Intonational Realization of Doubt and Taunt in Urdu Assertive and *Kya*-Questions

By

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DECLARATION

I **Anam Amin** Student of **M.Phil Applied Linguistics** ID **F2020084002** aware of and understand the university's policy on plagiarism and I certify that this thesis titled **"Intonational Realization of Doubt and Taunt in Urdu Assertive and *Kya*-Questions "** is my own work, expect where indicated by referencing, and the work presented in it has not been submitted in support of another degree or qualification from this or any other university or institute of learning.

All experimental work belongs to me; the collaborative contributions have been indicated clearly and acknowledged. Due references have been provided on all supporting literatures and resources.

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The dissertation titled "**Intonational Realization of Doubt and Taunt in Urdu Assertive and *Kya*-Questions**" submitted by **Anam Amin** has been accepted in partial fulfillment of the requirements for the degree of MPhil in Applied Linguistics by the Department of Linguistics and Communications, Institute of Liberal Arts, University of Management and Technology, Lahore.

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DEDICATION

I dedicate

My work to

My Parents and My Son

for their endless support during my whole educational career.

Acknowledgement

First of all, and foremost I would like to thank Allah Almighty, Who designed my ways to meet my passions and help me to complete my study within assigned time under professional parameters of this research. A big thanks goes to my respected co-supervisor Dr. Sarmad Hussain who acknowledged my research proposal, listened to my unpacked ideas and supervised me throughout this journey giving his generous teachings to me, whenever I raised my query. It was not possible for me to do my research without his technical and theoretical teachings, and quick reviews and feedback on my work.

I am heartily thankful to the administration of DLC, UMT and my departmental supervisor Miss. Sidra Haroon who allowed me and facilitated me to explore my research under co-supervision of Dr.Sarmad Hussain. I cannot forget to say a big thanks to the team and management of Center For Language and Engineering who allowed me to use their booth-room, and provide technical support whenever it was needed. This research is not based upon unbaked assumptions, rather is based upon scientific study, as my co-supervisor Dr.Sarmad Hussain advised me;

"The study of intonation is an art that needs careful scientific analysis and scientific evidence to prove your findings."

I suppose my work as a ground to add my contribution and explore it further, in the intonation of my native language Urdu under this scientific research and findings.

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Abstract

The thesis represents the underlying system of different intonation patterns of Urdu speech. It illustrates that how different tonal patterns are possible against one syntactic structure depending upon different contexts and emotions. The study of Urdu intonation and its stress patterns is noteworthy in fields of Urdu language teaching as foreign language, speech pathology and in the development of artificial intelligence and machine-based translation systems. Present study based on scientific research methods explores the intonational patterns of Urdu assertive and declarative statements and Urdu *kya*-questions. The experiments and analysis are conducted to test the hypothesis that these Urdu assertive and declarative statements, and *kya*-questions when realized with taunt and doubt show different tonal patterns. The study also looks into the effect of SOV and SOOV syntactic structure on intonational patterns of every theme and category to test if the effect of subject Vs. object focus shift is a cue to intonational differences of taunt and doubt. However, the complete study revolves around the phonological layer of intonational patterns of prescribed categories and themes. The whole analysis reveals that there is a significant difference in tonal patterns of Urdu statements and *kya*-questions. Not any difference is found in tonal patterns of assertive and *kya*-questions, therefore, the study postulates that the difference of assertion and declaration in Urdu statements is caused by emphatic stress not a tonal stress. Study also asserts that there is a significant difference of tonal patterns of doubt and taunt in Urdu (assertive and declarative) statements and in Urdu *kya*-qusetions. Hence, the findings reveal that the shift of subject

Vs. object focus a cue for difference of tonal patterns in themes of taunt and doubt.

Chapter-1

1.1. Introduction

Prosodic elements provide naturalness and linguistic input for an utterance. Such elements include stress and intonation, naturally communicating language, and its different emotions (e.g., anger, happiness, and sadness). The present study aims to find intonational correlations in Urdu *Kya*-Questions (interrogative) and declarative statements. We assume that these statements can carry the negative implications of taunt and doubt, while also communicating assertion or seeking information depending upon intonational and stress patterns. For example, an Urdu *kya*-question, *kya tum gaaRi calao gi?* "Will you drive a car?", can be a question (info-seeking statement) in one context but in another context, the same question can carry the negative implicature of doubt or taunt. The same behaviour is observed in the case of declarative sentences; e.g., in Urdu, the sentence, *tum khana pakaao gay* "You will cook food." communicates assertion in one context but in another context, the same statement implicates doubt or taunt.

This study will analyze the declarative and assertive statements in Urdu to find the intonational differences between doubt, taunt, and assertion. The understanding of the prosodic features is a complex task as similar changes may happen for the different emotions i.e., there is not a significant difference between L% boundary tones of anger and happiness boundary tones suggested by Urooj et al. (2021). Statements with one tone may communicate dual function in conversation, for example, as noticed by Arvaniti (2020 and 2019) Greek wh-questions with flat ending tones that are generally used to seek information may carry feelings of doubt or taunt in another context.

Although previous work in Urdu intonation discusses the intonational and prosodic correlates of happiness, sadness, neutrality, and anger (Urooj et al.2021), no work is found on Urdu intonation of doubt, taunt vs assertion.

1.2. Research Aim

The study intends to find the difference in intonation patterns of natural speech when uttered to communicate implicatures of doubt and taunt. Also, we know that simple statements are of two types assertive and declarative. The present study intends, to find the type of stress or intonational difference between these two categories of simple statements. We assume that in our daily life conversation a statement can be uttered using different intonation patterns to communicate different meanings.

1.3. Research Hypothesis

We hypothesized the same phenomenon to examine the intonational cues, when a speaker utters a positive statement but implicates a negative emotion of doubt and taunt in Urdu declarative and assertive statements, and also in Urdu *kya*-questions.

1.4. Research Objectives

- To identify the interference of intonational effect in Urdu declarative, assertive, and *Kya* questions.

- To find the intonational difference among implicatures of doubt, taunt, and assertion. And doubt, taunt, and interrogative-*kya* within the same sentences of Urdu language.

1.5. Research Questions

1. What are the intonational cues of doubt, taunt, and assertion in Urdu assertive and *kya*-questions?
2. What is the effect on intonation due to the focus shift between Subject and Object in taunt Vs. doubt?
3. How do doubt and taunt differ at the intonational level in Urdu assertive and *kya*-questions?

1.6. Significance of The Study

Urdu is claimed to be the most extensively spoken and studied languages among South Asian Languages. Understanding and inquiring Urdu linguistics is needed for efficient teaching of Urdu language as a foreign language. The study of intonation has its significance for spoken Urdu language in reference to its context. It facilitates language comprehension in regard to its grammatical functions, and context, making bridge with sociolinguistics and discourse as well. It explores the patterns responsible for meaning making, meaning changing and identification of emotions and personal attitudes. Thus, its application facilitates to find meaning beyond the words. Moreover, intonation patterns of language are significant for speech and language pathology. The intonation of Urdu is significant to find stress patterns helping pathologists to find articulatory disorders depending on native language. Also, the development of intonation is important in speech therapy of

people suffering aphasia. Technology based speech corpora are integral part for development in artificial intelligence. The automated speech to text system is trained on intonation patterns of language to recognize natural speech. Herein, the study of Urdu intonation is significant in this era of artificial intelligence to train efficient speech automated and recognition systems and text to speech systems. Different scholars have been working to explore the intonational patterns of natural speech in Urdu and the Hindi language. Western scholars Arviniti et al. (2020) in Greek and Jeong (2018) in English have explored the intonational differences in one type of sentence when uttered in different contexts. Urooj et al. (2021) have defined the intonational cues of happiness, anger, and sadness in the natural speech corpus of Urdu declarative and yes/no questions. However, not established work is found in the Urdu language, which is based upon the intonational patterns of sentences that implicate the negative meaning of doubt or taunt, while doubt and taunt are two integral parts of natural speech.

This study is an experimental study, which intends to find the intonational patterns of taunt and doubt in Urdu assertive and declarative and Urdu *kya*-questions, also this study intends to find out the prosodic cues that make these intonation patterns different. The study is important in its theoretical implications to develop intonational phonology of Urdu speech. Future dimensions of the study will provide a rationale to develop an in-depth analysis on phonetic grounds. Since the development of MAE-TOBI, several languages have developed their own developed TOBI system. The study foresees to make an addition to the development of the Urdu intonation on Phonological grounds.

On practical grounds, the study is significant in training the models of automated speech processing systems of Urdu language to interpret and recognize

emotionally sensitive Urdu speech of taunt and doubt for automated speech recognition systems.

1.7. Delimitations of The Study

The study of intonation involves the analysis of stress at lexical, syllable, and morpheme levels. It involves the analysis of F0 contour and its configuration at the phonetic layer as well. The present study, due to a limited time and scope of M.Phil dissertation, is restricted to find the intonational patterns and their differences through analysis of pitch contours of utterances. Thus, the discussion of the present study moves around the intonation patterns and focused entity of the utterance which creates the difference in meaning in elicited context.

Moreover, Intonational models are trained on big corpora to analyze their F0 rationale. But, the present study is designed to cover 150 Urdu assertive and declarative sentences and 95 Urdu *kya*-question realized in targeted emotions. The data is analyzed manually by the stylization of the pitch contours of every utterance which requires more time. That is why the data is intentionally short-listed to highly frequent rated utterances because of time limitations. As this is an experimental study that is why the data is collected in laboratory settings but the naturalness of emotions in the data is maintained by providing speakers with elicited context.

CHAPTER-2

2.1. Literature Review

This section will deal with general introduction of intonation and its definitions. The section will cover the background of intonational phonology and its theoretical development from Pierrehumbert (1980) to present. The section is further divided into five subsections. These sections elaborate the intonational phonology of western languages and theoretical development of intonation, intonational phonology of South Asian Languages and intonational phonology of Urdu and Urdu stress.

2.1.2. Intonation

Intonation in phonetics is a pattern of an utterance that expresses the difference of meaning and difference of one type of phrase or sentence from others. Heusinger (2007) posits that the sentence type presents the general class of the statement while intonation represents the specific kind of speech (p.24). Wagner (2008) classifies function of intonation at three levels which are lexical, sentence, and discourse/dialogue level. Wagner (2008, also noticed by Jabeen, 2010) claims that the discussion of intonation in a broader sense refers to features such as stress, tone, and accent whereas, in its narrow sense, intonational studies deal with the overall meaning of a phrase or sentence. Garding (1993) posit intonation to refer fundamental frequency (F0) patterns of a speech. Defining it as:

> "Intonation is correlated with a rhythmic pattern which are made up of accented and unaccented syllables. While accented syllables and boundaries are considered as more significant F0 points to mark intonation." (p.63)

Selkirk (1986), In her seminal work on prosodic phonology and its domains, describes the following properties of the prosodic hierarchy. It consists of prosodic (phonological) categories of different layers. i.e., syllables, foot, prosodic word, phonological phrase, intonational phrase, utterance. And for phonological representation, they are arranged into layers according to that hierarchy. Buring (2008, 2013) asserts the intonational (prosodic) labelling of English different from other languages depending on the primary focus. He illustrates it as SOF (subject of focus) indicating that SOF is only representing stress while secondary focus carries both stress and accent. But generally, the hierarchy of prosodic analysis comprises of intermediate phrase and an accentual phrase. Jun (2014) and Selkirk (1986) suggest 'Intermediate Phrase' as a 'Phonological Phrase' and an 'Accentual Phrase' as a 'Prosodic Phrase'. Beaver and Velleman (2011) develop a theory to explain the assignment of primary and secondary prominence in English, but there is no provision found for accent-less sentences with flat F0. However, English sentences do have a nuclear accent even when uttered in broad focus. While they assert the realization of complex material within an intonational phrase. (p.1673)

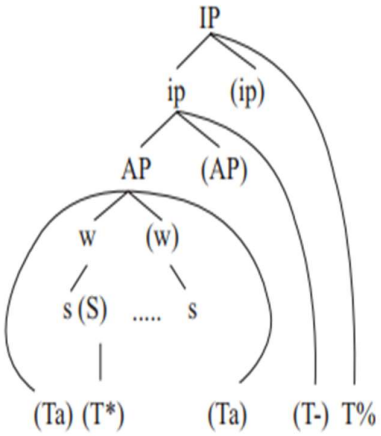

Figure 2.1. Hierarchy of intonational phonology, Jun (2022).

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Liberman (1975) and Pierrehumbert (1980) presented the Autosegmental-metrical Theory of intonation for British and European languages. This presents that intonation consists of a string of L (low) and H (high) tones (i.e. a string of tonal autosegments) at the phonological level and these tones are associated with metrical heads and phrasal boundaries. These levels may be combined to produce bitonal utterances such as L+H*, L*+H, etc. Generally, pitch movements in this theory can be divided into two types of tones: pitch accent and boundary accent (Banziger & Sherer, 2005; Ladd, 1996). Since the early 1990s, it has given rise to a whole series of ToBI (Tone and Break Index) transcription systems for the intonation of a variety of languages, and on this basis, it is widely presupposed in discussions of prosodic

structure and the relationship between intonation and information structure (Ladd, 2012).

The intonational phrase is a primary unit of meaning analysis in intonational phonology (Pierrehumbert, 1980 Liberman, 1975). An intonational phrase (IP) consists of one or more intermediate phrases (ip). ip consists of one or more pitch accents and a simple high or low tone. The pitch accents have two levels i.e., H (high) and L (low). Both these pitch accents are marked with a (*) mark. The end of IP is marked with an additional high (H) or low (L) tone which indicates the boundary tone by adding % with it. The end of IP is also an end of ip (intermediate phrase). The four intonational phrases in European languages can be LL%, HL%, LH%, HH%. The phrase tone is determined by its particular sequence of pitch accent, phrase accent, and boundary tone which is H*LL% for declarative, while L*HH% for interrogative statements (Pierrehumbert and Beckman, 1986).

The acoustic analysis of Greek wh-questions (Baltazani et al. 2020) with two distinct tones represent as L*+H L-!H% and L+H* L-L% (within the intonational system of Greek) categorically performs information-seeking questions with the high ending, L-!H% tone, but those with flat tone ending L-L% implies an assertive force to the addressee. Arvaniti et al. (2020) assert ending flat-tone in Greek wh-questions may also carry negative implicature of doubt depending upon elicited context and perceived context of the addressee. While Baltazani et al. (2020), explain high-ending tone in non-information seeking wh-questions where contexts could be interpreted as sarcastic or ironic. Jeong (2018) asserts the existence of two types of rising declarative in English, one is assertive rising and the second is inquisitive rising declarative having different intonational contours and distinct discourse that

correspond roughly to H* H-H% and L* H-H%, respectively. He further explains that these two different types of declaratives have marked differences regarding their meaning and function depending upon the context of utterance. Falling tone at the end of the sentence indicates a declarative sentence and rising tone indicates doubt, uncertainty, or question (Heusinger, 2007).

2.1.3. Theoretical Development of Intonational Phonology

The work of Pierrehumbert (1980, 1983) and Ladd (1983) in form of ToBI and Auto-Segmental Metrical theory (AM) are considered as theoretical view point to study intonation in western languages. But different theories have been presented before AM model of intonation and also several notions in different languages have been developed after Pierrehumbert's AM and ToBI models of intonations. These emerging notions depend upon different stress patterns of languages and their tonal cues. Also, several researchers transcribe phonetic and phonological patterns based upon these developing theories (Jun, 2014). The development of these AM and ToBI based intonational theories are discussed in this section.

2.1.3.1. Theory of Association

The notion of "phonological association" between tune and text was first presented by Leben (1973), and Goldsmith (1976). Its contribution is recognized in AM theory. In classic AM treatments, the tonal arrangements are associated with phonological and phonetic levels.

The principle of association deals with a link between the autosegmental tonal tier and prosodic domain. Where the tones are accessed at syllable level instated of foot level. The rules defined by Goldsmith (1976) also discussed by D'Imperio (2000) aligns the association relation between a tone T and a syllable σ. It specifies that the speaker will produce and perceive the physical realization of T together with the segments that compose σ (i.e., within the same time). In Autosegmental Theory a tone is analyzed at pitch level. The concept of starredness of a tone is linked to classical autosegmental theory and is closely related to the concept of association. Accentual languages are denoted in terms of association, in which a tone and its specific vowel are marked with an asterisk and are selected first in terms of association procedure. A pitch accent denotes the most prominent word in an utterance, in Languages like English and Italian such a tone is associated with its stressed syllable. This represents that pitch accent can occur only on the syllable that is marked as stressed. For example, the syllable "bil" in the English noun "billow" is marked as stressed but it is not accented in "below" where the second syllable carries stress (D'Imperio, 2000). An accented syllable is marked as a high or low pitch accent or combination of two.

Figure 2.2. Schematic representation of association for tone and syllable. Figure.2.2. (D'Imperio, 2000; Figure. 1.5.)

2.1.3.2. Contour Interaction Theory

Ladd (1983) explained the significance of phrasal contours in European languages correlating the shape of F0 contour with grammatical meaning of utterances such as ‘declarative’ or ‘constitution’. Further, he elaborates the factors which affect F0 contour are emotions, syntactic boundaries, accent, and emphasis are not dependent upon phrase contour but generate their own local F0 configuration. The CI model assumes a rigid classification of grammatical and expressive uses of Intonation. But, Pierrehumbert (1981) presented a different view of F0 contour based on ‘Phonological Units’ instead of functional categories. This intonational view is more comprehensive and is based on Tone Sequence (TS). TS theory treats intonational tunes based upon pitch accents that are considered simpler tonal elements. The model allows certain basic assumptions and insights into the autosegment (Goldsmith, 1976) and the metrical theory (Liberman,1979; Selkirk, 1980). However, particularly prominence and pitch are conceptually separate but phonetically independent aspects of phonology. Ladd further elaborates contours as:

> “Since the tone features specify points rather than contours, there are in a sense only two dimensions to be considered: F0 and time. Acoustically, that is, we can specify a tone in terms of how high it is, and when it occurs relatively to the segmental string. However, as discussed above, acoustic dimensions are not to be confused with phonological ones. The model assumes that several features may interact to specify a given output on a single dimension. In particular, F0 may be described through the interaction of different features of peak height; e.g., one feature might lower a peak by a certain amount concerning a preceding peak, while another would raise it for a speaker-specific standard reference value. The acoustic output is described in

> terms of the single dimension F0, but the phonological structure is more usefully specified in terms of multiple factors which affect the output in different interacting ways (p;728).

Tones are concatenated by the transitions of F0 contours. These transitions are not only straight lines but they are composed of transitions of High accents and low accents. Pierrehumbert (1980) explored the transitions of High accents between high peaks. Ladd (1978) suggests the stylized version of intonational contours of analyzing such High transitions to get sustained pitch throughout the transitions.

2.1.4. Autosegmental-metrical Theory of Intonation for British And European languages

Liberman (1975) and Pierrehumbert (1980) presented the Autosegmental-metrical Theory of intonation for British and European languages. This presents that intonation consists of a string of L (low) and H (high) tones (i.e., a string of tonal autosegments) at the phonological level and these tones are associated with metrical heads and phrasal boundaries. These levels may be combined to produce bitonal utterances such as L+H*, L*+H, etc. Generally, pitch movements in this theory can be divided into two types of tones: pitch accent and boundary accent (Banziger & Sherer, 2005). Since the early 1990s, it has given rise to a whole series of ToBI (Tone and Break Index) transcription systems for the intonation of a variety of languages, and on this basis, it is widely presupposed in discussions of prosodic structure and the relationship between intonation and information structure (Ladd, 2012).

2.1.4.1. Intonation Phrase, Pitch Accents and Boundary Tones

The intonational phrase is a primary unit of meaning analysis in intonational phonology (Pierrehumbert, 1980 Liberman, 1975). An intonational phrase (IP) consists of one or more intermediate phrases (ip). ip consists of one or more pitch accents and a simple high or low tone. The pitch accents have two levels i.e., H (high) and L (low). Both these pitch accents are marked with a (*) mark. The end of IP is marked with an additional high (H) or low (L) tone which indicates the boundary tone by adding % with it. The end of IP is also an end of ip (intermediate phrase). The four intonational phrases in European languages can be LL%, HL%, LH%, HH%. The phrase tone is determined by its particular sequence of pitch accent, phrase accent, and boundary tone which is H*LL% for declarative, while L*HH% for interrogative statements (Pierrehumbert and Beckman, 1986). Ladd (2008) provides a frame of AM Model for different F0 contours.

Monotonal low pitch accent L*: This tone is realized as a local F0 valley on the stressed syllable.

Monotonal high pitch accent H*: The F0 peak aligned with the stressed syllable is labeled as H*.

Bitonal pitch accents: Pierrehumbert and Hirschberg (1993) report the presence of two pitch accents in the English language. These accents can be illustrated as L*+H, L+H*, H*+L, and H+L*. H* indicates an immediate high peak whereas in the case of L+H* there is a pronounced valley before the peak and the peak occurs on the first syllable. While L*+H denotes the stress on the second syllable.

