation, these tonal words were also recorded in the form of statement and question.

Phonetic analysis and sound manipulations were performed with the help of PRAAT, speech processing tool designed for windows users. Results illustrate that the above mentioned Punjabi tonal words are overwhelmingly articulated with fall pitch and they are perceived with marginal pitch variations in a discourse. Instead of using their phonological knowledge to perceive pitch variations, the Punjabi speakers activate their pragmatic knowledge to entail different meaning of tonal words.

**Keywords:** Punjabi Language, Semantic variations, Tone, Pitch

## Introduction

Many languages of South-East Asia and Africa are tone languages. Punjabi is considered to be one of the tonal languages of Indo-Iranian family. These languages use pitch (the perceived 'height' of the human voice, depending on the rapidity of the vibration of the vocal cords) to signal difference in meaning between words (Avery and Susan, 1992; Ladefoged, 2000). These pitch variations are an important part of language, just as stress and phonotactics in a language. In tonal languages, pitch marks lexical realization of at least some morphemes.

Baart (2003) elaborates this phenomenon: for example when I say (1), I am asking you to show me a whip. When I change pitch of the word *kora* as in (2), I am asking you to show me a horse. When I change it again as in (3), I am asking you to show me a leprosy patient.

- (1) *Menu kōra takao*. Show me a whip.
- (2) *Menu kòra takao*. Show me a horse.
- (3) *Menu kóra takao*. Show me a leprosy patient.

Various typical pitch changes or tones have been identified, e.g. level, fall and rise; these are often further distinguished in terms of pitch levels they span. Pitch patterns of Punjabi word *Kora* can be described as level in the case of 'whip', high-falling in the case of 'horse', and low-rising in the case of 'leprosy patient' (Bailey, 1915). In Punjabi, there are three contrastive tonal contours heard as follows in citation forms: falling pitch: rising onset followed by falling pitch /↘/; leveled pitch: mid level pitch /- /; rising pitch: low onset followed by rising pitch /↗/ (Gill, 1960).

Tone languages use pitch contrasts to keep word apart, in the same way that languages use vowel and consonant contrasts for this purpose (Gussenhoven and Jacobs, 1998 and Wang, 2006). In order to explain the concept of tone languages, it is necessary to lay down the foundation for understanding with a few terms which are related to the concept.

Since tone languages are languages which use variant pitches, and pitch is the first term that should be discussed. All languages which have sounds have pitch differences. In tone languages, those pitch differences are used either to differentiate between word meanings or to convey grammatical distinctions.

Physically changing the pitch of a sound can occur in two ways. The first is the stretching and tensing of the vocal folds: the tauter they are, the higher the pitch. The second is changing the pressure below the vocal folds, the subglottal pressure: the more pressure, the higher the pitch (Catford, 1988). The pitch of an utterance depends on the rate of vibration of the vocal cords, the higher the rate of vibration, the higher the resulting pitch becomes. The tauter the vocal cords, the faster they vibrate and the higher the pitch of the perceived sound (Katamba, 1989). In languages where pitch plays a role, some sequence of segments may have different meanings if uttered at different relative pitches. Pitch variations used in this way are called tones.

Tone languages are languages that use pitch in this way (Sloat and Sharon, 1978). Tones are pitch variations which are used in short stretches of syllable length, such as in small grammatical units like words (Catford, 1988).

The term pitch contour is sometime used instead of tone, particularly in the description of a tone as it affects several syllables (Chalker and Weiner, 1998). There is enough evidence that the pitch contour changes the meaning of tonal words. Similarly, tonal words in Punjabi language mark the semantic variations for example the word *Kora* for whip, horse and leprosy patient, the word *Cha* for: tea, enthusiasm and peep over, the word *Kera* for circle, front portion of a shirt and phlegm.

Previous studies draw on the above theme based on empirical data collection; whereas this study based on acoustic and phonological examines: (a) whether or not Punjabi (spoken in Pakistani Punjab) is spoken with its tonal features (level, fall and rise pitch), and (b) Do Punjabi speakers perceive semantic variations of Punjabi tonal words (*Kora*, *Cha* and *Kera*)?

## **Methodology**

The study setting was University of Management and Technology Computer Laboratory. Of 20 subjects, 10 were males and the rest were females between 20-22 years old, belonging to the suburbs of Lahore. These subjects were selected on the basis of the criteria that their mother language is Punjabi and that they speak it especially in their homes.

Method used in this research was quantitative. A questionnaire composed of three tonal words (*Kora*, *cha* and *kera*), each with three different meaning were infused into 27 phrases (see appendix A). A sample of 10 subjects: 5 males and 5 females was taken to record these phrases.

However, the conventional meanings of the tonal words were carefully embedded in the construction of the phrases. In order to exclude effect of stress, these tonal words were incorporated into phrases at three different positions: Phrase Initial (PI), Phrase Medial (PM) and Phrase Final (PF). Similarly, to neutralize the effect of intonation, these tonal words were recorded in the form of statement and question (see appendix A).