Bitonal L*+H is labeled when an F0 valley is realized on the stressed syllable followed by a rise culminating in an F0 peak after the stressed syllable. There is conflict among experts about treating H* and L*+H as distinct tones or paralinguistic variations of the

falling and rising-falling accent. The confusion arises specifically when two peaks are realized consecutively and the F0, instead of rising continuously from one high tone target to another, is low between two rises. This drop in F0 has been interpreted as either a mere 'sag' or 'scoop' between two F0 peaks or an H* followed by an L*+H. However, the term 'delayed' peak to describe L*+H pitch accent is used (Ladd 1983).

Bitonal L+H*: In this pitch accent, the L starts before the stressed syllable and rises to meet the H tone on the stressed syllable. Although there are disagreements between labeling a tone as L+H* vs. H*, because both tones are realized as a local F0 peak on the stressed syllable preceded by low F0. It has been suggested that the rise in F0 in L+H* is sharper than the rise from low F0 to monotonal H*. However, Ladd (2008) suggests that the difference between these tones is debatable that can be resolved by collapsing them into one kind of rising tone.

Bitonal H+L*: In this pitch accent, the L* is realized on the stressed syllable where the L* is preceded by a high unaccented tone. This contour is potentially ambiguous with a monotonal L* tone.

Bitonal H*+L: pitch accent is realized when the H tone aligns with the stressed syllable followed by lowering F0. There is also controversy about the distinction between H* and L+H*. When two subsequent H*s are produced, the sagging F0 between them can be aligned to the first F0 peak and the sequence will be annotated as H*+L and the following peak as H*. On the other hand, the low F0 between two peaks may be realized on the second one, thus, resulting in H* on the first peak and L+H* on the second peak. Ladd (2008) concluded this discussion under the concept of downstep. He explained that when two adjacent H tones are produced, the second rise may or may not be

downstepped concerning the preceding peak. Herein, there is a need to propose two different pitch accent types. He claimed that if downstep is considered an optional phonological process, the two sustained peaks may both be annotated as H*, irrespective of their F0 scaling.

Phrase accents or boundary tones are referred to as edge tones. Likewise, pitch accents, phrase accents, and boundary tones are either monotonal (L, H) or bitonal (LH, HL). Khan (2014) suggests Tritonal IP boundary tones in Bengali. But generally, Tritonal boundary tones are infrequent in AM based analyses. Ladd (2008) asserts that in English, a phrase accent is produced 'soon' after the last pitch accent in a phrase (p. 102). When the last pitch accent is realized before the end of a sentence, the phrase accent may span across two to many syllables before a boundary tone is realized at the end. However, the last phrase accent is realized at the end of a phrase, when both the phrase accent and the boundary tone may be realized on a single syllable leads to tonal crowding. That might be the result of the truncation of tones.

Phrase accent H- is realized as an F0 peak after the last pitch accent in a phrase.

Phrase accent L- The L phrase accent is typically realized as a low F0 target after the final pitch accent in a phrase.

End boundary H% is realized by a rise in F0 at the end of a sentence. It is preceded by a high phrase accent, the H% is framed by upstepping the F0 so that H% is scaled higher than the H- phrase accent.

End Boundary L% is realized by lowering the F0 to the bottom of a speaker's pitch range at the end of a sentence is marked as L%. When preceded by a high phrase accent, the low boundary tone is realized by sustaining the pitch level instead of lowering it further. This tone is realized due to the failure of rising the F0 at the end of a phrase. Herein, the lack of rising is labeled as L%.

Start boundaries %L and %H may be marked at the beginning of a sentence in English, the initial boundary tones have a specific purpose in discourse and are used to indicate topics and turn in a conversation (Couper-Kuhlen 2003).

Ladd (2008) has not prescribed any frame that could provide a velar distinction between phonetic variation and phonological tones. This query mostly ended with the recognition of ambiguity between tones and a statement imposing that the distinction between pitch accents and phrase accent depends upon different contexts. Herein, the discussion reveals that the same F0 contour may be labeled in multiple ways and the final selection of one label over another is a matter of one's theoretical assumptions regarding downstep, upstep, and the utility of phrase accents. Many researchers working on developing an AM based intonational analysis in languages other than English have modified these tone labels to describe their language-specific inventory. It is also important to notice that the labeling of pitch accents in the AM framework is based on the alignment of a starred tone with the lexically stressed syllable.

2.1.4.2. Tonal Crowding and Truncation

When more than one tone aligns with the same tonal boundary tone TBU, this results in tonal crowding. This may lead to early/delayed alignment of tones or adjustment in their scaling (D'Imperio 2012). Similarly, if there is a lack of segmental material to anchor all the tones, some of them may be truncated. Sometimes, the tones may be deleted when the speech tempo is fast. Ladd (2008) suggests that some languages show restrictions on the number of tones to be realized on a single tone bearing unit (TBU). Gussenhoven and Jacobs (2017) further suggest the application of

a ‘no crowding constraint’ in a language to limit the surface realization of tones on a single tone bearing unit. Gussenhoven and Jacobs assert the realization of surface tones is governed by the no crowding constraint to represent the realization of double tones as single.

Some languages show tonal crowding which results in either the truncation of tones or their compression. Languages vary in their choice of compression or truncation to resolve this pressure. Khan (2014) refers to it as “concurrent boundary tone overriding”. He explains that the sentence-final accentual phrase (AP) in Bengali declarative sentences does not have the default LH contour as the final peak is truncated and the low boundary tone is realized on its TBU. Similarly, in a sentence-final AP in French declarative (Sun-Ah-Jun and Fougeron 2002), the H* tone in the default LHLH* is deleted at the surface level and the L% IP boundary tone is produced as an end tone. This happens because the H* of the AP and the L% of the IP needs to be realized on the last syllable of the sentence, which results in tonal crowding on the same TBU. Similar findings are also reported for Hindi (Sengar and Mannell 2012), Korean (Sun-Ah-Jun 2012), and Urdu (Jabeen et al. 2018). Significantly, Ladd claimed that different strategies that are used to avoid tonal crowding are mere phonetic variations and do not affect the phonological structure of an intonational contour.

Pierrehumbert (1980) and Limberman and Pierrehumbert (1984), also cited in Pierrehumbert and Hirschberg (1990) elaborate on upstep rises in English. When a high plateau is further followed by an additional rise at the end of a phrase, this IP is marked as HH%. While it is different from HL% which is marked when a high plateau does not follow any drop at the end. While Jabeen (2019) reports the H^ as upstepped high boundary pitch phrase accent AP in the Urdu Language.

A down step is compression of pitch range after double tone accents. Pierrehumbert and Hirschberg (1990) define downstep as descending stair case in pattern of F0 contour. Beckman et al. (2012) prescribe "!" punctuation with high H to represent downstepped pitch contour (Frey, 2007) and also Arvaniti (2007, 2015) denotes !H down stepped phrase accent while !H% is suggested to represent downstepped and midlevel pitch contour.

2.1.4.3. AM Based Prosodic Cues

Pierrehumbert's (1980) definition of an IP delimits the phrase than defines it. She defines that an IP is cued by the occurrence of boundary tones L% or H%, bitonal or tritonal contours. More than one intermediate phrase may be grouped to form one IP. The ip is defined as a prosodic unit that has at least one pitch accent and each pitch accent defines an AP. All the levels of prosodic phrasing are explained regarding one another. Both an AP and an ip carry a pitch accent but the ip can optionally have more than one pitch accent. Languages that do not have lexical stress, instead use phrasal prominence, intonational analyses have typically proposed tonally demarcated APs and no ips, e.g., Jun (2012) for Korean, and Jun and Fougeron (2000) for French.

Not all languages use all levels of phrasing proposed in the prosodic hierarchy. For languages like English, the evidence for the existence of APs is still in debate but there is strong evidence for APs in Japanese (Beckman and Pierrehumbert 1986). For Tamil, Keane (2014) proposed only APs and IPs, though she did not deny the possibility of another level of phrasing, ip, between these two phrases.

The AM based analyses of different languages believe on intonational cues and segmental processes than phrasal phonological phenomena. For example, Jun (2012), in her discussion of Korean intonation, reports that an AP is the domain of obstruent tensing and IP is the domain of obstruent nasalization and spirantization.

Although, the AM based analysis claims that an IP is the equivalent of a sentence and an ip is equal to a syntactic phrase, the general accounts of the intonational phonology of a language denies from evoking syntactic evidence for prosodic phrasing. All the analyses of various languages presented in the Prosodic Phonology series, edited by Jun (2012) offer accounts of the intonational phonology of respective languages without syntax reference.

Tune-text alignment is the component of the grammar of intonation, in this system text is segmented into a grid as listed by Pierrehumbert (1980). The high and low tones are basic elements of pitch accent that can be monotonal or bitonal. Bitonal tone accents are comprised of two tones joined by the "+" sign, as in L+H). The subsequent tones LH represent two different tones depending on the stressed syllable. The association in such a case is marked with an asterisk specifying which part of the tone is stressed. In such a case the grammar of intonation is either L*+H or L+H*. L is associated with stressed syllables while H is realized to specify the distance from L and vice versa. Such features are prescribed as “a feature controlling alignment with a text”.

In addition to the notions of starredness and association, Pierrehumbert's work is also important in that it introduces a notion of tone that differs from the very concrete notion of "Tone Target " embodied in Bruce's work. For Bruce, all pitches are implemented phonetically in tangible targets (later called “turning points”), each

characterized by a specific f0 value and temporal alignment. For Pierrehumbert, however, not all tones have a concrete phonetic manifestation. For example, the tone L of H*+L (later excluded from English ToBI transcriptions) is not translated phonetically but instead is interpreted as triggering "downstep" (a process of making consecutive tones to the power of lower than expected). values of f0). This idea was common when studying the lexical tone of African languages.

Furthermore, for Pierrehumbert, all visible valleys and peaks of f0 need not be mapped to tones, as in the case of the 'sag' in the contour f0 between two consecutive H* accents, which is interpreted as the result of an independent interpolation, linear between them. Conclusively, Bruce (1977) suggests that both Accent I and Accent II are assigned with the same phonological representation, which is the falling accents of HL, in which both pitches are associated with the stressed syllable, which is represented in most current AM Models, and distinguish between two structurally distinct tonal accents. That is, accent I is interpreted such that its low tone is associated with the stressed syllable (H+L*), while accent II is associated with the tone H tone aligns with the same bitonal pitch accent (H+L*).

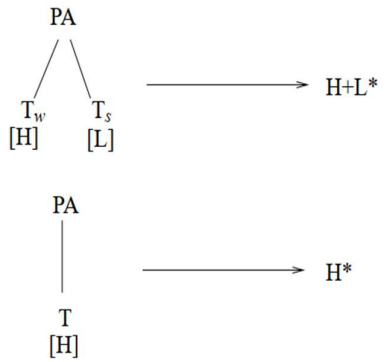

Figure 2.3. Schematic representation of a bitonal pitch accent (PA) and a monotonal pitch accent (D'Imperio, 2000; Figure,1.6, p;20).

Therefore, in the original version of Bruce's theory, alignment does not depend on association since there is no explicit prediction about the phonetic alignment of the tones and the stressed syllable. Also, the tones are fairly concrete events as they are marked by visible inflection points within the f0 contour. Pierrehumbert's and later AM work will differ significantly from either notion, as the association (and hence the star) translates directly into orientation, and mapping targets on f0 is more complex. Similar to Bruce's original theory, the association and alignment of tones do not imply temporal overlap of the elements in the association relationship.

Ladd (1983), proposes the use of the feature [+delayed peak] to represent the alignment of tones concerning the 20-syllable with which they are associated. Ladd's central concern was to capture the similarity in meaning between pitch accents that seemed to differ only in form. These accents are the "simple" drop (H*L) and its "scooped" variant (L*+H L). In Ladd's theory, the acceptance drop is characterized by the property [+delayed peak] because its target H in the syllable is reached later than the target for H*. He suggests that both pitch accents are represented as drops of HL, with only the scooped variant being [+delayed peak]. For Ladd, the alignment is contrastive since his analysis of the opposition H* vs. L*+H, so has a phonological status. But the alignment is also phonetic since it can be used to describe details of the phonetic translation of the same pitch accent in different varieties of the same language (e.g., Swedish). Therefore, the main difference from the treatment in the theory of Pierrehumbert and colleagues is that the orientation does not fall outside of the association relationship between the stellar tones and the structural elements, but is instead given as an independent feature.

The point of view expressed in Ladd (1983) is quite similar to that offered by Gussenhoven (1983), although its "delay" feature is on the contour (such as a "fall" or "rise") of as a whole and not on to specify a target within the outline (e.g., an H or an L). For Hirst (1988), the alignment of tones and the phonemes associated with a given syllable is mediated by a prosodic category that can either be the intonational unit or the tonal unit. This superordinate prosodic category is concerned with both the syllabic and tonal levels (located at different levels) interconnected and seems to dominate both.

Pierrehumbert and Beckman's (1988), work on Japanese led to a very explicit formulation of association as a relationship between a set of structural elements (such as syllables or moras) and one of the elements at a particular noun level (as a pitch). First, the concept of association is defined in terms distinct from the relationship of dominance, which is simply a relationship between two structural elements, such as B. a foot and a syllable. Furthermore, the following holds: “The association relation A obtained between the entire noun S and the tree T is then a set of such ordered pairs “sAn”. From the point of view of the temporal interpretation of the association, it represents (Pierrehumbert and Beckman 1988, pp. 153) 'temporary overlap between substantive elements and structural positions', or in other words, whether the structural element is a mora and the associated substantive element is a Tone is, which means that the tone "occurs simultaneously with each phoneme segment associated with that mora" (p. 119).

Although phonetic alignment does not fall under the notion of association, it would appear on the surface that the two concepts cannot simply be equated. One of the most obvious reasons. The reason that the association does not translate directly and unambiguously into a specific phonetic alignment pattern is that different

languages tend to align sounds to a specific edge of the structural domain with which they are associated. For example, it seems that the targets for the asterisked tones like H* in English tend to be on the right-edge (ie., "right peripheral" alignment in Pierrehumbert and Beckman (1988)) of the stressed syllable, while the opposite seems to be true for the star tones of Standard Swedish. There seems to be a sociolinguistic pressure in Standard Swedish that imposes this type of alignment, as non-standard dialects later align the asterisked sounds. Also, an asterisked tone can have different alignments within the same language, depending on the specific tone accent to which it belongs. So, in Neapolitan Italian, the L* of L*+H tends to occur much earlier than the L* in H+L* of broad-focus declarative statements.

In short, the notion of association in Pierrehumbert and Beckman (1988) implies a special relationship between a tone and a structural unit, which simply translates to "time overlap" between tones and segments. However, the concrete details of the mapping between tones and the segments associated with the structural unit are not part of the phonological representation itself in such a model. As stated by Pierrehumbert and Beckman;

> "The left-peripheral, central, and right-peripheral alignments cannot be distinguished by the association relation alone. If it is desirable to distinguish them–for instance, to describe the relative timing of elements on different tiers that are attached to the same node–this must be done by additional stipulations. In cases with which we are familiar, such stipulations take the form of language-specific rules of phonetic interpretation." (1988, p. 159).

However, the alignment of visible acoustic targets alone can be confusing when we want to use the alignment directly as a window into the phonological representation of a particular pitch accent. For example, in some cases, none of the

tones in a pitch accent appear to agree with the stressed syllable, as in the case of the Greek pre-nuclear accent of (Arvaniti et al. 2000) accented bisyllable is characterized by an LH surge where the L aligns before the onset of the stressed syllable, while the H aligns with the post-stress segments.

The trailing tones in bitonal L*+H pitch accents are due to a 'delayed' F0 peak. This variation in the timing of F0 peaks is examined regarding stressed syllables having a primary or secondary association. Arvaniti (2012; as cited in Jabeen, 2019) discusses that this phenomenon has been found in several languages such as English, German, Dutch, Hungarian, Romanian, and different varieties of Greek.

Alternatively, Prieto et al. (2005) present data from Italian and Catalan to show that minor differences in the alignment of F0 peaks in bitonal pitch accents result in phonologically distinct pitch accents. They argued that the variation in alignment and primary vs. secondary association of tones should be a part of the phonological representation of tones. The data from Arvaniti (2012, as cited in Jabeen, 2019) and Prieto et al. (2005) show that the interpretation of alignment varies among languages as mere phonetic variation vs. meaningful phonological movement. Also, the phenomenon of primary and secondary association refers to tonal spreading.

The concept of primary and secondary association has also been used to explain what was previously referred to as tone spreading. Where a tone is spreading over many syllables of text between a phrase accent and the following boundary tone (Pierrehumbert 1980). The same phenomenon can, however, be explained in terms of primary and secondary association. In their discussion of Greek intonation, Grice et al. (2000) report that the phrase accent may have two patterns of association: it may associate both with the accented syllable as well as the end of the phrase. The F0

movement between these two associations is a mere interpolation between two tone targets.

Pitch accents are localized movements of F0 (Ladd,2008). Beckman et al. (2005) assert the local pitch range of tones is influenced by phrasal prominence in a sentence. The H tones can be downstepped regarding previous peaks and the L tones between two F0 peaks can be upstepped. This shift in the F0 range is indicated by using special diacritics, i.e. '!' to mark a downstepped tone and '^' to indicate an upstepped tone. Beckman et al. (2012), states that the absolute F0 of a tone is measured by a speaker's pitch range and the position and function of tones. Thus, a low intonational phrase boundary tone may be scaled lower than the low tone in the preceding L+H* pitch accent (Beckman et al. 2012). This lowering of tones is unique from the global downstepping of subsequent peaks within a phrase (Ladd 2008).

Ladd (1986) represents the patterns of pitch declination due to the recursion of Ips in English. Declination is a property of intonational phrase and there is possibility of having 'declination within declination' (p. 326). He asserts the possibility of having declination between F0 peaks across smaller domains in a sentence while the peaks across these domains are further downstepped in a larger reference domain such as a sentence. Although, Connell and Ladd (1990) present declination as natural process that happens throughout continuous speech. While downstepping is a different form of phonetic declination realized on F0 contour over an utterance or sentence. However, Ladd (1983) suggests a preliminary analysis of level high tones i.e. two consecutive high tones scaled at the same level and thus canceling downstep. He proposed that in such instances, the first F0 peak is followed by a phrase boundary and results in an embedded phrase structure. To sum up, Ladd showed that the upstepping of an F0 peak

regarding a preceding peak or the level scaling of two adjacent F0 peaks is indicative of prosodic phrasing.

Jabeen (2019) reports that there is conflict among annotators regarding the labelling of F0 movements which is inherent for pitch accents and phrase accents. Also, the guidelines regarding their position and realization in a phrase always remain ambiguous. Although, it leaves room for individual judgments to decide on a label among all the possible options. So, the selection of one label over another is in no way inherently better or worse. Another source of ambiguity in the labelling of tones lies in the fact that intonation is largely seen as F0 movement within a target unit. The labelling of pitch accent or phrase accent is a reflection of duration, voice quality, shape and range of pitch contour, etc. Ladd (2008) explains an example sentence in his Figure, 7.1 where two !H* accents were marked when F0 is gradually falling and no rise in F0 is seen. Although he rates the duration as one of the cues for the spread of a tone. Conclusively, F0 contour is not the only cue to the labelling of tones. Therefore, Jabeen (2019) asserts to explore the idea of a 'toneme', a bundle of intonational and prosodic features.

2.1.4.5. Realization of !H% as Sustained High IP with Downstepped F0

Arvaniti et al. (2016) assert L% as fall, H% as rising, and !H% as mid level pitch accent boundary tones having specific pragmatic functions in Greek TOBI. She asserts the L-L% is manifested as a low plateau at the end of a phrase. Further, she adds the L-L% is preceded by L+H*, H* or !H* in Greek declaratives, while this L-L% is preceded by L+H* in imperatives, and in negative declaratives but by L*+H in wh-questions (Arvaniti et al. 1999; Arviniti 2000). The L-H% is manifested phonetically as a dip (fall) and then a rise to a high F0 value. The L-H% is realized

following a L+H* pitch accent, with the complete configuration (L+H* L-H%) suggesting a more "involved" type of continuation rise. In the Greek corpus, the L-H% is revealed usually after L* in the "suspicious" calling contour. The H-L% configuration IP is used in yes-no questions, in which the nuclear accent is L*. However, the H- accent, in this case, represents two distinct patterns of alignment, depending on the position of the nucleus (Arvaniti, in press; Arvaniti et al. 1999; Baltazani & Jun, 1999; Grice, Ladd & Arvaniti, in press).

If the nucleus of the question is the non-final word of the phrase, the H- aligns with the stressed syllable of the final word, but if the nucleus is realized on the final word, the H- and L% are realized at the right edge of the utterance. The H-H% configuration is realized as a smooth rise to a high F0. Which is preceded by a L* in both "continuation rises" and in the questioning calling contour. The L-!H% in Greek is found in wh-questions, requesting imperatives, and negative declaratives that show reservation. All these types of utterances represent similar intonational structures: a L*+H or L+H* nucleus followed by a low plateau (a spreading L-), and a small rise (the !H%). As can be seen in Figure 3. (Arviniti and Baltazani, 2000; 2017) which illustrates this contour, the !H% remains approximately in the middle of the speaker's range.

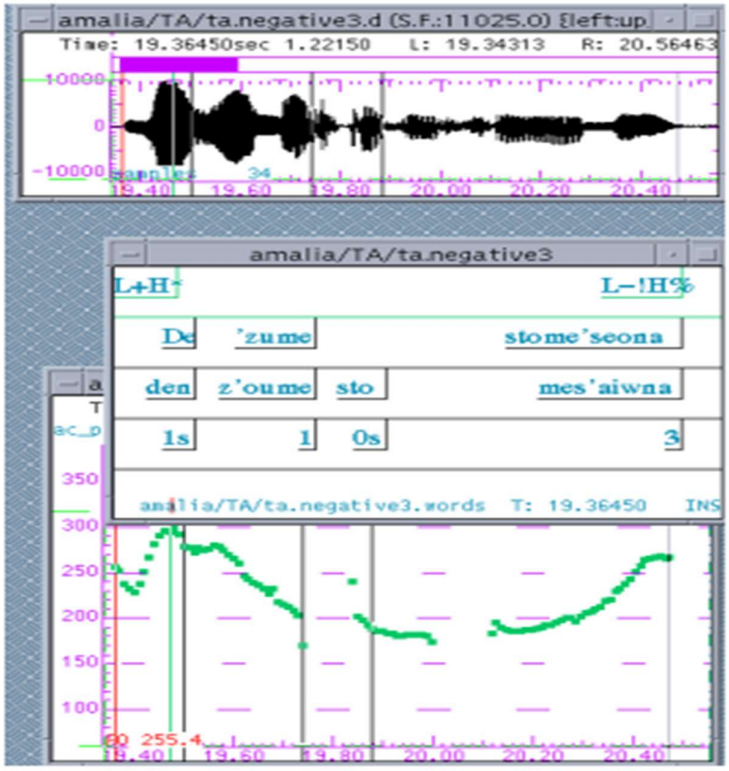

Figure 2.4. (Figure 3, Arviniti and Baltazani, 2000; Arviniti, 2017). Representation of !H% after a bitonal L+H*

Also noticed by Prieto (2014) in Calatan and Frota (2014) in Portuguese as a Final sustained high pitch. (Hualde and Prieto, 2016). In the Catalan vocative chant there is a single phonological representation L+ H* !H% , with two allo tunes. Figure 4 in (Hualde and Prieto, 2016) represent the bitonal high boundady.

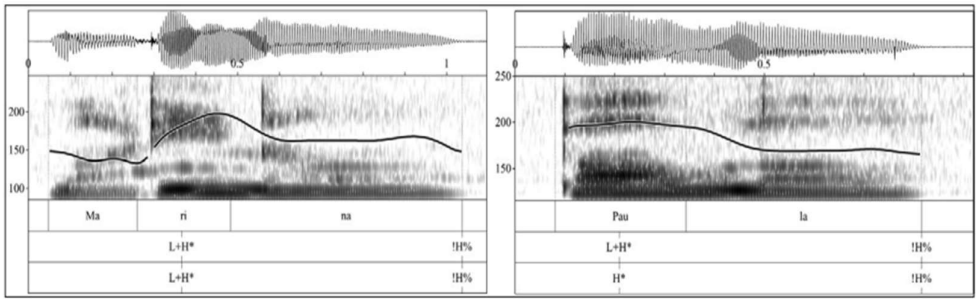

Figure 2.5. Hualde and Prieto (2016; Figure 4: Phonological and broad phonetic representations of the vocative chant in Catalan, realized over a three-syllable paroxytonic word (left) and a two-syllable paroxytonic word (right).)

Illustrating prosodic structures of IP Arvaniti et al. (2016) assert the configuration in IP*s* with the complex final movement, such as a rise-fall, the two tones align independently, as noted, e.g., in the description of H-L% and L-!H%. Although in prosodic structures Arvaniti et al. (2016) do not deal with bitonal boundary tone!H% aligns with the last vowel utterance following a spread L- tone. The realization of double high in Urdu was also noticed by Jabeen (2019) in the case of AP, and the realization of down stepping and also sustained high pitch in the present data is manifested by !H% boundary tone.

2.1.3. ToBI and its Application

Beckman et al. (1994; 2005) presented original ToBI. ToBI convention is designed for annotation of intonational phonetics and phonology based upon AM model. These conventions are helpful to illustrate the text-based transcription and also for sound waves. However, with development of intonational phonology different models based on ToBI conventions has been presented, and has been formulated

worldwide for different languages. Especially European and Tibetan languages have developed their own ToBI conventions based on their language stress and intonation patterns (Jun, 2022). Frey (2007) and Jun (2022) has presented the ToBI conventions for labeling of tones for prosodic phonology. Present study has used the developed version of ToBI conventions (2007) and Jun (2022) based upon AM model of intonation for tonal labeling and alignment. A summary of ToBI convention and its application is discussed in this section.

2.1.3.1. Structure of ToBI

The tone tier is for transcription of labeling tones. The tones can be transcribed at, prosodic level which is marking the phrasal tones, phrasal pitch accents, start edge, and ending edge labeling of tone. It can be marked at level of lexical tones, lexical pitch accents, and morphological pitch accents. Distinctive tones have their language specified distinctions and specifications that may vary from language to language and across dialects as well. (Jun, 2022; Frey, 2007). The types of tones and configuration have been discussed in chapter 2. Under the section Theoretical framework of Auto Segmental Metrical Model.

The word tier is based upon orthographic transcription of utterance at the word level. The segments of words are aligned with the acoustic representation of the word shown in the wave form of spectrogram. Fery (2007) suggests that a word tier can be based upon transliteration or phonetic transcription of word or both, or it may be transliteration of text as an additional tier, with orthographic tier of aligned text.

The Break Indices tier is used to transcribe the perceived degree of juncture in a phrase. Its purpose is to define the hierarchical nature of an utterance in a prosodic

group. There are four degrees of juncture in original TOBI system, two have corresponded to prosodic boundaries that are higher than the word level. These are IP and ip. The third one is the medial word boundary of ip and fourth is weaker than a typical word boundary. Jun defines MAE-TOBI BI as;

"0 A juncture smaller than a typical phrase-medial word boundary. It corresponds to the juncture between a content word and a function word when the function word is cliticized. It can also be used for a weakened word juncture due to coalescence of adjacent segments across a word boundary.

1 A typical phrase-medial word boundary.

3 A juncture corresponding to an ip boundary.

4 A juncture corresponding to an IP boundary.

2 A mismatch between a tonal cue and the degree of juncture that mark a prosodic boundary. It includes two types of mismatches: (i) a juncture corresponding to ip or IP but with no tonal event defining ip or IP, and (ii) a juncture weaker than an ip level but with a clear tonal event for an ip or IP "(pg; 161).

However, Frey (2007) recommends a researcher's preference or need to add or not add the break Indices tier, when the scope of study is limited to analyze intonation at phonological level. Therefore, present study has not added BI tier into its analysis.

The miscellaneous tier is used to transcribe any remarks about the utterance. It can be used to mark the pauses, laughter, or hesitations. It can also be used to assign a specific label to words or to a certain category. Present study has used this Tier to mark syntactic and grammatical categories of words.

In labeling, TOBI certain diacritics are used which are ToBI labels for uncertainty to define a tonal category.

- * is used to mark the accented pitch on the respective category i.e. high or low. i.e H* means accented high, while if L carries * it denotes accented low.
- ! is used to mark down stepped pitch

- ^ is used to mark upstep
- ? is used to indicate an uncertain tonal table
- *? Category is used to label when not sure about presence of pitch accent
- -? Is used to label the uncertainty about type of phrase accent
- % is used for an IP boundary

The detail of labels, their markings, and mechanism has been discussed in chapter one under the section of Theoretical Framework.

The development of prosodic study has introduced other tiers based upon phonetic transcriptions, or tiers based upon study specific requirements and linguistic needs. These tiers can be added to make language comprehension for non-native tiers. (Fery, 2007; Jun, 2022)

2.1.3.2. Application of TOBI to Mark Phonological Tier

The phonological word is a component isomorphic to the grammatical word except for cliticization. In languages with lexical stress, a syllable has primary meaning. Phonological words (PWs) are often hyphenation domains and can stand alone. Identification of this area is not critical to the structure of the information. However, its use is limited when you feel safe or when it is important for the upper layers. (Fery, 2007; Jun, 2022)

A phonological phrase (PHP) is an area for syntactic accents and for phrasing. Depending on the presence of accents, a PHP will contain a main accent or an element that stands out more than the others. A PHP is often bounded by boundaries, which can be tonal, segmental, or duration related. (Fery, 2007; Jun, 2022)

An intonation phrase is the domain of tonal realization. In languages with lexical stress and/or sentence stress, it is the domain of main stress. In most cases it closely follows the syntactic structure, and an IP is usually isomorphic to a sentence. Embedded clauses generally form separate IP addresses, as do bracketed clauses. Also, a vocative or a label (e.g., "it's not like that") often form separate sentences. Lists, elliptic constructions, and inverted discontinuous constituents can be in separate IPs, as can cleft constructions, tonalizations and extrapositions. In intonation and pitch-accent languages, intonation phrases are always, and most often in tonal languages, delimited by a boundary tone, which means that a word has a different intonation (falling or rising) when it is at the end of a sentence than when it is a sentence. -Middle. (Fery, 2007; Jun, 2022)

The intonation of a language can be transcribed using the ToBI framework. ToBI systems are available in English, German, Dutch, Greek, Japanese, Korean, etc. See Jun (2005) for an overview of ToBI in different languages. We propose three layers of pitch transcription: Two of these layers (TONES and SURFACE) capture phonological descriptions of pitches.

In tonal languages, lexical items are associated with tones. The underlying tone of each syllable or word is recorded in the Fery et al. (2007). If the words assigned to the tones occur in combination, certain tones on the surface can change through phonological processing or restrictions. These surface tones are representations of pitch accents and tonal patterns. Surface tone patterns around salient syllables (in intonational languages) or tone-bearing units (in tonal languages) could first be described in the phonotones layer. The phonetic layer can thus help capture the surface variation that leads to phonological abstraction in later analyses.

The tones layer includes lexical tones (as in Chinese), lexical accents (as in Japanese or Swedish), intonation tones (as in English or German), and boundary tones. Tone carrier units (TBUs) can be syllables (most languages) or moras (e.g. Japanese). Tonal layers have been specified according to the following standards by Fery et al. (2007);

> "1). use the designations H (high) and L (low); possibly also M (middle). 2). use pitch designations according to existing conventions, e.g. B. Pitch 1, 2, 3, 4 in Mandarin Chines."

A pitch accent is a pitch associated with the stressed syllable of a word. A boundary tone marks the beginning or end of a prosodic region, such as B. a phonological phrase or intonation phrase. The transcription of both types of sounds would be phonological rather than phonetic, so they do not contain unnecessary details to make categorical distinctions (Fray et al. 2007).

The same conventions apply to the surface layer as to the tones layer. The significant difference between the two layers is that the surface layer provides information about pitches that have undergone phonological adaptations. This optional layer allows a first view of the data without analysis. But the phonological structure of the language can be mapped here in addition to represent the phonological-phonetic mapping rules and their difference across. This layer comprises of the pitch contour around the prominent or stressed syllables. An implementation domain may contain at most four tags (prestressed, stressed, post-stressed and final domain syllable), and at least two (stressed and prestressed or post-stressed syllable).

Lexical tones and lexical tone accents change the meaning of a word and are, therefore, unlike stress tones, fixed in the lexicon. A language has a lexical tone when

most syllables have an associated lexical tone. Examples are Chinese and many African and Amerindian languages. A language has lexical tone stress if even one syllable of a word (or phrase) has an associated tone. Examples are Japanese and Swedish. For example, in Japanese H*+L is only one type of pitch accent while L and H are associated as stress Phrase (AP), and boundary tones H, LH, and HL are associated with intonation phrase (IP) (Jun, 2022).

Intonation tones are marked at a "post lexical" level. Current theories of intonation phonology ddifferentiate between two types of intonation tones: (post lexical) pitch accents and boundary tones. Both can be analyzed as sequences of simple tones (H and L). All languages do not realize pitch accents on each syllable instead some bear tone on multiple syllables. Generally, multiple syllables do not have assigned tone. In such case the tone between two tones is filled in by interpolation, e.g., between a high tone and a low tone, there is a gradual lowering of tone that does not need to be marked in the phonological transcription. For Example in German pitch accents are L*, H*, LH*, L*H, H!H* and H*L (or HL*) while L and H are contour tones (Jun, 2022). Information structure is assigned to examine the relationship between intonation and structural categories of information, such as subject or focus, you can take a sentence and have it read with several different focus structures.

Fery (2007), examining intonation or the language under study uses only morphological markers or syntax to realize different focus structures. Such analysis is based upon the examination of affectedness of intonation and its relation to syntactic structure. It would also be checked whether narrow focus is characterized by intonation, as Fray et al. (2007). In certain cases, an accent indicating narrow focus is ambiguous with an accent indicating broad focus. This happens when the narrow

focus word is accidentally the same as the standard stressed word in broad focus sentences. Sentences also contain parts that do not stand out. This happens because they are repeated from the previous sentence or simply because they are near a focused ingredient, the difference between statement, yes-no question, and wh-question is usually expressed by emphatic or tonal stress.

2.1.4. Intonational Phonology of South Asian Languages

Khan (2014) reports on the intonational phonology of Bengali. The IP is the largest tonally marked unit in the Bengali intonational hierarchy, and its right edge is marked by final lengthening, the following pause, and one of five boundary tones—low (L%), high (H%), rising (LH%), falling (HL%), and dipping (HLH%). The pitch accents are L*, H* and L*+H, AP final boundaries in Bangladeshi standard Bengali are Ha and La, ip boundary tones are L-, H-, LH-, and HL-. The choice of IP boundary tone (e.g. H% vs. L%) is primarily dependent upon sentence type. The most common IP boundary tone is of the low category (L%), occurring at the edges of almost all declarative, as well as some wh-questions. While confirmation questions in Bengali bear high IP. Sengar & Mannell (2012) argued that Hindi intonation includes tones on three kinds of prosodic phrases: the accentual phrase (AP), the intermediate phrase (ip), and the intonational phrase (IP), with L*+H as the default pitch accent for Hindi. Patil et al. (2008) noticed the presence of low as well as high IP boundary tones in the Hindi language. While Jabeen (2019) noticed the inventory of IP boundary tones in Hindi contains three tones: L%, H%, and LH%. She further adds that declarative sentences in Hindi/Urdu contain L% IP (also noticed by Urooj et al., 2019).

Previous work in the intonation of emotions in South Asian Language (SAL) finds rising and falling patterns of the pitch in different emotions of SAL languages. Agrawal (2011) discusses the intonation of different emotions in the Hindi language. He asserts that the pitch of anger rises and falls at the beginning of the sentence and falls towards the end of the sentence. For fear, the pitch rises at the beginning of the sentence and remains the same before it falls at the end of the sentence. For a Happy mood, pitch utterances hold a pattern at the beginning of the sentence while rise and fall at the end of the sentence. For natural mood, the pitch falls at the end of the sentence while rises and falls at the beginning of the sentence. For sad emotion, the pitch falls and rises at the beginning of the sentences and for surprise emotion, the pitch shows fall and rise at the beginning of the sentences and falls at the final position.

2.1.4.1. Intonational Phonology of Bengali

Hayes and Lahiri (1991) presented the most influential analysis of Bengali intonation, further, followed by Khan's (2008, 2014) AM based analysis of intonation in Bengali. In their analysis (Hayes and Lahiri ;1991) formulated on the intonational framework suggested by Pierrehumbert (1980) and the theory of prosodic phonology offered by Selkirk (1986), Hayes and Lahiri (1991) suggest two levels of prosodic hierarchy in Bengali i.e., phonological phrases (PhP) grouped into intonational phrases (IP). Their analysis reveals, that Bengali has a low (L*) and a high (H*) monotonal rather infrequent bitonal L+H* pitch accents, but there is only a high phrase accent (HP).

The IP boundaries are either monotonal low or high (LI, HI) or a combination of these tones to produce bitonal boundaries. The distinction between high

Phonological phrase and Intonational phrase boundaries in their analysis is sustained by referring to the scaling of tones. They suggest the F0 contour ranges between 200 – 420 Hz as high boundary tones, whereas the high IP boundaries are ranged between 330 – 500 Hz (p. 65). While their distinction between the upper and lower limit is very clear, these numbers indicate a remarkable overlap in the scaling of phonological phrase and intonational phrase with boundary high tones. Although, Hayes and Lahiri acknowledged and claimed that this difference in the scaling is not categorical.

Hayes and Lahiri's (1991) analysis reveal the pattern of tunes carrying the nucleus and pre-nuclear heads in declarative, yes-no questions, and statements with a narrow focus. They assert the that realization of these tones is affected by the information structure of the sentences. The nuclear accent with a neutral focus in a sentence is realized at the rightmost PhP within an IP. However, the pre-nuclear heads in Bengali are realized with L* H%. They assert that heads with flat F0 or a very small rise also carry L* H% tone, but their lack of a big rising contour is only an issue of phonetic implementation.

Khan (2014) reports on the intonational phonology of Bengali. The IP is the largest prosodic tone in the Bengali intonational hierarchy its right edge is marked as final lengthening position which follows a pause. While boundary tones in Bengali are -- low (L%), high (H%), rising (LH%), falling (HL%), and dipping (HLH%). The pitch accents are L*, H* and L*+H, AP final boundaries in Bangladeshi standard Bengali are Ha and La, ip boundary tones are L-, H-, LH-, and HL-. The choice of IP boundary tone (e.g. H% vs. L%) is primarily dependent upon sentence type. The most common IP boundary tone is of the low category (L%), occurring at the edges of almost all declarative, as well as some wh-questions. While confirmation questions in Bengali bear high IP.

Khan (2008) proposes that consecutive F0 peaks are downstepped concerning the immediately preceding F0 peak. His analysis reveals the presence of higher F0 contour on long content words following a short one or a functional word. Although his study does not reveal any discussion regarding the influence of downstep effects on the prosodic structure of the target sentences. In his analysis, ips are a collection of APs. The ip boundaries are phonetically aligned on the right edge of the phrase final lengthening position, optional pitch reset, and a small pause. In Bengali, they typically align with adverbials, topics, and post-posed constituents. The high ip boundaries are marked higher than the high AP boundaries. Additionally, the rise for the ip boundaries is steep and limited to its syllable, but the rise for an AP boundary is gradual and spread over multiple syllables of the target word. Herein, the difference between high AP and ip boundary tones is realized by the phonetic alignment and scaling of high tones. He proposed intonational hierarchy for Bengali as

IP > ip > AP

This hierarchy proposes that the high tones for ip boundary are scaled higher than the tones for APs and the high tones for IPs are scaled at highest position. This further implies that the scaling of high tones is categorical in Bengali due to its utilization to indicate the level of prosodic phrasing. This notion is comparable to the upstepping of F0 peaks which is realized due to a number of syllables (Khan,2014). Although he has not finalized the scaling of upstepped or downstepped peaks there is no doubt that Khan (2014) has made a valuable contribution to the AM based analysis of SA languages.

2.1.4.2. Intonational Phonology of Tamil

Keane (2014) presents intonation of Tamil declaratives and interrogatives. Keane has formulated the inventory of tones in Tamil. She suggests that a typical declarative sentence in Tamil consists of consecutive rising F0 contours. She did not find any conclusive evidence regarding the use of lexical stress and its alignment with pitch accents in Tamil. The low tone in Tamil is aligned with the first syllable as L* (Keane 2007). For the high tones, she suggests that they align with either the last or the second syllable of the word and decides to label the high tones as phonological phrase boundary tones i.e., H-. Keane's analysis of rising contours in Tamil is similar to that Hayes and Lahiri (1991) for Bengali intonation.