For recording perceptual data, the tonal words, assuming their possible semantic variations were presented to 10 additional subjects: 5 males and 5 females with correct pitch into nine phrases (see appendix B). Each subject was asked to identify meanings on hearing a tonal word with three pitch inflections (fall, level, and rise). The choice of this sample was made presuming the sample was chosen for recording might generalize the semantic variations of the tonal words.

Phonetic analysis and sound manipulations were performed with the help of PRAAT, speech processing tool designed for Windows users. Primary emphasis of this study was to break down pitch patterns of words into smaller units. These smaller units were tone elements, of which there were three: *F*, *L* and *R*. The symbol *F* stands for relatively falling pitch, that is, a pitch level that

is lower than the surrounding pitch levels in the word. And the symbol L stands for level pitch, when there is neither fall nor rise in the pitch. In the same way, the symbol R stands for relatively rising pitch (a pitch level that is higher than the surrounding pitches in the word).

### Analyses and Results

It is evident from table 1 below that the Punjabi speakers articulate falling pitch overwhelmingly to utter the word *Kora* including its three semantic variations that is horse, leprosy patient and whip. A significant percentage 84%, 72% and 54% of the speakers choose only falling pitch to articulate the above mentioned semantic variations. Whereas, a pocket of the speakers (10% and 32% regress to articulate *Kora* for leprosy patient and whip with actual pitch.

**Table 1 Percentage of Pitch Contour of *Kora***

		<i>Kora</i> (horse) (\)			<i>Kora</i> (whip) (-)			<i>Kora</i> (leprosy patient) (/)		
		Rising	Falling	Level	Rising	Falling	Level	Rising	Falling	Level
<b>Word position</b>	<b>PI</b>	2	8	2	4	4	1	6	3	
	<b>PM</b>	-	8	1	3	6	1	7	2	
	<b>PF</b>	-	7	-	7	3	1	9	-	
<b>Intonation</b>	<b>IS*</b>	-	10	2	6	2	1	6	3	
	<b>IQ**</b>	1	9	2	7	1	1	8	1	
<b>Percentage</b>		6	84	10	14	54	32	10	72	18

\* Intonation in statement

\*\* Intonation in question

In table 2 data endorse the finding that the Punjabi speakers (82%, 38% and 46%) use falling pitch in place of level and rising pitches to realize different meanings. As many as (82%) of the speakers articulate the right pitch in case of *Cha* for peep over, 38% for enthusiasm and 48% for tea, whereas rest of the speakers deviate from the norm.

**Table 2 Percentage of Pitch Contour of *Cha***

		<i>Cha</i> (to peep over) (\)			<i>Cha</i> (love) (-)			<i>Cha</i> (tea) (/)		
		Rising	Falling	Level	Rising	Falling	Level	Rising	Falling	Level
<b>Word position</b>	<b>PI</b>	-	7	3	2	1	7	1	3	6
	<b>PM</b>	2	7	1	-	4	6	1	4	5
	<b>PF</b>	1	8	1	-	6	4	-	2	8
<b>Intonation</b>	<b>IS*</b>	1	9	-	1	5	4	-	6	4

<b>IQ**</b>	-	10	-	3	3	4	-	8	2
<b>Percentage</b>	8	82	10	12	38	50	4	46	50

Similar results (like in table 1 and 2) with small deviation are found in table 3. The data here put the onus behind the previous findings that a significant percentage (78%, 76% and 68%) of the speakers uses falling pitch to articulate *Kera* for three different meanings. However, 78%, 20% and 16% of the speakers use correct pitch of *Kera* for the front portion of a shirt, circle and phlegm.

**Table 3 Percentage of Pitch Contour of *Kera***

		<i>Kera</i> (front portion of shirt) (\)			<i>Kera</i> (circle) (-)			<i>Kera</i> (phlegm) (/)		
		Rising	Falling	Level	Rising	Falling	Level	Rising	Falling	Level
<b>Word position</b>	<b>PI</b>	1	7	2	2	6	2	1	8	1
	<b>PM</b>	-	6	4	-	7	3	2	5	3
	<b>PF</b>	-	10	-	-	7	3	1	7	2
<b>Intonation</b>	<b>IS*</b>	1	7	2	-	9	1	3	6	1
	<b>IQ**</b>	1	9	-	-	9	1	1	8	1
<b>Percentage</b>		6	78	16	4	76	20	16	68	16

Perceptual data of the Punjabi tonal words that is *Kora*, *Cha* and *Kera* show a mix picture in figure 1. It is evident from figure 1 that the subjects perceive *Kora* with ratio of 10:10 for horse, 3:10 for leprosy patient and 2:10 for whip, *Cha* with ratio of 5:10 for peep over, 3:10 for enthusiasm and 3:10 for tea, and *Kera* with ratio of 8:10 for shirt front portion, 2:10 for circle and 2:10 for phlegm. The data here seem to validate the finding that the Punjabi speakers on the whole articulate and perceive falling pitch.