Keane (2014) prescribes two levels of phonology in Tamil. Accentual Phrases and Intonational Phrases. The APs in Tamil are defined intonationally as each rising contour is labeled as an AP. These rising contours are realized on content words and their corresponding function words are phrased with the immediately preceding AP. While words without a rising contour are prosodically incorporated into the preceding APs. She highlights the instances where a morphologically complex word (with derivational or inflectional morphemes) and compound nouns are realized with double rising contours. But, not necessarily a double rising contour is found due to the morphological complexity or compounding in her data. Keane (2007) reports the small number of monomorphemic words produced with double rises. While this analysis has not defined any systematic constraint on the size of the AP. However, the appearance of a single in comparison with a double rise on a word or phrase could not be predicted based on the number of syllables in her analysis. Herein, no single factor could induce the appearance of double rises rather she reports it as rhythmic rise dependent upon speaker

choices leaving the debate unresolved in her study. The right edges of Ips in Tamil are marked by phrase final lengthening and their left edge is marked by pitch reset. (Keane, 2014)

2.1.4.3. Intonational Phonology of Hindi

Sengar & Mannell (2012) reports that accentual phrase (AP), the intermediate phrase (ip) and intonational phrase (AP) are three different prosodic phrases in Hindi language, L*+H is reported as default tonal pattern of Hindi. Patil et al. (2008) noticed the presence of low as well as high IP boundary tones in Hindi language. While Jabeen (2019) noticed the inventory of IP boundary tones in Hindi contains three tones: L%, H%, and LH%. She further adds that declarative sentences in Hindi/Urdu contain L% IP (also noticed by Urooj et al., 2019).

Féry (2010, 2017) suggests a new language typology in terms of prominence marking, i.e., phrase languages and asserts the intonation of Hindi language as intonational phrase language. Her observations are based on the intonation of Bengali, Hindi, Malayalam, and Tamil. These languages do not have lexical stress comparable to languages like English and German as prominence in these languages is phrasal. Her analysis of the LH F0 contour is the characteristic of these languages, as consisting of phrasal boundary tones on the left and the right edges. Although this claim is partially supported by the aforementioned analyses of Bengali and Tamil as they proposed the existence of an HP or H-, a phrase boundary tone in the languages under discussion. However, the low tones in these analyses are labeled as L* pitch accents and not phrase boundary tones.

2.1.5. Intonational Phonology of Urdu

This section will discuss a detailed background of Urdu intonation. Before going into the details of Urdu intonation the section presents a brief summary of Urdu stress. Lexical stress defines phonetic patterns and features of a language but phonologically it explains how different tunes are aligned with relevant words. Also stress manipulation is used to manifest that which signals or tonal patterns are significant in an utterance.

2.1.5.1. Urdu Stress

Hussain (1997) has reported that in Urdu the duration of stressed vowels is longer with lower F0 as compared to unstressed syllables. He asserts that the quality of unstressed vowels undergoes contextual assimilation as compared to stressed vowels. Also, he reported that F0 of long vowels in Urdu is extreme as compared to short vowels. Hussain reported that in case of bisyllables the stress is usually on heavy syllable and F0 value for stressed syllable is low and is measured at mid-point value of the vowel. The duration of closure for all stressed stops in onset position are longer than closure duration of unstressed onset position. While the stress effects are weaker at coda position. However phonologically long vowels show longer duration when they are stressed. Hence a vowel undergoes less contextual influence.

2.1.5.2. Urdu Intonation

Urdu inventory is defined by Urooj et al. (2019), which present that in Urdu statements IP-final tones are L%, LH%, and H%. The AP-initial tone is aL while the Ap-final tones are Ha and La. The pitch accents in Urdu are L* (low), L*+H (rising), and H*(high). She reveals that all declarative sentences in Urdu consist of a series of APs, represented as (aL) L* (H) Ha, except the sentence-final AP, represented as (H*) L%. Urooj et al. (2019) assert that Urdu Imperative statements show H% boundary tones as the most frequent patterns among native speakers and LH% rising boundary tone is reported at end of sentences in Urdu polite honorific imperatives. Urdu-Yes/no questions show a rising H% boundary tone at end of sentences. While the final boundary tone of Urdu declarative sentences is L%. Wh-Questions in Urdu also show a rising H% boundary tone at the end of sentences. In the Urdu language "*Kya"* is one of the wh-phrases which is used at the start of a sentence to perform the function interrogation. Urooj et al. report L*Ha as the accent pitch of "*Kya*-phrase".

Urooj et al. (2021), in their analysis of speech corpus, report the phonological details at an acoustic and prosodic level. At the acoustic level, they have calculated utterance rate and their overall F0 range. While on the prosodic level, they reported the syllable duration, syllable intensity, and F0 according to the pitch and phrase accent types (L*, Ha, L*Ha). Urooj et al. assert that the syllables realized with L*Ha are monosyllabic words while the syllables containing L* are from bi-syllabic and tri-syllabic words where L* is realized on their first syllable and Ha on their last syllable. Moreover, the comparison of final boundary tones (L%, H%) for emotions of happiness, sadness, and anger has also been conducted.

Urooj et al. (2021) assert that the syllable duration for anger is shorter in emotion across all pitch accents, also found in the Hindi speech corpus by Agrawal (2011). While at the prosodic level, they report that the syllables containing L* and L*Ha accents (accented syllables) have significant differences in duration between anger vs. neutral, and anger vs. sadness emotions. However, their work does not report any significant difference in the accented syllables of anger and happiness. Additionally, a syllable with Ha is reported as a longer syllable in a corpus of neutral emotion as compared to the corpus of happiness and sadness, and the duration for anger decrease in unaccented syllables as compared to neutral and happiness

Urooj et al. (2021) report that the F0 range of utterances represents that anger and happiness have wider pitch ranges whereas neutral and sadness have narrow pitch ranges. (Agrawal, 2011; Noad et al., 1997). Although the analysis reveals that neutral emotions have lowest L% boundary tone when followed by sadness, there is no significant difference between the lowest L% of anger and happiness. Moreover, the H% found in happiness is higher as compared to the H% found in anger. Herein, the study states that F0 is not a significant clue to differentiate between anger and happiness.

Urooj et al. (2019) have proposed the basic model of Urdu intonation. They suggest three basic pitch accents in Urdu, low L*, high H*, and rising (L*+H). While their data reveal two boundary tones for prosodic phrases which are AP and IP. The tone is considered a basic cue to determine boundaries within phrases, while their data reveal the presence of non-tonal cues for the determination of boundary phrases.

Urooj et al. (2019) propose that an AP is the basic phrase of Urdu prosody composed of pitch accent and AP boundary tone. Hussain (1997) asserts that pitch accents are tones attached to the stressed syllables. A pitch accent in Urdu can be L*, H*, or rising L*+H, whereas, each AP possesses a high boundary tone Ha at its right edge. L* Ha is the default tonal pattern of AP in Urdu. However, when an AP covers more than two syllables L* Ha is not a default pattern of Urdu AP. While, when the stressed syllable is realized at a non-initial position the AP- initial low tone is labeled as aL. The trailing tone +H is the half of the pitch realized in the case of complex post positions when the bitonal pitch accent L*+H is realized on a phrase made up of a noun and a case marker. In the case of complex predicates, H*(La) pattern is realized in their data, which is usually reported on the first member of complex predicates. Their analysis report H*L% as a less common AP pattern in the Urdu speech corpus. Herein, their study asserts more discussion about the realization of H* and complex predicates. Although, the realization of H* L% is an integral part of the present research. Urooj et al. (2019) in Figure 8. represent schematic F0 contours to illustrate five types of AP.

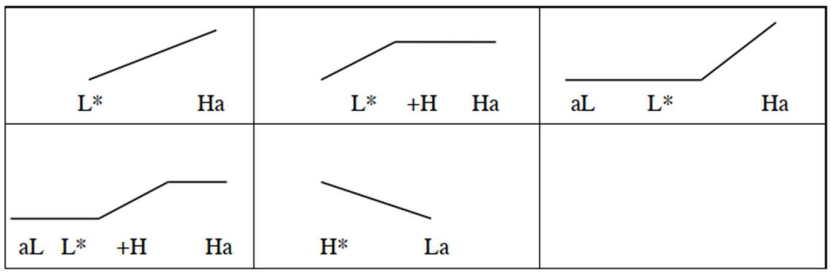

Figure 2.6. Urooj et al., 2019; schematic representation of f0 contours of five types of APs.

Urooj et al. (2019) report three IP boundary tones in Urdu low (L%), high (H%), and rising (LH%) recommending the IP boundary tone dependent on sentence type. Their analysis depicts that the L% is the default boundary tone of declarative sentences in Urdu while high (H%) is found mostly at end of yes/no questions. However, the realization of H% is found less frequently at IP of semi-honorific imperative and wh- questions. H% is realized with a sharp rise at the final IP position. Also, the realization of LH% is reported frequently in polite honorific imperatives, although less frequently, it is found also in Urdu wh- questions. Figure 13, by Urooj et al. (2019) depicts the realization of H% IP boundary tone, and Figure 11. And Figure 14. Urooj et al. (2019) show the tonal patterns of L% and LH% respectively at the IP boundary.

The work of Urooj et al. (2019) and further (2021) has added a significant contribution to defining the Urdu Intonation Inventory presented in table 12. of Urooj et al. (2019). Also, they presented the schematic representation of F0 contour patterns in their study Figure 15. (Urooj et al., 2019). However, their study does not cover the analysis based upon focus realization and its impact on intonational contour. Also, Urooj et al. (2021) discuss the emotions of happiness, anger, and sadness but there is room to study Urdu intonation from the perspective of negative implicature in Urdu speech. The present study examines the realization of taunt, doubt, assertion, and declaration on F0 contour. Also, the present research has identified the realization of focus and its impact to communicate different meanings i.e taunt, doubt, and assertion or declaration in Urdu simple and Urdu *kya*- questions.

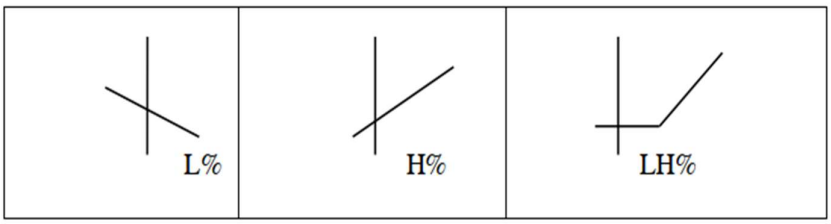

Figure 2.7; Schematic representation of f0 contours of IP boundary tones in Urdu (Urooj et al. 2019)

AP-initial tone	Pitch accents	AP-final tones	IP-final tones
aL	L* L*+H H*	Ha La	L% LH% H%

Figure 2.8. Urdu tonal inventory

2.1.6. Phonology of Bitonal Pitch Accents and Focus

Prieto, D'Imperio, and Gili Fivela (2005) suggest the phonological representation of certain pitch accents may also require the use of secondary associations. In particular, the secondary association of Prieto et al. (2005) to phonologically represent small differences in phonetic alignment between accent types when the tonal inventory does not allow for different representations based on tonal composition and differences in star redness. For example, in pre-nuclear positions in broad-focus statements, Catalan uses ascending accents with a delayed peak appearing in the posttonic syllable called climax, in the pre-nuclear position. Catalan uses rising accents, where the peak occurs at the end of the stressed syllable. Prieto et al. show that the only possible representation for both accents is L+H*, as opposed to an L*+H and a H* pitch accent. To distinguish between the two accents

L+H*, Prieto et al. propose that the L+H* of utterances has a primary association with the stressed syllable, and their peak is aligned with the posttonic by default; the L+H* of imperatives, on the other hand, has the same primary association, but also a secondary association of its H sound to the right edge of the stressed syllable, and therefore peaks earlier.

Although the frame prescriber by Prieto et al. (2005) is attractive because it provides a principled explanation of the differences found in their data, we see two potential problems with this use of the secondary association. One concerns the nature of the device itself. The original proposal by Pierrehumbert and Beckman, similar to Grice et al. (2000), involves taking a tonal element primarily associated with a prosodic edge and giving it an alternative association to a particular TBU (tone bearing unit); this alternate binding overrides the primary binding of the tonal element when the TBU is available. Contrastively focused Greek sentences (hereafter contrasting sentences) also show an ascent and descent movements like the polar ascent and descent question. In this case, however, the rise-fall always occurs on the stressed syllable of the word with contrastive focus, regardless of that word's position in the utterance (D'Imperio, 2001).

2.1.7. Focus and Bitonal Pitch Accents at IP

Grice et al. (1998; Moore et al., 2000) report that the right edge of an intonation phrase is automatically the right edge of an intermediate phrase. It is customary to mark the sequence of tones together on these two right-hand edges. Since there is also the possibility of H or L pitch at the limit of the intonation phrase,

there are four combinations to choose from 1.L-L% 2.L-H% 3.H-H% 4.H-L% The diacritic "-" is added for intermediate phrase boundaries and "%" for intonation phrase boundaries. The H% or L% is raised by an automatic 'upstep' when it follows H-. This means that H-H% symbolizes a high-rising boundary tone that is very high in the current pitch range (H% rises), and H-L% symbolizes a high-level ceiling (L% rises to the same value as the previous H- tone).

Sengar and Mannell (2012) report the F0 on the case marker to represent two phonetic realizations the high tone of the default rising contour or the declined F0 contour on the case marker. Although these two variants may occur in free variation and also can be analyzed as allophones of the same LH rising contour. Regardless of the various F0 contour of the case marker, Sengar and Mannell (2012) label them as part of the AP grouped with the preceding word. Sengar and Mannell further propose that APs may categorically be grouped into intermediate phrases (ip) in Hindi. The ip boundary in their data is usually aligned with a syntactic phrase boundary while following a small pause and IP as an intonational phrase. In their analysis, they report the presence of APs except for the phrase final in a sentence has an L*+H contour. While the H in the final AP is replaced with the IP boundary tone determined by a sentence's declarative or interrogative meaning. While their analysis is insufficient to reveal the difference of ip boundaries from IP boundary tones in Hindi. Also reported by Jabeen (2019). She asserts;

“Sengar and Mannell’s analysis is attractive but does not explain some relevant issues. For example, they did not discuss the morphological structure of their target 58 words. It is difficult to find monomorphemic words in Hindi that are longer than four syllables. So one could assume that their observation regarding the L and the H tones not being separated by more than three syllables, is based on long

morphologically complex words. However, it is not possible to make firm claims as their data set is not available. They also used the term ‘word’ to refer to both lexical and non-lexical words and according to their analysis, non-lexical words such as case markers formed an AP whereas lexical words such as s@n ‘year’ did not constitute an AP. Moreover, the lexical word *A*.z*A*:.d*”*i ‘independence’ was always grouped as an AP with the following verb even when *A*.z*A*:.d*”*i had a LH contour of its own. Thus, their labeling of tones was sometimes inconsistent with
their analytical claims.” (Jabeen,2019).

Moore (1965), Sengar and Mannell (2012), and Patil et al. (2008) reveal that the rising contour in Hindi is marked at the post-lexical level and may be realized over a single lexical word or group a lexical word together with the following function word. Jabeen (2019) also agrees with these assumptions and uses the term Accentual Phrase (AP) as the domain of these rising contours in Urdu/Hindi. The flexible alignment of high tones in Urdu/Hindi has also been observed by Jabeen and Braun (2018) who report the illustration of high tones with varied alignment in narrowly and correctively focused nouns among Urdu speakers.

However, the results of a perceptual experiment by Jabeen and Braun (2018) reveal the realization of nouns with various high tone alignments in narrow and corrective focus as equally natural among Urdu native speakers. The results of Jabeen and Braun (2018) indicate that, at least in its given context, the variation in high-tone alignment was only phonetic and did not affect the narrow or corrective interpretation of target nouns. Jabeen's (2019) analysis is based on sentence-initiating subject nouns in a broad focus, and Jabeen and Braun's (2018) results show preverbal objects in a narrow and corrective approach. Interestingly, despite the difference in their data set

and target conditions, both studies found similar results in terms of high-pitch alignment variation in APs.

Patil et al. (2008) assert this lack of a high tone is most of the time in the APs of Bengali and Hindi at the end of the sentence by creating a contrast between their final vs. non-final position. They reported the occurrence of rising contour at non-final APs but the final AP only has a low IP boundary tone. They report;

"... the tonal structure of the (sentence-final) verb is determined by the final low boundary tone ..." (p. 65).

Patil et al. (2008) state that the falling F0 contour of the verb carries the preceding high pitch accent and the following low boundary tone. However, their analysis is ambiguous about the representation of the following options for Urdu/Hindi.

a) All APs have an underlying LH contour but the high tone in the sentence final AP is not realized phonetically due to a clash with the low IP boundary tone required by declarative.
b) The final position is somehow special and the intonation contour of sentence-final APs are different from their non-final counterparts.

Moore (1965) and Harnsberger (1994) assert an AP consists of morphologically complex words that may optionally carry two rising contours (LHLH). He reports that the words given may be uttered with a single or a double rising contour. He suggests the selection between a single or a double rise is random and optional which does not change the meaning of these words. However, Jabeen (2019), reports the presence of a double rise at AP. She observes the occurrence of double rising contours in Urdu and Hindi may vary more than one syllable. She further asserts the presence of this sustained high due to complex morphological

structures of Urdu morphemes, specifically in the case of inflectional morphemes. In her work Figure 3.15, represents Multiple words produced with a single rise. These words were produced at a non-final position in the sentence. Hence, they have no IP boundary tone.

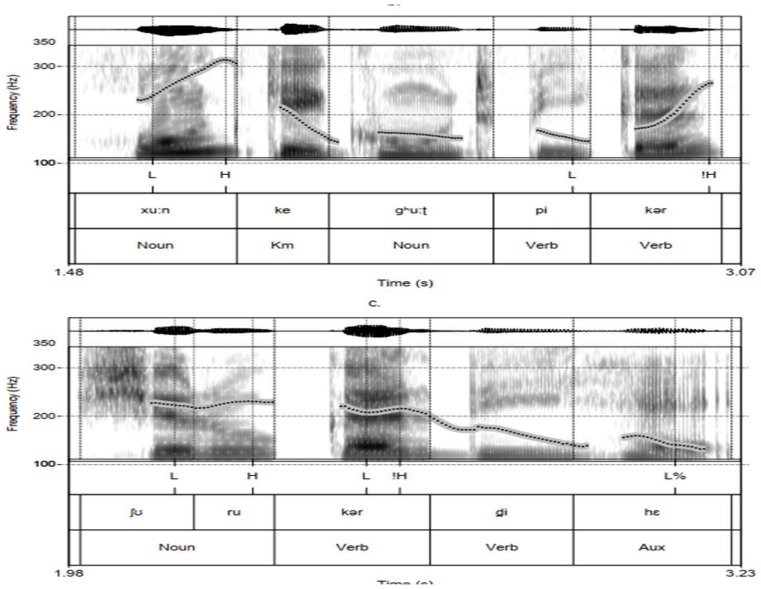

Figure 2.9 (Jabeen ,2019; Figure 3.15: Multiple words produced with a single rise. These words were produced at a non-final position in the sentence. Hence, they have no IP boundary tone.)

Keane (2014) reveals that noun phrases and morphologically complex words may carry double rises in Tamil but Keane did not offer an analysis of these rises. (Jabeen, 2019). While Jabeen (2019) represents the analysis of double rises that only explains the data for Urdu/Hindi. While Patil et al. (2008) reported the occurrence of low as well as high IP boundary tones in Hindi. Urdu/Hindi sentences can also be produced with bitonal boundary tones that are realized as a rising F0 contour on the last syllable of the utterance but they are very infrequent. The inventory of IP boundary tones in Urdu/Hindi contains three tones: L%, H%, and LH%.

Moore (1965) discusses a detailed account of the phonetic cues to IPs in Hindi. He reported that the right edge of this unit is marked by elongating the rhyme of the final syllable and by a rapid decrease in the intensity of that syllable. However, Moore (1965) concludes, that these phonetic correlates are optional because of the consistent absence of their realization in his data. His analysis depicts that the IP final syllable is not audible due to which it is not possible to examine the lengthening of the final syllable. Puri (2013) also reveals the extent of lengthening before an IP boundary in Hindi. Her study shows that the IP final position has a significantly longer syllable duration than its counterparts at the sentence medial position. However, the final syllables contributed more to this elongation than the penult syllables. Puri hypothesized the lengthening of vowels on the last syllable context-dependent.

Mohanan (1995) asserts the incorporation of a single LH intonation contour without any juncture when two words are lexically and syntactically incorporated. She used this claim to reveal the difference between noun-verb sequences in non-incorporated and incorporated contexts. She interpreted it as incorporated when both the noun and the verb share one rising F0 contour. While jabeen (2019) illustrates that these words are prosodically incorporated and are parsed as a single AP. She incorporates the scaling of F0 peaks to investigate if it renders systematic patterns in the scaling of high tones. Therefore, she uses '^' to mark an upstepped high tone and '!' to indicate a downstepped tone in comparison with the immediately preceding high tone.

Summary

Tonal alignments are defined as coordination of tones and segments, mediated by structure of utterances spoken in elicited discourse. The alignment of tones may

have variant intonational patterns at phonological layer that develop different pragmatic meanings (Pierrehumbert and Steele 1987; Pierrehumbert and Steele 1989; D'Imperio and House 1997). Tones are aligned at the edge of a phrase or with an accented syllable. Intonational Phonology incorporates the notion of alignment and it has its specific mechanism. This alignment is either the consequence which is represented with starredness and association (Pierrehumbert 1980; Pierrehumbert and Beckman 1988; Hirst 1988; Grice 1995a; Arvaniti, Ladd, and Mennen 2000), or it can be represented in terms of binary feature of level tones (Bruce 1977; Ladd 1983) and It may dependent upon the pitch configuration (Collier, and Cohen 1990; Gussenhoven 1984).

The present research is analyzed within the autosegmental-metrical (AM) theory of intonational phonology, associated with the work of Pierrehumbert (Pierrehumbert 1980; Beckman and Pierrehumbert 1986; Pierrehumbert and Beckman 1988), and, with the work of Ladd and Grice (see Ladd, 1996). The intonational transcription systems inspired by ToBI (Tone and Break Indices, (Beckman and Ayers Elam 1994)), is assumed to be used in such studies for a variety of languages. Present research will also transcribe intonational patterns in terms of ToBI. One of the central principles of such a theory is that tones are systematically associated with the text.

In this chapter I discussed the background of intonational phonology and the Theoretical framework of Autosegmental metrical model, its history, and its developments across languages. Also, in South Asian Languages, and the conventions of ToBI for text tune alignment for data annotation is also discussed in this chapter. The discussion concluded the chapter on stress and intonation of Urdu language which reveals that the stress patterns of Urdu are different from other languages.

Chapter-3

3.1. Methodology

This chapter will discuss the methods adopted to design the data set, the details of subjects and detailed methodology used to run Experiment. A. and Experiment. B. These methods help to map the analysis in a structured and uniform method.

3.1.1 Data Design

The data design was comprised of two stages. In the first stage, eight Urdu declarative and assertive statements and eight Urdu *kya*-questions were designed. These statements carried SOV structure, which is the general default structure of the Urdu language. Intentionally, these statements were designed to carry a single object, double objects (direct and indirect objects), adjectives, and adverbs. The purpose of various sentence construction aimed to find the effect of different grammatical categories on intonational cues. And also, to analyze that how the focus shift on different lexical categories effect intonation in simple declarative, assertive and *kya*-questions Vs. emotions of doubt and taunt in similar sentences when spoken within relevant contexts.

In the second stage eight participants were selected for piloting of data set. Four native Urdu male and four native Urdu female participants were selected for pilot testing. These participants were native Lahori Urdu speakers. These participants were of age 25 to 35 they were either University students of graduation or MS Scholars working in different organizations. The participants were provided with a questionnaire to rate the occurrences of these sentences having emotions of doubt, taunt, assertive, simple declarative, and simple-*kya* questions. All the sentences were

recorded in a handset recorder in a natural environment and were presented to participants to listen to them and rate them in a relevant category while speakers were not acknowledged of the context of these sentences. This method was adopted to pilot the data set and hypothesis. Five declarative and five *kya*-questions were selected as the final data that got rated more than 85% for representing relevant emotions. These statements were written in the illustrated context of simple declarative, assertion, doubt, taunt, and *kya*-questions. For phase validity two professional linguist judges working in CLE were selected for approval of the designed context and relevant statements.

3.1.2 Sampling and Data Collection

22 participants of age 20 to 35 were selected to conduct this study using convenient sampling method. These participants were of age 25 to 35 they were either University students of graduation or MS Scholars working in different organizations, while 2 judges through purposive sampling were also selected. These participants were native Urdu speakers of Punjab. They were either graduating from different Universities in Lahore or had completed their M.Phil in different disciplines and were professionals in their subjects. These participants were divided into two groups, Group A and Group B. Group A was composed of 10 participants, with 5 male and 5 female participants to control for gender. And Group B was composed of 6 male and 6 female participants to control for gender. To collect the data, 10 Urdu statements were recorded by Group A using Praat. To record these statements five Urdu *kya* and five Urdu statements were designed with context to elicit taunt, doubt, assertion, declaration, and simple questions. These statements carry syntactically subject, object, and verb (SOV) and SOOV structure which is the general syntactic structure of Urdu language. While adjective, adverb, and double object constructions were added

intentionally to examine the impact of grammatical variation and richness on intonational tone. Personal idiolects were not considered in this study and people with standard Lahori dialects were chosen to record these statements.

Each participant recorded 30 sentences three times at 48KHZ on PRAAT in a professional anechoic chamber of the Center For Language and Engineering. The sound to noise factor of this chamber was recorded 0.00dB-HL with no voice on a professional sound meter. The participants were instructed to sit in a natural position in recording room of anechoic chamber in front of mic maintaining a distance of 10 cm. Microphone PL-24S was used to record the data whose frequency range was 80 Hz- 16,000 Hz. While micro phone was placed at an angle of 45 on left side of speaker to avoid echo during speech recording. The master volume of amplifier was set between 5 to 6 to maintain the natural sound within laboratory parameters. Participants were instructed to maintain their quality of voice and a natural and constant level of voice was maintained during the process of recording.

Collectively each participant recorded 90 sentences in three different sessions. Each secession took 40 minutes to record one theme (emotion e.g., doubt) against five sentences. Collectively each participant took 120 minutes to record 90 statements of four different themes (emotions). On whole, the complete data took 1200 minutes (20 hours), in different secessions to record.

3.1.2.1 Experiment 1

To perform Experiment 1, participants in Group B listened to the recorded statements and mark them as doubt, taunt or assertion. Perceptual verification of data was performed and the best examples of sentences from the three repetitions were

shortlisted according to the responses of participants where the majority showed the right context. 12 participants through convenient sampling and two judges through purposive sampling were selected for perceptual Testing. In the first stage, 900 sentences were presented to 2 judges. 760 sentences that got a mutual rating of 2 out of 2 were selected for perceptual testing. These 760 sentences had 386 declarative sentences and 374 *kya*-questions statements. In the second stage of perceptual testing, 12 participants were selected. Each participant was presented with 193 declarative and assertive, and 187 *kya*-questions. Each statement was presented to 6 participants that is why 174 declarative and assertive, and 95 *kya*-questions statements uttered by 10 speakers, which got a rating of 6/6 were selected to perform Experiment 2. Due to the limited time, these 174 declarative and assertive statements were short listed to 150. Collectively 245 statements were selected to perform phonological analysis. Each statement was realized against a minimum of three and a maximum of seven speakers. However, each theme i.e doubt, taunt, *kya*-question and simple (assertive and declarative) covered all 10 speakers.

3.1.2.2 Experiment 2

In Experiment 2, the shortlisted statements from Experiment 1 are analyzed by conducting their acoustic analysis on Praat. The acoustic analysis is performed at the phonological level to mark the intonational differences of interrogative *kya*, assertive, doubt, and taunt based on their F0 pitch contour realization. The stylized contour is used to eliminate the unnecessary pitch points. And TOBI model is used to transcribe the illustrations of pitch contours on a text grid.

3.1.3. Data Set and its Configuration

The designed data is consisting of five statements and five *kya*-questions. Each statement is designed with a different grammatical configuration to cover grammatical richness in our sentences. Syntactically the statements carry two major type of structures which is SOV and SOOV. Categorically five different kinds of configuration are present in five different simple sentences illustrated in doubt, taunt, and assertion or declarative. And five different grammatical configurations are present in Urdu *kya*- Question illustrated as doubt, taunt, and simple questions. These grammatical configurations are given in Tables 3.1. and 3.2. Respectively. While complete data set with their transcription and English translation is given in *Table 7.1. Appendix*. A.

Table 3.1. Illustrations of simple sentences with syntactic structure

Grammatical configuration of Urdu simple statements	**Urdu simple statements with transliteration**
Sub+Adv+ Obj.1+ Obj.2 + V+Aux	تم آج دوپہر کا کھانا پکاؤ گی
Subj+ Obj.1 + Obj.2 +V+ Aux	تم امتحان میں پاس ہو گئے ہو
Sub+ Obj.1+ Adj+ Obj.2 +V+ Aux	تم قلم سے ادبی کہانی لکھو گی
Sub+ Adj+ Obj+ Aux.V	تم میرے قریبی دوست ہو
Sub+ Obj.1+ V+Obj.2 + AuxT	تم روڈ پر میری گاڑی چلاؤ گی

Table 3.1.1. Illustration of Urdu *kya*-questions with syntactic configuration

Grammatical configuration of Urdu *Kya*-statements	**Urdu *kya*-statements with transliteration**
kya+ Sub+ Obj.1 + Obj.2 +V+AUX	کیا آپ میرے ساتھ بازار چلیں گے؟
Kya+ Sub+ Obj.1+ Obj.2 + Adj+ V+ AUX	کیا تم میرا کمرہ جھاڑو سے صاف کرو گی؟
Kya+ Sub+ Adj+ Obj.1+ V+ Obj.2+ Aux	کیا تم سالانہ امتحان میں پاس ہو گئے ہو؟
Kya+ Sub+ Adj+ Obj.1+ Obj.2 + V+ Aux	کیا آج علی ہمارے لیے کھانا پکائے گا؟
Kya+ Sub+ Adj+ Adj+ Obj+ V	کیا تمہارے پاس نئی ہنڈا گاڑی ہے؟

The transliteration and syntax gloss of these ten sentences is also provided in Appendix. A. The data set is transliterated according to the Roman letter-Based transliteration scheme prescribed by Ahmed et al. in their 'Transliterating Urdu for Broad-Coverage Urdu/Hindi LFG Grammar'. While the syntactic gloss follows the Urdu POS tag set scheme of CLE (2013).

3.1.4. Data Analysis Method

The recorded data is analyzed on PRAAT software. The F0 contour (pitch contour) of the above prescribed dataset is analyzed under the theoretical frame work of Pierrehumbert AM model of intonational Phonology. And the Phonological transcription of TOBI is used to mark the tonal tears.

The first step was annotation of data. To annotate the wave files their text grids were generated in PRAAT. The data is labeled and annotated at four different tiers against their wave files. The wave files are segmented at word levels. The first tier is used to mark the respective tune. The sentences are segmented at word level and the second tier is used to annotate the sentence at each segmented word level. The

orthographical representation of each Urdu word is written using Nastalik Nafees Urdu Font in the first tier. The second tier is used to transcribe these Urdu words into Roman-based transliteration. In third-tier words are labeled to indicate their syntactic categories, however, the fourth tier is used to label the grammatical categories of these words in the sentence. Jun (2022) suggests that the labeling of word, their grammar and transliteration is sufficient when the scope of the study is to study phonological layer of language.

The data was analyzed by using the pitch stylization method on PRAAT. The purpose of pitch stylization was to omit tunes that are not necessary for the purpose of articulation. Pitch stylization helps to find the tonal cue on F0 contour responsible for articulation of the utterance. During stylization toggle method was also used to ensure the exact realization of tune on F0 contour. The phonological layer was marked by aligning its text grid with stylized pitch. And, the tune found on F0 contour of stylized pitch was marked into the tune tier of text grid. A sample of stylized pitch and its alignment with text grid is shown in figure.8.

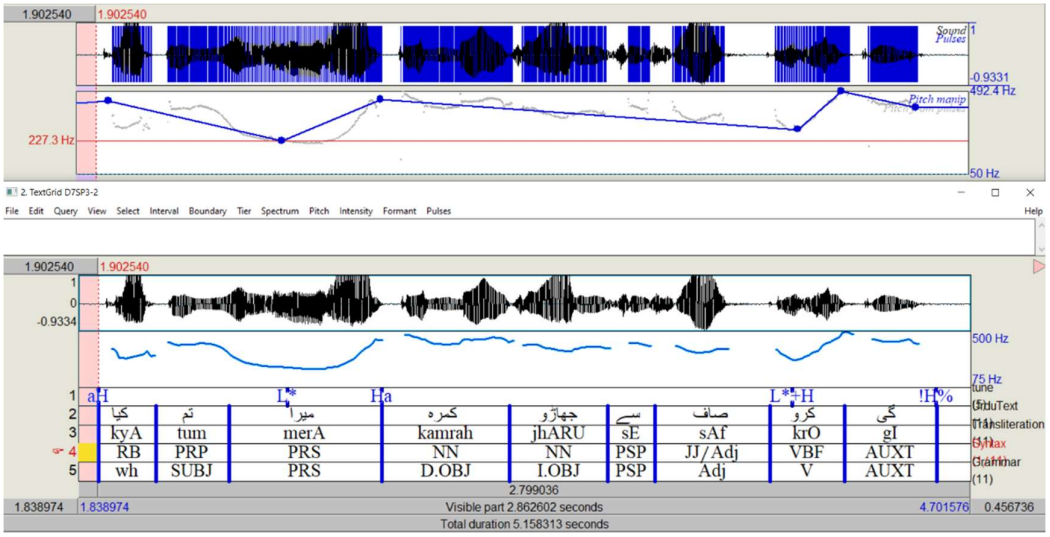

Figure 3.1. Stylized F0 aligned with its sound & text grid file.

The whole set of 245 utterances was analyzed following the above procedure. And was annotated and marked as shown in figure.8.

Summary

The whole chapter tells the methods used to run the analysis of 245 utterances against 30 different themes and 10 different speakers with equal distribution of male and female participants. The chapter clearly demonstrates the distribution of participants to run two experiments for this study. The utilization of laboratory and technical parameters are also discussed and technical specification used to record the sophisticated data sample is also provided in this chapter. In the end chapter concludes on the methods used to annotate and scientifically analyze the data on its stylized F0 contour using PRAAT software.

Chapter-4

4.1. Analysis and Results

The results of analysis are discussed and quoted to illustrate their tonal patterns. However, the frequency and occurrence of different stress patterns within a statement are also presented side by side to illustrate the realization of focus on different syntactic and grammatical categories. However, going into the grammatical details or phonetic details of F0 contour is not scope of this study that is why the discussion is designed to present the intonational patterns of selected themes in two syntactic structures of Urdu i.e., SOV and SOOV sentences. The research was designed to find the intonational patterns of assertion, declarative, and *kya-* questions and also their patterns with illustration of taunt and doubt. The alignment of tunes found against different tonal patterns was obvious during analysis, the discussion has presented the alignment of tones with one sentence against 10 speakers to make reader comprehension, although the presentation of these alignments was required only to find the intonational patterns. Herein, the focus of the discussion based on alignment of tunes with certain syntactic categories is to present the effect of structure variation on tonal patterns.

4.1.1. Intonation Patterns of Urdu Assertive and Declarative Statements

The analysis of tonal patterns of sentences is based on their grammatical configuration in each selected emotion. The patterns are finalized based on their frequency of occurrences across the emotion and among different sentences uttered by ten Urdu native speakers.

4.1.1.1 Intonation Patterns Used for Urdu Assertive Sentences with SOOV Structure

The results of intonational patterns of assertive sentences are based on SOOV structures, which has further three kinds of sentences based on their grammatical variation.

1. Sub+ Adv+ Obj.1 +Obj.2 + V +Aux

2. Sub+ Obj.1+ Adj+ Obj.2 +V+ Aux

3. Sub+ Obj.1 +Obj.2 +V+ Aux

The intonation patterns marked on sound files are extracted in a tabular form. These patterns are categorically represented here according to their grammatical configuration.

The first assertive sentence *'tum Aaj dOpehar kA khAnA pakAO gI'* تم آج دوپہر کا کھانا پکاؤ گی۔ (You will cook the lunch today) has syntactic distribution as; *Sub + Adv + Obj.1+ Obj.2 + V+Aux.* Five intonation patterns across 10 speakers are revealed. The most frequent intonation pattern revealed during analysis for the sentence is aH L* L%. In which five speakers show stress on *'pakAO'* پکاؤ (cook) that is a grammatical verb. Although nine out of ten speakers show a high starting pitch represented as aH. While one speaker realizes a low starting F0 contour illustrated as aL. Although the rest of the pattern regarding stress patterns across different grammatical categories of the sentence. The second frequent pattern found in this sentence is aH L*Ha L* L%. Both speakers show double focus in a sentence where the first focus is illustrated as stress L* on '*dOpehar'* دوپہر (noon), its syntactic category in sentence is the object.1, and the second stress in this sentence is realized on verb *'pakAO*' پکاؤ (cook). Although the table clearly shows that all speakers in

various patterns end on low F0 L%. Even less frequent intonational patterns represent their uniqueness due to a shift of focus. A summary of intonation patterns is shown in Table 4.1. While the summary of the stressed word is shown in Table 4.2.

Table 4.1 Intonational pattern of Urdu assertive sentence 1.

Sub+Adv+Obj.1+ Obj.2+ V+Aux	**Frequency**
aH L* L%	5
aH L* Ha L*+H L%	1
aL L* La L* L%	2
aH L* Ha L* L%	1
aH L*+H L%	1

Table 4.2 Stress patterns of Urdu assertive sentence 1

Grammar	**ADV**	**OBJ.1**	**PSP**	**OBJ.2**	**V**
Syntax Urdu.	**NN**	**NN**	**PSP**	**NN**	**VBF**
Transliteration	**Aaj**	**dOpehar**	**kA**	**khAnA**	**pakAO**
tone count	L* 1	L* 3	Ha 2	L*+H 2	L* 8
tone count			La 1	La 1	

The second assertive sentence *'tum qalam sE adbI kahanI likhO gI'* تم قلم سے ادبی کہانی لکھو گی (You will write a literary story with a pen) with syntactic distribution as; *Sub+ Obj.1+ Adj+ Obj.2 +V+ Aux.* Five various intonation patterns are revealed across ten speakers depending upon the value of high and low F0 contour and accented syllables and words within a sentence. All intonation patterns reveal low F0 contour at sentence-final position. But four speakers illustrate low starting F0 aL that is realized in two different intonational patterns shown below in table.5. Although all intonational patterns are different in their stress patterns. Four patterns are in table 4.3 shows double focus having two mono tonals while others with one monotonal and one

bitonal pitch accents. These stress patterns are revealed across object.2 *'kahAnI'* کہانی (story), object.1 *'qalam'* قلم (pen), verb *'likhO'* (write)**,** and also adjective *'adbI'* ادبی (literary). The summary of stressed words is shown in the table. 4.4.

Table 4.3 Illustration of tonal pattern in Urdu assertive sentence

Sub+ Obj.1+ Adj+ Obj.2+ V+ Aux	**Frequency**
aL L* Ha L*+H L%	2
aH L* La L*+H L%	2
aH L* Ha L* L%	1
aL L*+H L%	2
aH L* Ha L*+H L%	2

Table 4.4 Stress patterns Urdu assertive sentence 2

Grammar	**OBJ.1**	**PSP**	**Adj/ JJ**	**OBJ.2**	**V**
Syntax	**NN**	**PSP**	**Adj/ JJ**	**NN**	**VBF**
Urdu.					
Transliteration	**Qalam**	**sE**	**adbI**	**kahAnI**	**likhO**
tone count	L* 6	La 2	L* Ha 1	L*+H 2	L*+H 2
tone count		Ha 2	L*+H 4		
tone count			Ha 2		

The third assertive sentence *'tum rOd par mErI gARI caLAO gI'* تم روڈ پر میری گاڑی چلاؤ گی (You will drive my car on road) with syntactic distribution *Subj+ Obj.1+ Obj.2 +V + Aux.* The intonational patterns found in this grammatical combination across four speakers also show low F0 contour L% at sentence final position, while all three intonational patterns are realized at high F0 aH. The summary of these intonational patterns is shown in table 4.5. Two intonational patterns are realized with double focus one on indirect object *'rOD'* روڈ (road) and the other on verb *'calAO'* چلاؤ (drive) once with monotonal accent and the other with

bitonal pitch accent. And the stressed direct object *'gARI'* گاڑی (car) is realized with bitonal accent L*+H. The summary of accents is shown in table 4.6.

Table 4.5 Intonation pattern in Urdu assertive sentence 3.

Subj+ Obj.1 +Obj.2 +V+ Aux	**Frequency**
aH L* Ha L* L%	1
aH L*+H L%	2
aH L* La L*+H L%	1

Table 4.6 Stress patterns in Urdu assertive sentence 3

Grammar Syntax Urdu.	**OBJ.1 NN**	**PSP PSP**	**OBJ.2 NN**	**V VBF**
Transliteration	**rOD**	**Par**	**gARI**	**calAO**
tone count	L* 2	Ha 1	La 1	L* 1
tone count	L*+H 1		L*+H 1	L*+H 1

4.1.1.2. Summary of Intonation Patterns in Urdu Assertive Sentences

The above analysis of intonational patterns for Urdu Assertive statements is based upon sentences having a similar grammatical structure which is Subject+ Object 1+ Object 2+ Verb. A summary of the most frequent patterns is given below. The analysis reveals aH L* L% and aH L*+H L% a combination of both can be represented as aH L* (aH L*(+H)) L% as a most frequent pattern of assertive statements. It may be interpreted that in assertive statements speaker usually realizes only one stress across words which can be Object.1, Object.2, Adj, adverb or verb. The analysis also shows that the variety or location of grammatical categories across sentences does not affect the tonal pattern in Urdu assertive statements. For example, Table 4.7. represents a detailed analysis of one assertive sentence *'tum Aaj dOpehar kA khAnA pakAO gI'* تم آج دوپہر کا کھانا پکاؤ گی (You will cook the lunch today).