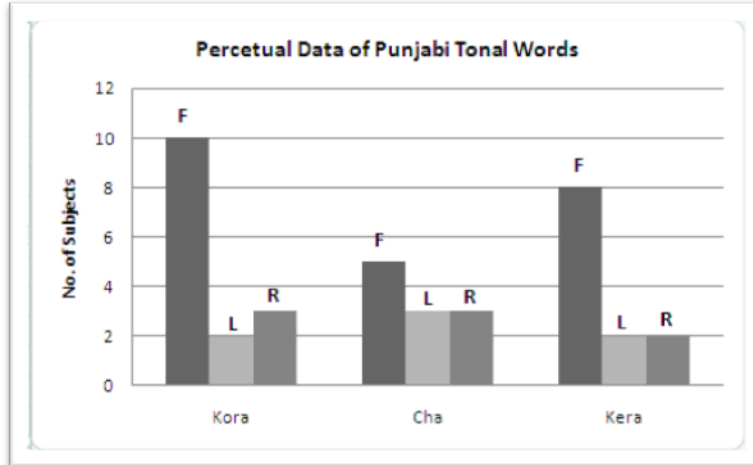


Figure 1

## Conclusion

Acoustic data collected from Punjabi Speakers belonging to the suburbs of Lahore show that the tendency to bring variation in pitch to inflect different meanings is gradually decreasing. It is assumed that they activate their pragmatic knowledge to entail different meaning of the tonal words. It is also found that they choose falling pitch overwhelmingly even in place of rising and level pitch in articulating the tonal words (see table 1, 2, 3 and figure 1 for details).

The reason why they opt for falling pitch instead of rising and level pitches is that rising pitch requires a particular type of glottal abduction controlled by the posterior cricoarytenoid and interarytenoid muscles. The complexity of rising pitch may help to explain the finding that Punjabi speakers prefer to articulate less or non-complex sounds.

The perceptual and acoustic data do not support the research questions: (a) Punjabi (spoken in Pakistani Punjab) is spoken with tonal features (level, fall and rise pitch), and (b) Punjabi speakers realize tonal changes of Punjabi words. However, it is predicted that Punjabi tonal features are endangered because of: (1) influence of other languages such as Urdu, English, Hindi and (2) Punjabi families encourage their children to communicate in Urdu and English rather than in Punjabi language in their informal and formal situations.

## Colophon:

I am very thankful to Ms. Waqasia Naeem for her help in recording and analyzing data for this study.

## Appendix A

### Tonal Words at Different Phrase Positions

*Kōra* (horse)

koje da ray kala vava sadzda e  
bili kṛta te koja mere pasandida dzanvar nē  
mere kar ik koja e

*Kōra* (whip)

angrez koje nā kṛdiā nū marde si  
koje nā kṛdiā nū marca dzandā si  
māe dzalad de hatḥ vitj koja vekha

*Kōra* (leprosy patient)

koja dovē latā tū langya si  
māe hospatal vitj koja vekha  
māe latifa sanaea te koja has pea

*Chā* (to peep over)

sana nē boa kḥol ke kea tja  
tja tja nā kar  
māe tja kṛta te o dar gea

*Chā* (love)

meri masi mera baya tja kṛdi e  
tja te pear nā renā tjabī da  
us nē minū tja nā kḥana kḥavasa

*Chā* (tea)

tja mera pasandida mṛrub a  
mere lai tja te biskut le ke a  
māe us nū tja palai

*Kēra* (front portion of shirt)

apnā kera vekha  
kere te karhai vava tjangi lagdi  
is kurti da kera vava tang e

*Kēra* (circle)

kera banā ke vekha  
tjalo ao kera pa ke khedie  
pak fodz nē. durmanā da kera pa lea

**Kēra (phlegm)**

kera set lai tjanga nē  
set lai kera tjanga nē  
rnh kera pē andā

**Intonation (Question and Statement)**

māe koya vekha  
rs nē tja kea  
kera te vakhai



## Appendix B

### Perceptual Data

*Kora* (horse)

bili kirṭa te koja mere pasandida dzanvarnē

*Kora* (whip)

māe dzalad de bath vitf koja vekhea

*Kora* (leprosy patient)

māe haspatal vitf koja vekhea

*Cha* (to peep over)

māe tfa kṭa te o dar gea

*Cha* (love)

meri masi mera baya tfa kardī

*Cha* (tea)

mere lai tfa te biskut le ke a

*Kera* (front portion of shirt)

apnā kera vekha

*Kera* (circle)

tfalo ao kera pa ke khedie

*Kera* (phlegm)

Set lai kera tjangā nē

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