Table 4.7 Speaker variation and stress patterns across different syntactic categories. Most frequent intonation pattern aH L* L% in one of assertive sentences, 'tum Aaj dOpehar kA khAnA pakAO gI'. تم آج دوپہر کا کھانا پکاؤ گی (You will cook the lunch today.)

		تم	آج	دوپہر	کا	کھانا	پکاؤ	گی	
	0	1	2	3	4	5	6	7	8
		SUB	**ADV**	**OBJ.1**	**PSP**	**OBJ.2**	**V**	**AuxT**	
		PRP	**NN**	**NN**	**PSP**	**NN**	**VBF**	**AUXT**	
	AP	**Tum**	**Aaj**	**dOpehar**	**kA**	**khAnA**	**pakAO**	**gI**	**IP**
SP1	aH		-	-	-	-	L*	-	L%
SP2	aH	-		-	-	-	L*	-	L%
SP3	aH	-	-	-	-	-	L*	-	L%
SP4	aH	-	-	-	-	-	L*	-	L%
SP5	aH	-	-	-	-	-	L*		L%
SP6	aH	-	-	L*	Ha	-	L*	-	L%
SP7	aH	-	-	L*	Ha	L*+H	-	-	L%
SP8	aL		L*	-	La	-	L*		L%
SP9	aH	-	-	L*	-	La	L*		L%
SP10	aH	-	-	-	-	L*+H	-		L%

Table 4.8 Intonation patterns in Urdu assertive sentences

Most frequent patterns across assertive sentences
aH L*(Ha L*(+H)) L%

4.1.2. Intonation Patterns Used of Urdu Declarative Sentences with SOV Structure

Two declarative sentences are designed these declarative sentences are spoken by ten various speakers. Collectively 11 utterances are analyzed to draw out intonational patterns against two sentences having different grammatical configurations. The grammatical configuration of these sentences is as

1. Sub+ Adj+ Obj+ Aux.V
2. Sub+ Obj+ V+ AuxT

4.1.2.1. Detailed Analysis

The first declarative sentence *'tum merE qarIbI dOst hO'* تم میرے قریبی دوست ہو (You are my close friend) with syntactic structure *Sub+ Adj+ Obj+ Aux.V*, carries five intonational patterns uttered by seven speakers. The summary of these patterns is given in table 4.9. Five out of seven speakers show high F0 contour aH at sentence starting position. While rest of the two utterances are realized at a lower F0 contour at the sentence starting position. All seven utterances against five intonational patterns are realized with low F0 contour L%. While L* monotonal and bitonal L*+H phrase accents are realized on the subject, personal pronoun, adjective, and object. While no accent is realized on the verb in this grammatical combination of a declarative sentence. The summary of phrase accents and their realization is shown in Table 4.10. That illustrates the variation of intonational patterns in this category of declarative sentences.

Table 4.9 Intonation patterns of declarative sentence 1

Sub+ adj+ Obj+ Aux.V	**Frequency**
aH L*+H La L* L%	1
aL L* Ha L* L%	2
aH L* L%	2
aH L*+H L%	1
aH H* Ha L*+H La L* La L%	1

Table 4.10 Stress patterns of Urdu declarative sentence 1

Grammar		**SUB**	**PRS**	**Adj**	**OBJ**
Syntax		**PRP**	**PRP**	**Adj**	**Adj**
Urdu.					
Transliteration		**Tum**	**merE**	**qarIbI**	**dOst**
tone	**count**	L* 1	L* 1	L*+H La 2	L* 5
tone	**count**		H*Ha 1	Ha 1	
tone	**count**		L*+H 1	L* Ha 1	

Second declarative sentence *'tum ImtehAn meN pAs hO gaE hO'* تم امتحان میں پاس ہو گئے ہو۔ (You have passed the exam.) with syntactic structure Sub+ Obj+ V+ AuxT, illustrates three tonal patterns against four speakers. Two tonal patterns are realized with a high starting F0 contour. While one tonal pattern is realized with a low starting F0 contour. All three tonal patterns illustrate a low L% F0 boundary. The summary of these tonal patterns is given in table 4.11. However, the phrase accents are realized on object *'ImtehAn'* امتحان (exam) and verb *'pAs'* پاس (to pass) only. Only mono tonal focus realized on the verb is the most frequent pattern in this category of simple declarative sentences. The summary of stressed grammatical categories is shown in table 4.12.

Table 4.11 Intonation patterns of Urdu declarative sentence 2

Sub+ Obj+ V+ AuxT	**Frequency**
aH L* L%	2
aH L*Ha L* L%	1
aL L* L%	1

Table 4.12 Stress patterns of Urdu declarative sentence 2

Grammar	**OBJ**	**PSP**	**VBF**
Syntax	**NN**	**PSP**	**Adj/ JJ**
Urdu.			
Transliteration	**ImtehAn**	**meN**	**pAs**

tone	count							
		L*	1	Ha	1	L*	4	

4.1.2.2. Summary of Intonation Patterns in Urdu Declarative Sentences

For analysis of Urdu Declarative sentences, a simple SOV structure is used. The data set of ten Urdu speakers reveal that aH L* L% and aH L*+H L% are the most frequent intonation patterns of Urdu declarative sentences with a simple SOV structure. Table 4.13. illustrates the realization of stress patterns in a SOV declarative sentence. While table 4.14 presents the most frequent intonation pattern of SOV Urdu declaratives.

Table 4.13 Speaker variation and stress patterns across different syntactic categories. Most frequent intonation pattern aH L* L% in one of declarative sentences 'tum merE qarIbI dOst hO' -تم میرے قریبی دوست ہو(You are my close friend)

		تم	میرے	قریبی	دوست	ہو	
		0	**1**	**2**	**3**	**4**	**5**	**6**
		SUB PRP	**PRS PRP**	**Adj Adj**	**D.OBJ Adj**	**V VBF**	
	AP	**Tum**	**merE**	**qarIbI**	**dOst**	**hO**	**IP**
SP1	aH		-	L*+H La	L*		L%
SP2	aL		L*	Ha	L*	-	L%
SP3	aH	-	L* +H	-	-	-	L%
SP4	aL		-	L* Ha	L*		L%
SP5	aH		H* Ha	L*+H La	L*		L%
SP6	aH	L*	-		-	-	L%
SP7	aH	-	-	-	L*	-	L%

Table 4.14 Most frequent intonation pattern of Urdu declarative sentences

Most Frequent Patterns across Urdu declarative sentences
aH L*(aH L*(+H)) L%

4.1.2.3. Conclusion

The final findings state that analysis of 10 speakers against 35 statements reveals no difference among tonal patterns of Urdu Assertive and Declarative statements. aH L*(Ha L*(+H)) L% is realized as the default pattern for both kinds of statements. The Analysis also reveals that it is not the tonal stress that communicates the difference between Urdu assertion and declaration but there is emphatic stress due to which a speaker creates the difference between assertion or declaration. i.e in assertive statement *'tum Aaj dOpehar kA khAnA pakAO gI'* تم آج دوپہر کا کھانا پکاؤ گی (You will cook lunch today) frequent stress is realized on verb *'pakAO'* پکاؤ (cook). So, the stress on verb *'pakAO'* پکاؤ (cook) illustrate that the assertion is realized due to emphatic stress not tonal stress. However, the difference between emphatic or tonal stress is not the scope of my study, rather, the present study in this section was limited to seeing the tonal patterns and identifying their differences in Urdu assertive and declarative statements.

4.1.3. Tonal Patterns of Doubt in Urdu Assertive and Declarative Statements

The intonational patterns of doubt in assertive and declarative sentences are found against five different kinds of sentences concerning their grammatical configuration. Collectively 50 sentences are uttered by 10 speakers. The analysis is represented here by categorizing them into SOV and SOOV structures in Urdu, also, the discussion unfolds the analysis of respective sentence types based on the following five grammatical combinations.

1. Sub+Adv+ Obj.1+ Obj.2 + V+Aux

2. Subj+ Obj.1+Obj.2 +V+ Aux
3. Sub+ Obj.1 + Adj+ Obj.2 +V+ Aux
4. Sub+ Adj+ Obj+ Aux.V
5. Sub+ Obj+ V+ AuxT

4.1.3.1. Detailed Analysis of Intonational Pattern of Doubt in SOOV Structure

The sentence *'tum Aaj dOpehar kA khAnA pakAO gI'* تم آج دوپہر کا کھانا پکاؤ گی (You will cook the lunch today). has grammatical distribution Sub+Adv+ Obj.1+ Obj.2+ V+ Aux in SOOV category. Five intonational patterns are realized across ten different speakers. Three patterns are realized with starting low F0 contour aL while two patterns are realized with high start boundary aH. Three patterns show !H% high sustained mid boundary tone while the rest of two patterns are realized with low L% and falling rise LH% tones respectively. The summary of intonation patterns is given in table 4.15. Three tonal patterns represent single focus with bitonal pitch accent L*+H while two tonal patterns are realized with two focus entities in a sentence, one with monotonal pitch accent H* or stress L* and other with bitonal pitch accent L*+H. However, different speakers realized to focus on different words in sentences. The focus words across speakers and their summary is represented in table 4.16.

Table 4.15 Intonation patterns of doubt in statement 1

Sub + Adv + Obj.1 + Obj.2 + V+Aux	Frequency
aL L*+H !H%	3
aH L*+H !H%	5
aL H*La L*+H !H%	1
aH L*+H LH%	1
aL L*Ha L*+H L%	1

Table 4.16 Stress patterns of doubt in statement 1

Grammar		**SUB**	**ADV**	**OBJ.1**	**PSP**	**OBJ.2**	**VBF**
Syntax		**PRP**	**NN**	**NN**	**PSP**	**NN**	**VBF**
Urdu.							
Transliteration		**Tum**	**Aaj**	**dOpehar**	**kA**	**KhAnA**	**PakAO**
tone	**count**	H* 1	La 1	L*+H 6	Ha 3	L*+H 6	L*+H 1
tone	**count**	L* 1	Ha 1	L* 3			
tone	**count**			L* Ha 1			

The SOOV sentence *'tum rOd par mErI gARI caLAO gI'* تم روڈ پر میری گاڑی چلاؤ گی۔ (You will drive my car on road) has grammatical distribution as; Subj+ Obj.1+ Obj.2+V+ Aux. Five intonational patterns are revealed against seven utterances of this grammatical category. All the intonation patterns carry high end boundary tones while in three patterns this high boundary tone is realized as a sustained high boundary. Three patterns show high starting F0 aH, while, two are realized with low starting F0 aL. Although the various pitch patterns define different focus realizations on Object.1, Object.2, and the verb. The frequency of L*+H is most frequent on Object.2 of the sentence *'gARI'* گاڑی (car). The summary of focus and stress realization on different syntactic categories is illustrated in table 4.18. Whereas, table 4.17. shows the summary of intonational patterns of doubt in the S+O+O+V+AuxT structure sentence.

Table 0.17 Intonation patterns of doubt in statement 2

Subj + Obj.1 + Obj.2 + V + Aux	**Frequency**
aL L*+H !H%	3
aH L* Ha L*+H !H%	1
aH L*+H !H%	1
aL L* Ha L* H%	1
aH L* H%	1

Table 4.18 Stress patterns of doubt in statement 2

Grammar		**OBJ.1**	**OBJ.2**	**AUX**
Syntax		**NN**	**NN**	**VBF**
Urdu.				
Transliteration		**rOD**	**gARI**	**calAO**
tone	**count**	L* 3	L*+H 3	L*
tone	**count**		L* Ha 1	
			L* 1	

The analysis of SOOV sentence structure *'tum qalam sE adbI kahanI likhO gI'* تم قلم سے ادبی کہانی لکھو گی (You will write a literary story with a pen) with grammatical configuration Sub+Obj.1+Adj+Obj.2+V+Aux shows that the results of ten speakers reveal 8 intonational patterns, four with low starting tone aL and four with high start tone aH. Three different boundary tones !H%, LH%, and L% are realized at the sentence final position. Four intonation patterns show L*+H as one single focus in the sentence which is realized four times on *'khAnA'* کھانا(lunch) that is Obj.2 of sentence and one time on Obj.1 *'dOpehar'* دوپہر (noon). While four patterns represent double focus L* which is mostly realized on obj.1 as first stress in the sentence and L*+H as second focus of doubt. The analysis reveal that Urdu speaker may reveal doubt on two syntactic categories of a sentence. A detailed analysis of this sentence is given in table 4.19. The summary of intonation patterns is given in table.21. while a summary of words carrying focus stress is given in table 4.20.

Table 4.19 Intonation patterns of doubt in Statement 3

Sub+ Obj.1+ Adj+ Obj.2+V+ Aux	**Frequency**
aH L*+H !H%	2
aL L*+H !H%	1
aL L*+H L%	2
aH L*Ha L*+H !H%	3
aH L*+H L%	2
aH L* Ha L*+H LH%	1

aL L* Ha L* L%	1
aL L*+H La H* L%	1

Table 4.20 Stress patterns of doubt in statement 3

Grammar Syntax	**SUB PRP**	**OBJ.1 NN**	**PSP PSP**	**Adj Adj**	**OBJ.2 NN**
Urdu. Transliteration	**Tum**	**Qalam**	**sE**	**adbI**	**kahAnI**
tone count	L*	L* 3	La 2	L*+H 4	L*+H 4
tone count		L* Ha 2	Ha 2	L* Ha 2	+H 1
tone count		L*+H 1		L* 1	
tone count				H* 1	
tone count				Ha 1	

4.1.3.2. Summary of Intonation Patterns of Doubt in Statements with Structure Subj+ Obj.1 +Obj.2+ V (SOOV)

There are three statements with grammatical structures of Subj.+Obj.1+Obj.2 +V in my dataset of doubt irrespective of additional grammatical categories i.e., adjectives, adverbs, personal pronouns, and auxiliaries. The summary of these patterns is given below in table 4.21. The analysis reveals that among different combinations and arrangements of the SOOV structure the most frequent intonational patterns are aH L*+H !H% and aL L*+H !H%. This means that the speaker realizes bitonal pitch accent L*+H to reveal the focus of doubt while the intonation of utterance at IP final boundary is sustained high with downstepping which is !H%. The detailed analysis of one of the SOOV sentences is given in table 4.22.

Table 0.21 Realization of stress in sentence ‘tum Aaj dOpehar kA khAnA pakAO gI’ تم آج دوپہر کا کھانا پکاؤ گی۔(You will cook the lunch today), shows various realizations by one speaker against 8 speakers.

		تم	آج	دوپہر	کا	کھانا	پکاؤ	گی	
		0 1	2	3	4	5	6	7	
		SUB	**ADV**	**OBJ.1**	**PSP**	**OBJ.2**	**VBF**	**AUX**	
		PRP	**NN**	**NN**	**PSP**	**NN**	**VBF**	**AUXT**	
	AP	**Tum**	**Aaj**	**dOpehar**	**kA**	**KhAnA**	**PakAO**	**gI**	**IP**
SP1	aL		-	L*	Ha	L*+H	-		!H%
SP1	aH		-	-	-	L*+H	-		!H%
SP2	aH	-	-	-	-	L*+H	-		!H%
SP2	aH		-	-	-	L*+H	-		LH%
SP3	aH		-	L* Ha		L*+H	-		!H%
SP4	aH	-	-	L*+H	-	-	-	-	!H%
SP5	aH	-	-	L*	Ha	-	L*+H		H%
SP6	aL	L*	Ha	L*+H	-	-	-	-	L%
SP6	aL	H*	La	L*+H	-	-	-	-	!H%
SP6	aH		-	L*+H	-	-	-		LH%
SP7	aH	-	-	L*+H	-	-	-	-	!H%
SP9	aL	-	-	L*	Ha	L*+H	-		!H%
SP9	aH	-	-	L*+H	-	-	-		!H%

Table 0.22 Intonation patterns of doubt in SOOV statements

Subj+ Obj.1 +Obj.2+ V	**Frequency**
aH L*+H !H%	8
aL L*+H !H%	7
aL H*La L*+H !H%	1
aH L*+H LH%	1
aL L*Ha L*+H L%	1
aH L* Ha L*+H !H%	4
aL L* Ha L* H%	1
aH L* H%	1
aL L*+H L%	2
aH L*+H L%	2

4.1.3.3. Detailed Analysis of Intonational Patterns of Doubt in SOV Structure

The SOV sentence *'tum merE qarIbI dOst hO'* تم میرے قریبی دوست ہو (You are my close friend) with grammatical configuration Sub+ Adj+ Obj+ Aux. V represents five different intonation patterns during the analysis. aH L*+H !H% is most frequent intonation pattern of this sentence in SOV structure. The summary of five different intonation patterns is given in table 4.23. L*+H is most frequent stress accent realized on Object of the sentence, The distribution of L*+H is also found on *'qarIbI dOst'* قریبی دوست (close friend) where speaker realize L* on adjective *'qarIbI'* قریبی (close) and +H tune is realized on Object *'dOst'* دوست (friend). However, some speakers realized focus of doubt of personal pronoun *'merE'* میرے (my) of the sentence. The frequency of focus realized on the personal pronoun, object, and adjective is given in table 4.24. b. Although the most frequent pattern is realized with a single bitonal accent preceded by a sustained high boundary tone. !H%.

Table 0.23 Intonation patterns of doubt in statement 4

Sub+ adj+ Obj+ Aux.V	**Frequency**
aH L*+H !H%	4
aH L*+H LH%	2
aL L* Ha L*+H !H%	2
aL H* Ha L*+H LH%	1
aH L*+H L%	1

Table 0.24 Stress patterns of doubt in statement 4

Grammar		**PRS**		**Adj**		**OBJ**	
Syntax		**PRS**		**Adj**		**NN**	
Urdu. Transliteration		**merE**		**qarIbI**		**dOst**	
tone	**count**	L*+H	2	L* Ha	2	L*+H	3
tone	**count**	L*	1	L*	2	+H	2
		H*	1	L*+H	2		
				+H	1		

The SOV sentence *'tum ImtehAn meN pAs hO gaE hO'* تم میرے قریبی دوست ہو (You are my close friend) with grammatical distribution of Sub+ Obj+ V+ AuxT is a simple sentence of Urdu. When elicited in the context of doubt is realized with three different kinds of intonation patterns. Although the most frequent pattern is realized with one bitonal focus L*+H. The details of stressed entities of SOV structure in this sentence is presented in table 4.26. Only one pattern by one speaker is identified as having two accented words or focus categories which is as aH L*Ha L*+H !H%. A summary of intonation patterns for this grammatical structure is given in table.27. While a summary of intonation patterns is given in table. 4.25.

Table 4.25 Intonation patterns of doubt in statement 5

Sub+ Obj+ V+ AuxT	**Frequency**
aH L*+H !H%	10
aH L*Ha L*+H !H%	1
aL L*+H !H%	1

Table 0.26 Stress patterns of doubt in statement 5

Grammar		**OBJ**		**PSP**		**VBF**		**AUXA**	
Syntax		**NN**		**PSP**		**Adj**		**VBF**	
Urdu. Transliteration		**ImtehAn**		**meN**		**pAs**		**hO**	
tone	**count**	L*	4	Ha	1	L*+H	7	+H	1
tone	**count**	L*+H	1	+H	2	+H	1		

4.1.3.4. Summary of Intonational Patterns of Doubt in Simple SOV Structure

There are two statements with a simple SOV structure. The dataset against ten speakers for SOV statements shown in table.4.27. reveals that aH L*+H !H% is the most frequent tonal pattern of doubt in these statements. This means that in these

statements speaker's starting tone is high while there is a realization of bitonal pitch accent L*+H where the focus of doubt is realized. However the final boundary tone IP is !H% which is a sustained high boundary tone with downstepping. Detailed analysis to show the realization of L*+H stress pattern and its focus on different syntactic categories is represented in table.4.28.

Table 4.27 Realization of stress patterns in SOV 'tum ImtehAn meN pAs hO gaE hO' تم امتحان میں پاس ہو گئے ہو۔(You have passed the exam) against multiple utterances of seven speakers.

		تم	امتحان	میں	پاس	ہو	گئے	ہو	
	0	1	2	3	4	5	6	7	8
		SUB PRP	**D.OBJ NN**	**PSP PSP**	**VBF Adj**	**AUXA VBF**	**AUXA AUXA**	**AUXT AUXT**	
	AP	**tum**	**ImtehAn**	**meN**	**pAs**	**hO**	**gaE**	**hO**	**IP**
SP1	aH	-	-	-	L*+H	-	-	-	!H%
SP9	aH	-	-	-	L*+H	-	-	-	!H%
SP3	aH	-	-	-	L*+H	-	-	-	!H%
SP5	aH	-	-	-	L*+H	-	-	-	!H%
SP2	aH	-	-	-	L*+H	-	-	-	!H%
SP5	aH	-	-	-	L*+H	-	-	-	!H%
SP5	aH	-	-	-	L*	+H	-	-	!H%
SP7	aH	-	L*	-	+H	-	-	-	!H%
SP4	aH	-	L*	+H	-	-	-	-	!H%
SP3	aH	-	L*	Ha	L*+H	-	-	-	!H%
SP2	aH	-	L*	+H	-	-	-	-	LH%
SP9	aL	-	L*+H	-	-	-	-	-	!H%

Table 0.28 Intonation patterns of doubt in SOV statements

Sub + Obj +V	**Frequency**
aH L*+H !H%	14
aH L*+H LH%	2
aL L* Ha L*+H !H%	2
aL H* Ha L*+H LH%	1
aH L*+H L%	1
aH L*Ha L*+H !H%	1
aL L*+H !H%	1

4.1.3.5 Conclusion

The whole analysis reveals that the intonational pattern of doubt is aH L*+H !H% or aL L*+H H% in Urdu simple statements. As this pattern is found the most frequent pattern in the data set of simple doubt statements during analysis. The findings conclude that the grammatical richness and variation of structures among two types of categories SOOV and SOV do not affect the intonational pattern of doubt in simple statements. The overall frequency of this pattern is shown in table 4.29. Although the realization of aL or aH is uncategorizable throughout the data which shows that the realization of high starting tone aH or low starting tone aL does not affect the overall intonational pattern of doubt in Urdu statements.

Table 0.29 Intonation patterns of doubt in Urdu statements

Most frequent patterns of doubt in Urdu statements	**Frequency**
aH L*+H !H%	22
aL L*+H !H%	8

4.1.4. Intonation Pattern of Taunt in Urdu Assertive and Declarative Statements

The intonation pattern of Taunt for Urdu simple statements has the same five grammatical categories as of doubt. The only difference is that the same sentences are uttered communicating taunts. Sentences were represented to the speakers with an illustrated context of taunt.

4.1.4.1. Detailed Analysis Intonational Patterns of Taunt in Subj+ Obj.1+ Obj.2+V (SOOV) Structure

The SOOV sentence *'tum Aaj dOpehar kA khAnA pakAO gI'* تم آج دوپہر کا کھانا پکاؤ گی۔ (You will cook the lunch today) with grammatical distribution of Subj+ Adv+ Obj.1 + Obj.2 +V+ AuxT reveals five different intonational patterns when uttered with the realization of taunt. Four intonational patterns represent a low aL starting tone while one intonational pattern with a single utterance is realized at a high starting tone aH. All the patterns are representing a low ending boundary tone that is L%. While H* is a monotonal accent and H*+L a bitonal accent is found in this analysis to show the focus of taunt. Which is usually realized on subject *'tum'* تم (you) or proceeding noun of a subject that is adverb *'Aaj'* آج (today) in this sentence. Although two intonational patterns reveal utterances with double focus realized with monotonal L* stress and L*+H bitonal pitch accent. This shows that the speaker may illustrate the realization of a taunt by making two phrases. The variation in tonal patterns happens when the focus of taunt varies across other grammatical categories i.e., indirect object, direct object, adjective, or verb which is shown in the table.4.31. While table.4.30 presents the summary of various intonational patterns found in this sentence.

Table 0.30 Intonation patterns of taunt in statement 1

Sub +Adv+ Obj.1+ Obj.2+ V+ Aux	**Frequency**
aL H* La L*+H L%	1
aL H*+L La L* L%	2
aL H* L%	6
aL H*+L L%	7
aH H* L%	1

Table 0.31 Stress patterns of taunt in statement 1

Grammar	**ADV**	**OBJ.1**	**OBJ.2**	**V**
Syntax	**NN**	**NN**	**NN**	**VBF**
Urdu.				
Transliteration	**Aaj**	**dOpehar**	**KhAnA**	**PakAO**
tone count	H*+L 2	+L 2	L*+H 1	L* 1
tone count	H* 1		L* 1	
tone count	+L 3			

Three different intonational patterns are realized against *'tum qalam sE adbI kahanI likhO gI'* تم قلم سے ادبی کہانی لکھو گی (You will write a literary story with a pen) with Sub+ Obj.1+ Adj+ Obj.2 +V+ Aux structure. The summary of these intonational patterns is given below in table.4.32. Two intonational patterns are realized with low starting tone aL while one intonation pattern for taunt is realized with high boundary tone aH. All the intonation patterns reveal a low L% boundary tone and one focus of taunt which is accented H* and H*+L. Although one out of three patterns is realized with bitonal accent H*+L while the rest of two are realized with H* accent which is a monotonal accent. The alignment of tones is represented in table 4.33. concerning the relevant grammatical category.

Table 0.32 Intonation patterns of taunt in statement 3

Sub+ Obj.1 + Adj+ Obj.2 +V+ Aux	**Frequency**
aL H* L%	3
aL H*+L L%	8
aH H* L%	1

Table 4.33 Stress patterns of taunt in statement 3

Grammar	**SUB**	**SUB**	**Adj/ JJ**
Syntax	**PRP**	**NN**	**Adj/ JJ**
Urdu.			
Transliteration	**Tum**	**Qalam**	**adbI**
tone count	H* 8	+L 4	+L 1
tone count	H*+ L 4		

The sentence *'tum rOd par mErI gARI caLAO gI'* تم روڈ پر میری گاڑی چلاؤ گی۔ (You will drive my car on road) with Sub+ Obj.1 + Obj.2 + V+ AuxT structure represent five different tonal patterns. The summary of intonation patterns found is shown in table 4.34. While the summary of accents due to focus across sentences is given in table 4.35. aL and aH are two distinct starting high tones in these patterns that further precede with a high monotonal H* or bitonal H*+L accent and end on a low L% sentence final boundary tone. Two patterns are realized with two accents revealing two places of focus in a sentence. Second stress is realized with L*+H bitonal pitch.

Table 0.34 Intonation patterns of taunt in statement 5

Sub+ Obj.1+Obj.2+ V+ AuxT	**Frequency**
aL H*+L L%	8
aH H*+L L%	1
aH H* L%	3
aL H*+L La L*+H L%	1
aL H* La L*+H L%	1

Table 0.35 Stress patterns of taunt in statement 5

Grammar Syntax Urdu.	**SUB PRP**	**NN OBJ.1**	**PSP**	**PRS PRS**	**NN OBJ.2**
Transliteration	**Tum**	**rOD**	**Par**	**mErI**	**gARI**
tone count	H* 12	H*+L 1	+L 2	L*+H 1	+H 1
tone count		+L 6	La 2	L* 1	

4.1.4.2. Summary of Intonation Patterns of Taunt in Statements with Structure Subj+ Obj.1 +Obj.2+ V (SOOV)

Table 4.37 summarizes the results of all the statements with SOOV structures communicating doubt. The table reveals aL H*+L L% as the most frequent stress pattern realized in SOOV structure. However, aL H*L% is also found as less frequent as compared to the former one. The distribution and realization of H*+L and H* in one of SOOV structure *'tum rOd par mErI gARI caLAO gI'* تم روڈ پر میری گاڑی چلاؤ گی۔ (You will drive my car on road) is shown in table 4.36. The list of variations in intonational patterns is given below which are identified at the most less frequent utterance rate.

Table 0.36 The realization of different stress patterns against 10 speakers in SOOV ‘tum rOd par mErI gARI caLAO gI’ تم روڈ پر میری گاڑی چلاؤ گی You will drive my car on road uttered for taunt.

		تم	روڈ	پر	میری	گاڑی	چلاؤ	گی	
	0	1	2	3	4	5	6	7	
		SUB PRP	NN I.OBJ	PSP	PRS PRS	NN D.OBJ	VBF	AUXT AUXT	
	AP	tum	rOD	par	mErI	gARI	calAO	gI	IP
SP1	aL	-	H*+L	-	-	-	-		L%
SP7	aL	H*	+L	-	-	-	-	-	L%
SP3	aH	H*	+L	-	-	-	-	-	L%
SP3	aL	H*	+L	-	-	-	-	-	L%
SP6	aL	H*	+L	-	-	-	-	-	L%
SP10	aL	H*	+L	-	-	-	-	-	L%
SP2	aH	H*	-	-	-	-	-	-	L%
SP5	aH	H*	-	-	-	-	-		L%
SP9	aH	H*	-	-	-	-	-		L%
SP7	aL	H*	-	+L	-	-	-	-	L%
SP4	aL	H*	-	+L	-	-	-	-	L%
SP4	aL	H*	+L	La	L*+H	-	-	-	L%
SP2	aL	H*	-	La	L*	+H	-	-	L%

Table 4.37 Summary of intonation patterns of taunt in Urdu Assertive and declarative statements with SOOV

Sub+ Obj.1+Obj.2 + V	**Frequency**
aL H* La L*+H L%	1
aL H*+L La L* L%	3
aL H* L%	9
aL H*+L L%	24
aH H* L%	2

4.1.4.3. Detailed Analysis of Intonational Patterns of Taunt in SOV Structure

The SOV *‘tum ImtehAn meN pAs hO gaE hO’*-تم امتحان میں پاس ہو گئے ہو (You have passed the exam) with grammatical distribution subject+Obj+V+ Aux structure reveal two intonational patterns against ten speakers, these patterns are in table .40. Both the patterns show low aL starting tone and both the patterns are realized with

low L% boundary tones. While one tonal pattern realized with two places of focus in a sentence has an accented bitonal high tone H*+L on the first focus however the second focus is usually realized with stressed L*. However, the most frequent intonational pattern is aL H*+L L% in this sentence. This is realized with one focus theme of taunt. The summary of intonational patterns of SOV+AUX is given in table.4.38. while table.4.39 presents the realization of certain stress patterns across sentence.

Table 4.38 Intonation patterns of taunt in statement 2

Subj+ Obj +V+ Aux	**Frequency**
aL H*+L L%	9
aL H*+L La L* L%	1

Table 0.39 Stress patterns of taunt in statement 2

Grammar	**SUB**	**OBJ**	**PSP**	**VBF**
Syntax	**PRP**	**NN**	**PSP**	**Adj**
Urdu.				
Transliteration	**Tum**	**ImtehAn**	**meN**	**pAs**
tone count	H* 3	H* 1	+L 1	L* 1
tone count		H*+L 5		
tone count		+L 4		

The SOV sentence *'tum merE qarIbI dOst hO'* تم میرے قریبی دوست ہو- (You are my close friend) with grammatical distribution Sub+ Adj+ Obj+ Aux. V shows that data set of ten speakers for this grammatical structure reveals five different intonational patterns. Two patterns are different at the level of start boundary tones i.e., aL or aH, while the rest of the tonal patterns are same that are: H* L% and H*+L L% in both cases. These patterns show one accent in a statement that is assumed an

accent for the focus of taunt while both kinds of patterns end on a low boundary tone L%. One pattern against this structure is realized with two accented phrases where the first accent bears bitonal H*+L while the second is realized with stressed low L* ending on low L%. The summary of these intonation patterns is shown in table 4.40. while no. of accents on different words is shown in table 4.41.

Table 0.40 Intonation patterns of taunt in statement 4

Sub+ adj+ Obj+ Aux.V	**Frequency**
aL H* L%	5
aL H* +L L%	4
aL H*+L Ha L*L%	1
aH H* L%	2
aH H*+L L%	2

Table 0.41 stress patterns of taunt in statement 4

Grammar	**SUB**	**PRS**	**Adj**	**OBJ**
Syntax	**PRP**	**PRS**	**Adj**	**NN**
Urdu.				
Transliteration	**Tum**	**merE**	**qarIbI**	**dOst**
tone count	H* 11	H* 3	+L 2	+L 2
tone count		+L 2	+L Ha 1	L* 1

4.1.4.4. Summary of Intonational Patterns of Taunt in Urdu Statements with SOV Structure

The results of intonation patterns of taunt in SOV structures are summarized in table 4.43. The analysis reveals that aL H* L% is the most frequent pattern in SOV sentences when uttered to communicate taunt. Although the analysis and result of a dataset for statements of taunt show that aL H*+L L% is the second highest frequent

pattern of taunt in SOV statements. Table 4.42 presents the detailed analysis of SOV structure against different speakers when uttered for taunt.

Table 0.42 Realization of H* and H*+L across syntactic categories in a SOV sentence 'tum merE qarIbI dOst hO' تم میرے قریبی دوست ہو(You are my close friend) when realized with taunt.

		تم	میرے	قریبی		دوست	ہو	
	0	**1**	**2**		**3**	**4**	**5**	**6**
				Adj				
		SUB PRP	**PRS PRS**			**D.OBJ NN**	**V VBF**	
	AP	**Tum**	**merE**	**Adj qarIbI**		**dOst**	**hO**	**IP**
SP1	aH	-	H*	-		+L	-	L%
SP3	aH	H*	+L	-		-	-	L%
SP3	aL	H*	-	-		+L		L%
SP4	aL	H*	-	-		-		L%
SP5	aH	H*	-	-		-	-	L%
SP5	aL	H*	-	-		-		L%
SP6	aL	H*	-	+L		-		L%
SP6	aH	-	H*	-		-	-	L%
SP7	aL	H*	-	-		-	-	L%
SP7	aL	H*	+L	-		-		L%
SP9	aL	H*	-	-		-	-	L%
SP9	aL	H*	-	-		-		L%
SP7	aL	-	H*	+L		-		L%
SP2	aL	H*	-	+L	Ha	L*		L%

Table 0.43 Summary of intonation patterns of taunt in SOV statements

Sub+ Obj+ V	**Frequency**
aL H* L%	8
aL H* +L L%	12
aL H*+L Ha L* L%	1
aH H* L%	2
aH H*+L L%	3
aL H*+L La L*+H L%	1
aL H* La L*+H L%	1

4.1.4.5 Conclusion

Findings of analysis reveal that aL H*+L L% and aL H* L% are the two most frequent intonation patterns, that Urdu speakers realize when they utter a statement in

the illustrated context of taunt. In the data set of 58 statements of taunt, these two patterns are identified with a frequency of 27 and 17 which is represented in table. 40. Although the results also conclude that the difference in grammatical variation and rich grammar in SOOV and SOV sentences do not affect the tonal pattern of taunt because the same patterns are identified as the highest frequent patterns in both kinds of sentence structures.

Table 0.44 Intonation pattern of taunt in Urdu statements

Most frequent patterns across sentences
aL H*(La H*(+L)) L%

4.1.5. Intonation Pattern in Urdu *kya*-Questions

The analysis of the tonal pattern of Urdu *kya*-Questions is carried out on two major types of sentence structures, SOV and SOOV. Further SOOV questions have four different grammatical configurations based on the placement of adjectives and adverbs. These sentences are uttered by 10 speakers in three different emotions which are neutral/ simple Urdu *kya*-questions. The second is illustrated with the realization of doubt and the third emotion is taunt. The same five questions are realized in these three emotions. Collectively depending upon the themes with illustrated context fifteen *kya*-questions are analyzed. And each theme contains five types of sentence structures.

1. wh+ Sub+ Obj.1+ Obj.2+ V+AUX

2. wh+ Sub+ Obj.1+ Obj.2+ Adj+ V+ AUX

3. wh+ Sub+ Adj+ Obj.1 + V+ Obj.2 + Aux

4. wh+ Sub+ Adj+ Obj.1 + Obj.2+ V+ Aux

5. wh+ Sub+ Adj+ Adj+ Obj+ V

4.1.5.1. Detailed Analysis of Intonation Pattern of Urdu kya-*Questions with SOOV Structure*

The analysis of utterances of ten Urdu native speakers for intonation Pattern of Urdu *kya-Question 'kyA Aap merE sAth bAzAr calyN gE'* کیا اپ میرے ساتھ بازار چلیں گے؟ (Will you go to market with me?) with structure *kya*+ Sub+ Obj.1+ Obj.2+ V+AUX reveals seven different tonal patterns. The similarity among all these patterns is that they all are realized with high starting tone aH. Four intonational patterns are realized with high boundary tone H%, two intonational patterns are realized with low boundary tone L% and one intonational pattern is realized with mid level high sustained boundary tone which is !H%. Although the table 4.45 clearly shows low frequency for L% and also it is less for !H% at sentence final position IP. L* and L*+H are realized as focus of question in these patterns. Three patterns are realized with single focus with two kinds of accents which is a monotonal stress L* and the other is bitonal accent L*+H. However, four patterns represent two accentual phrases, first carrying L* stress and second with realization of bitonal L*+H pitch accent. The analysis in table. 48. clearly represent those entities bearing stressed syllable. Analysis reveals the location of L*+H at sentence initial position in one case while the rest of the utterances are realized with L*+H at sentence final position, which is either verb '*calyN'* چلیں (go) or its direct object '*bAzAr'* بازا ر (market) most frequently, or this

L*+H is expanded on both words making it as phrasal tone of '*bAzAr calyN*' بازار چلیں (go to market). On the other hand, L*+H at the sentence start position is realized on '*kyA tum'* کیا تم (will you). However, the realization of L* varies across the sentence on different syntactic categories i.e Subject, Obj.1, Obj.2, Verb is shown in table 4.46. So, the variation in patterns is due to presence of L* on different syntactic categories across speakers. Herein, the phonetic details of accent realization on different syntactic categories are wider than the scope of present study which is why proceeding sections are limited to discussing only intonational patterns and their phonological layer.

Table 0.45 Intonation patterns of Urdu kya-question 1

Kya+ Sub+ Obj.1+ Obj.2+ V+AUX	**Frequency**
aH L* La L*+H H%	3
aH L* H%	5
aH L*+H H%	2
aH L* Ha L*+H H%	2
aH L*+H L%	1
aH L* Ha L*+H L%	1
aH L* La L*+H !H%	1

Table 0.46 Stress pattern of Urdu Kya-questions 1

Grammar		**wh**	**SUB**	**OBJ.1**	**PSP**	**OBJ.2**	**V**
Syntax		**RB**	**PRP**	**PRS**	**PSP**	**NN**	**VBF**
Urdu. Transliteration		**kyA**	**Aap**	**merE**	**sAth**	**bAzAr**	**clyN**
tone	**count**	L* 1	L* 3	L* 2	La 1	L* La 1	L*+H5
tone	**count**		+H 1	Ha 1		L* Ha 1	L* 5
tone	**count**					L* 1	+H 1
tone	**count**					H* 1	
tone	**count**					L*+H 1	
tone	**count**					La 1	

Intonation Pattern of Urdu *kya*-Question *'kyA tum merA kamrah jhARU sE sAf krO gI'* کیا تم میرا کمرہ جھاڑو سے صاف کرو گی؟ (Will you clean my room with broom?) with grammatical distribution *kya*+ Sub+ Obj.1+ Obj.2 + Adj+ V+ AUX. The analysis of Urdu questions with this structure is realized with five different kinds of intonation patterns with the equal frequency as shown in table.4.47. All the patterns are realized with high IP (phrase ending tone) which is H%. In this structure, three intonation patterns are realized with aH while two are realized with aL. The variation of stressed syllables is varying across different patterns on different syntactic categories of sentence. Also, these patterns are illustrating more than two realizations of L* (low stressed syllables) in one utterance. The variation of L* and its frequency is shown in table.4.48.

Table 0.47 Intonation pattern in Urdu *kya*-questions 2

Kya+ Sub+ Obj.1+ Obj.2 Adj+ V+ AUX	**Frequency**
aH L*Ha L* Ha L* H%	1
aH L*Ha L* La L* H%	1
aL H*La L*+H H%	1
aH L* H%	1
aL L*Ha L* H%	1

Table 0.48 Stress patterns in *kya*-question 4

Grammar	**Wh**	**SUBJ**	**OBJ.1**	**OBJ.2**	**PSP**	**Adj**	**V**
Syntax	**RB**	**PRP**	**NN**	**NN**	**PSP**	**JJ**	**VBF**
Urdu.							
Transliteration	**kyA**	**Tum**	**Kamrah**	**jhARU**	**sE**	**sAf**	**krO**
tone count	L*Ha 1	H* 1	L* Ha 1	L* 2	Ha 2	La 1	L* 4
tone count				La 1	L* 1		L*+H1

Urdu SOOV *'kyA tm sAlAnA ImtehAn nyN pAs hO gaE hO'* کیا تم سالانہ امتحان میں پاس ہو گئے ہو؟ *(Have you passed in final exams?)* reveals five tonal patterns. During

perceptual testing only five utterances of five speakers are selected as question against this SOOV structure. Four tonal patterns have aH start boundary tone and one pattern has aL as sentence-initial tone. Two sentences of this structure are realized with !H% boundary tone at IP position. The variation among intonational patterns is due to the variation of stressed syllables across the sentence. The summary of stressed words for this structure is given in table 4.50. while the summary of intonation patterns for this structure is given in table.4.49.

Table 0.49 Intonation patterns in *kya*-question 5

Kya+ Sub+ Adj+ Obj.1+ V+ Obj.2+ Aux	**Frequency**
aL L* Ha L* La L*+H !H%	1
aH L* H%	1
aH L*+H La L* H%	1
aH L* Ha L* H%	1
aH L* !H%	1

Table 4.50 Stress patterns in *kya*-question 5

Grammar		**Wh**	**SUBJ**	**ADJ**	**OBJ.1**	**PSP**	**VBF**	**AUX**	**AUX**
Syntax		**RB**	**PRP**	**JJ**	**NN**	**PSP**	**VBF**	**AUXA**	**AUXA**
Urdu. Transliteration		**kyA**	**Tum**	**sAlAnA**	**ImtehAn**	**myN**	**pAs**	**hO**	**gaE**
tone	**count**	L* 2	Ha 1	Ha 1	L* 1	La 1	L* 1	L* 3	L* 1
tone	**count**			L* 1	+H La1				+H 1

Intonation Pattern of Urdu *kya*-Question *'kyA Aaj Ali hmArE lyE khAnA pakAE gA'* کیا آج علی ہمارے لیے کھانا پکائے گا؟ (Will Ali cook meal for us today?) with structure *kya*+ Sub+ Adj+ Obj.1 + Obj.2+ V+ Aux is realized with four intonation patterns. Two reveal aL phrase starting tone while two patterns are realized with aH as starting tone. One pattern starting with aL ends on L% while the other starting with aH ends also ends on L%. A similar pattern is analyzed with patterns having H% phrase ending tone. One tonal pattern is realized with bitonal accent L*+H while the

rest of the patterns represent two different accented phrases within a sentence where L* is realized on the first and L*+H is realized on the second accented word. Bitonal pitch accent H*+L is realized in one pattern in which the second syllable is L*. The realization of H*+L is identified in the phrase *'Ali hmArE'* علی ہمارے (Ali for us) while the second accent is on Verb. However, the Verb *'pakAE'* پکانے (cook) is the most frequent accented word of the sentence with both bitonal and monotonal pitch accents, as shown in table 4.52. And summary of intonational patterns for this sentence is given in table 4.51.

Table 4.51 Intonation patterns of *kya*-questions 4

Kya+ Sub+ Adj+ Obj.1 + Obj.2+ V+ Aux	**Frequency**
aL L*+H L%	1
aH L* Ha L*+H L%	1
aH L* La L* H%	2
aL H*+L La L* H%	1

Table 4.52 Stress patterns of *kya*-question 4

Grammar		**Wh**	**SUB**	**Adj**	**OBJ.1**	**OBJ.2**	**V**
Syntax		**RB**	**NN**	**NNP**	**PRS**	**NN**	**VBF**
Urdu. Transliteration		**kyA**	**Aaj**	**Ali**	**hmArE**	**khAnA**	**pakAE**
tone	**count**	L* 1	L* 1	L* 1	Ha 1	La 1	L*+H 2
tone	**count**			H* 1	La 1		L* 3
tone	**count**				+L 1		

4.1.5.2 Summary of Intonation Pattern of Urdu kya- *Questions with Structure SOOV*

Table 4.53 demonstrates the frequency of various intonation patterns found in sentences with SOOV structure. Detailed categorical analysis of these sentences has been discussed in the previous section and the analysis of the one of the sentences is given in table 4.54. The analysis reveals that aH L* H% is the most frequent intonation pattern found in Urdu *kya*-Questions. Although a variety of other less

frequent and unique patterns are found because speakers preferred realizing stress on more than one focus of questions.

Table 0.53 Summary of intonation patterns of Urdu SOOV structure *kya*-questions

kya+ Sub+ Obj.1+ Obj.2+ V	Frequency
aH L* La L*+H H%	3
aH L* H%	7
aH L*+H H%	2
aH L* Ha L*+H H%	2
aH L*+H L%	2
aH L* Ha L*+H L%	2
aH L* La L*+H !H%	1
aH L* Ha L* Ha L* H%	1
aH L* Ha L* La L* H%	1
aL H* La L*+H H%	1
aL L*Ha L* H%	1
aL L* Ha L* La L*+H !H%	1
aH L*+H La L* H%	1
aH L* Ha L* H%	3
aH L* !H%	1
aL H*+L La L* H%	1

Table 0.54 Realization of different stress patterns in a SOOV *'kyA Aap merE sAth bAzAr calyN gE'* کیا اپ میرے ساتھ بازار چلیں گے؟ (Will you go to market with me?)

SP		**کیا**	**آپ**	**میرے**	**ساتھ**	**بازار**	**چلیں**	**گے**	
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
		wh	**SUB**	**OBJ.1**	**PSP**	**OBJ.2**	**V**	**AUXT**	
		RB	**PRP**	**PRS**	**PSP**	**NN**	**VBF**	**AUXT**	
	AP	**kyA**	**Aap**	**merE**	**sAth**	**bAzAr**	**calyN**	**gE**	**IP**
SP1	aH		-	-	-	L* La	L*+H	-	H%
SP5	aH		-	-	-	-	L*		H%
SP5	aH	-	-	-	-	-	L*+H	-	H%
SP10	aL	-	-	-	-	-	L*		H%
SP3	aH		L*	Ha	-	-	L*+H		H%
SP7	aL		-	L*	-	La	L*+H		H%
SP8	aL		-	-	-	-	L*		H%
SP7	aH	-	L*	-	La	L*+H		-	!H%
SP5	aH	-	-	-	-	-	L*	-	H%
SP1	aH		-	-	-	L*	+H	-	L%
SP6	aH		-	-	-	L* Ha	L*+H	-	L%

SP9	aL		-	-	-	-	L*	-	H%
SP4	aH	L*	+H	-	-	-	-		H%
SP4	aH	-	L*	-	-		-	-	H%
SP3	aH		-	L*	La	H*	-		H%

4.1.5.3 Detailed Analysis of Intonation Pattern of Urdu kya-*Questions with Structure Sub+Obj+V (SOV)*

Urdu SOV *'kyA tumhArE pAs naI hondA gARI hE'* کیا تمہارے پاس نئی ہنڈا گاڑی ہے؟ (Do you have a new Honda car?) with grammatical distribution *kya*+ Sub+ Adj+ Adj+ Obj+ V is illustrated with five different intonation patterns. Table 4.55. demonstrates the intonation patterns in this structure of *kya*- question. This *kya*-question structure carries two adjectives before an object. All intonation patterns are realized with aH starting tone. While four intonation patterns are realized with LH% final boundary tone and one with H% as final tone. The intonational patterns are various because of the realization of bitonal L*+H and monotonal L* on various syntactic and grammatical categories in the sentence. However as shown in table 4.56. the most accented word is object *'gaRI'* گاڑی (car) in this sentence, while, *kya* and adjective *'hOndA'* ہنڈا (Honda) are also found accented words.

Table 0.55 Intonation patterns of *kya*-question 5

***Kya*+ Sub+ Adj+ Adj+ Obj+ V**	**Frequency**
aH L* Ha L*+H LH%	1
aHL* La L*+H LH%	1
aH L*+H LH%	2
aH L* Ha L* H%	1
aH L* La L* LH%	1

Table 0.56 Stress patterns of *kya*-question 5

Grammar		**Wh**	**SUBJ**	**ADJ/JJ**	**ADJ**	**OBJ**
Syntax		**RB**	**PRS**	**ADJ/JJ**	**NNP**	**NN**
Urdu. Transliteration		**kyA**	**tumhArE**	**naI**	**hOndA**	**gARI**
tone	**count**	L* 2	La 1	L* 2	L*+H 1	L*+H 2
tone	**count**		L*+H 1	La 1	Ha 1	L* 1
tone	**count**			Ha 1	L* 1	

4.1.5.4. Summary of Intonation Pattern of Urdu kya- Questions with Structure SOV

The dataset of SOV reveals that aH L*+H LH% is the most frequent intonation pattern of Urdu *kya*-questions. The summary of intonation patterns for SOV Urdu *kya*-questions is given in table. 4.57. And table.4.58 demonstrates the alignment of stress patterns with syntactic categories of utterance. The study gives an insight that aH is starting tone and LH % is the most frequent ending tone of these questions. Although the presence of bitonal L*+H is realized as the focus of the question and the presence of more than two accented phrases is the reason for alternative unique intonation patterns.

Table 0.57 Summary of intonation patterns of Urdu SOV *kya*-questions

kya+ Sub+ Obj+ V	**Frequency**
aH L* Ha L*+H LH%	1
aH L* La L*+H LH%	1
aH L*+H LH%	2
aH L* Ha L* H%	1
aH L* La L* LH%	1

Table 4.58 Realization of different tonal patterns in a sentence with SOV کیا تمہارے پاس نئی ہنڈا گاڑی ہے؟ kyA tumhArE pAs naI hondA gARI hE

		کیا	تمہارے	پاس	نئی	ہنڈا	گاڑی	ہے	
	0	1	2	3	4	5	6	7	8
		Wh	**SUBJ**	**VBF**	**ADJ/JJ**	**ADJ**	**OBJ**	**V**	
		RB	**PRS**	**VBF**	**ADJ/JJ**	**NNP**	**NN**	**VBF**	
	AP	**kyA**	**tumhArE**	**pAs**	**naI**	**hondA**	**gARI**	**hE**	**IP**
SP1	aH	-	-	-	L* Ha	L*+H	-	-	LH%
SP2	aH	L*	-	-	La	-	L*+H	-	LH%
SP3	aH	-	-	-	-	-	L*+H	-	LH%
SP4	aH	-	-	-	L*	Ha	L*	-	H%
SP5	aH	L*	La	-	-	L*	-	-	LH%
SP6	aH	-	L*+H	-	-	-	-	-	LH%

4.1.5.5. Conclusion

The analysis of the data set based on 34 utterances of Urdu *kya*-Question reveals although various intonational patterns are identified due to speakers' preferences to realize stress on more than one lexical item across a question, collectively most frequent pattern found in *kya*-Questions is aH L* H%. Which is realized across sentences. The results reveal that in SOV statements aH L*+H LH% and in SOOV statements aH L* H% are the most frequent intonation patterns of Urdu *kya*-questions. However, the collective analysis reveals aH L* H% as the default intonation pattern of Urdu *kya*-questions represented in table 4.59.

Table 0.59 Intonation pattern of Urdu *kya*-questions

Final Intonation Pattern of Urdu *Kya*-Questions
aH L* H%

4.1.6. Intonation Pattern of Doubt in Urdu *Kya*-Questions

To analyze the intonation pattern of doubt in Urdy kya-questions similar set of five different structures based on SOOV and SOV but having grammatical variation is used. These sentences are uttered in the elicited context of doubt. 26 utterances against ten speakers are used for this analysis.

4.1.6.1. Detailed Analysis of Intonation Pattern of Doubt in Urdu kya*-questions with Structure* kya+ *Sub+ Obj.1+ Obj.2+ V (SOOV)*

Table 4.60. demonstrates the summary of intonation patterns found during the analysis of *'kyA Aap merE sAth bAzAr calyN gE'*؟کیا آپ میرے ساتھ بازار چلیں گے (Will you go to market with me?). All intonation patterns have aH as starting tone. Four intonation patterns with doubt have downstepped sustained high-end boundary tone, which is !H%. And two intonation patterns have L% boundary tone. Although the variation in patterns is found due to variation in the focus of doubt and sometimes due to the realization of more than one focus of doubt in a sentence. The summary of stressed syllables is presented in table. 4.61. which shows the frequency of stressed syllables on words across the sentence. Although direct Object *'bAzAr'* بازار (market) is realized four times with bitonal L*+H and a monotonal L*. Also, the indirect object *'merE'* میرے (me) is the highly focused lexical item of this sentence. It may be interpreted that the speaker usually illustrates doubt on object.1 and Object.2 in sentences with this structure.

Table 4.60 Intonation patterns of doubt in Urdu *kya*-question 1

***kya*+ Sub+ Obj.1+ Obj.2+ V+AUX**	**Frequency**
aH L*+H La L*+H !H%	1
aH L* Ha H*!H%	2
aH L* La L*+H !H%	1
aH L*+H !H%	1
aH L* Ha L*+H L%	1
aH L*+H L%	1

Table 0.61 Stress patterns of doubt in *kya*-question 1

Grammar	**Wh**	**OBJ.1**	**PSP**	**OBJ.2**	**V**
Syntax	**RB**	**PRS**	**PSP**	**NN**	**VBF**
Urdu. Transliteration	**kyA**	**merE**	**sAth**	**bAzAr**	**calyN**
tone count	L* 1	L*+H 1	Ha 3	L*+H 4	H* 2
tone count		L* 3	La 2	L* 1	+H 1

The utterances against statement *'kyA tum merA kamrah jhARU sE sAf krO gI'* کیا تم میرا کمرہ جھاڑو سے صاف کرو گی؟ (Will you clean my room with broom?) with structure *kya*+SOOV+Adj+V+Aux demonstrate four different kinds of intonation patterns when realized in doubt, shown in table.4.62. and their stressed lexical items are presented in table 4.63. Two utterances are realized with !H% boundary tone while two are realized with L%. The intonation patterns realized with L% as the ending tone have one accent in them, which means the focus of doubt is realized once. The realization of L* on *'jhARU'* جھاڑو (broom) and +H on verb '*sAf*'صاف (clean) talks also about the focus of doubt on more than one lexical item, when L*+H a bitonal pitch accent is realized on two words. However, most frequent focus of doubt is realized on Obj.1 '*kamrah*' کمرہ (room).

Table 4.62 Intonation patterns of doubt in *kya*-question 2

Kya+ Sub+ Obj.1+ Obj.2+ Adj+ V+ AUX	**Frequency**
aH L* La L*+H !H%	1
aH L*L%	1
aH L*+H L%	2
aH L* Ha L*+H !H%	1

Table 4.63 Stress patterns of doubt in *kya*-questions 2

Grammar		**PRS**	**OBJ.1**	**OBJ.2**	**Adj**	**V**
Syntax		**PRS**	**NN**	**NN**	**Adj**	**VBF**
Urdu.						
Transliteration		**merA**	**Kamrah**	**jhARU**	**sAf**	**krO**
tone	**count**	L* 1	L*+H 2	L* 1	+H 1	L*+H1
tone	**count**	L* Ha1	L* La 1			

The analysis of Urdu *kya*-Questions with structure *Kya*+ Sub+ Adj+ Obj.1+ V+ Obj.2 + Aux shows that three different intonation patterns are realized against the utterances spoken for *'kyA tm sAlAnA ImtehAn nyN pAs hO gaE hO'.* کیا تم سالانہ امتحان میں پاس ہو گئے ہو؟ (Have you passed in final exams?) All patterns illustrate aH as starting while !H% is most frequent ending boundary tone. The variation of focus of doubt is realized on adjective '*sAlAnA'* سالانہ (annual), Obj.1 '*ImtehAn*' امتحان (exam), verb *'pAs* پاس (pass) and aspectual auxiliary *'gaE'* گئے (asp.aux.past participle -ed). The frequency of accents is given in table.4.64. However, table 4.65. shows the intonation patterns realized against this sentence structure.

Table 4.64 Intonation patterns of doubt in *kya*-question 3

***Kya*+ Sub+ Adj+ Obj.1+ V+ Obj.2+ Aux**	**Frequency**
aH L* Ha L*+H !H%	2
aH L* La L* Ha H* L%	1
aH L*+H !H%	1

Table 0.65 Stress patterns of doubt in *kya*-question 3

Grammar		**ADJ**	**OBJ.1**	**VBF**	**AUXA**
Syntax		**JJ**	**NN**	**VBF**	**AUXA**
Urdu. Transliteration		**sAlAnA**	**ImtehAn**	**pAs**	**gaE**
tone	**count**	L* Ha 2	L*+H 2	L* Ha 1	H* 1
tone	**count**	L* 1	La 2		

Urdu *kya*-Question *'kyA Aaj Ali hmArE lyE khAnA pakAE gA'* کیا آج علی ہمارے لیے کھانا پکائے گا؟ (Will Ali cook meal for us today?) with structure Kya+ Sub+ Adj+ Obj.1 + Obj.2+ V+ Aux realizes three different intonation patterns with equal frequency count. The summary of these patterns is shown in table 4.66. One out of three intonation patterns is realized with aL (Low starting) tone and also ends on L% (low ending tone). While the rest of the two patterns illustrate aH (high starting tone) and !H% (sustained high with downstepping) final boundary tone (IP). However, the summary of variation in the focus of doubt on different grammatical categories of sentences is given in the table 4.67.

Table 0.66 Intonation patterns of doubt in *kya*-question 4

Kya+ Sub+ Adj + Obj.1 + Obj.2+ V+ Aux	**Frequency**
aL L*+H L%	1
aH L* La L*+H !H%	1
aH L* Ha L*+H !H%	1

Table 4.67 Stress patterns of doubt in *kya*-question 4

Grammar		**SUB**	**I.OBJ**	**D.OBJ**
Syntax		**NN**	**PRS**	**NN**
Urdu.				
Transliteration		**Aaj**	**hmArE**	**khAnA**
tone	**count**	L* 1	La 1	L*+H 2

4.1.6.2 Summary of Intonation Pattern of Doubt in Urdu kya- *Questions with Structure SOOV*

Table 4.68 demonstrate that aH L* Ha L*+H !H% is the most frequent tonal pattern in SOOV *kya*-questions, when these questions are uttered not to ask information but to reveal the emotion of doubt. Detailed analysis of one of SOOV uttered by different speakers for realization of doubt is given in table 4.69. The intonation pattern of SOOV in *kya*-questions for doubt is realized with aH, high, at starting tone position and !H%, downstepped sustained high at IP (sentence final position), while having two accented phrases L* Ha and L*+H !H% in a sentence. This illustrates also, that a speaker realizes their doubt at two different positions in Urdu *kya*-questions carrying the negative meaning of doubt.

Table 4.68 Intonation patterns of doubt in Urdu *kya*-questions with SOOV structure

kya+ Sub+ Obj.1+ Obj.2+ V	**Frequency**
aH L* Ha L*+H !H%	4
aH L*+H L%	3
aH L* La L*+H !H%	3
aH L*+H !H%	2
aH L* Ha L*+H L%	1
aH L*L%	1
aH L* La L* Ha H* L%	1
aL L*+H L%	1
aH L*+H La L*+H !H%	1
aH L* Ha H*!H%	2

Table 0.69 Various stress patterns of SOOV kya-question when realized for doubt for sentence 'kyA Aap merE sAth bAzAr calyN gE' ؟کیا اپ میرے ساتھ بازار چلیں گے (Will you go to market with me?)

SP #		کیا	آپ	میرے	ساتھ	بازار	چلیں	گے	
		wh	**SUB**	**I.OBJ**	**PSP**	**D.OBJ**	**V**	**AUXT**	
		RB	**PRP**	**PRS**	**PSP**	**NN**	**VBF**	**AUXT**	
	AP	**kyA**	**Aap**	**merE**	**sAth**	**bAzAr**	**calyN**	**gE**	**IP**
	0	1	2	3	4	5	6	7	8
SP8	aH		-	L*+H	La	L*	+H		!H%
SP6	aH	-	-	L*	Ha	-	H*	-	!H%
SP6	aH		-	L*	Ha	-	H*	-	!H%
SP4	aH	L*	-	-	La	L*+H	-		!H%
SP9	aH	-	-	-	-	L*+H	-		!H%
SP5	aH		-	L*	Ha	L*+H	-		L%
SP2	aH		-	-	-	L*+H	-		L%

4.1.6.3 Detailed Analysis Intonation Pattern of Doubt in Urdu kya-Questions with Structure Kya+ *SOV*

'kyA tumhArE pAs naI hondA gARI hE' ؟کیا تمہارے پاس نئی ہنڈا گاڑی ہے (Do you have a new Honda car?) with grammatical distributions *Kya*+Sub+ Adj+ Adj+ Obj+ V Table 4.70. demonstrates that most frequent intonation pattern in this *kya*-question structure is aH L*+H !H%. other two patterns are also realized with aH, which is a high starting tone. But one out of three patterns are realized with L%. The highly frequent accented word in the sentence is adjective *'naI'* نئی (new) and *'hondA'* ہنڈا (Honda). Table 4.71 represent the distribution and frequency of focus of doubt and their accents.

Table 4.70 Intonation patterns of doubt in *kya*-question 5

***Kya*+ Sub+ Adj+ Adj+ Obj+ V**	**Frequency**
aH L*+H !H%	4
aH L* Ha L*+H !H%	3
aH L*+H La L* L%	1

Table 0.71 Stress patterns of doubt in *kya*-question 5

Grammar		**SUBJ**	**VBF**	**ADJ/JJ**	**ADJ**	**OBJ**
Syntax		**PRS**	**VBF**	**ADJ/JJ**	**NNP**	**NN**
Urdu.						
Transliteration		**tumhArE**	**pAs**	**naI**	**hondA**	**gARI**
tone	**count**	L* 2	Ha 2	L*+H 4	L* +H 3	L* 1
tone	**count**			L* Ha 2	+H 1	
tone	**count**			L* 1	La 1	

4.1.6.4. Summary of Intonation Pattern of Doubt in Urdu kya- *Questions with Structure SOV*

The summary of intonation patterns in Urdu *kya*- questions communicating the meaning of doubt is given in the table 4.72. Keeping in view the scope of the present study to find the intonation pattern of doubt in Urdu *kya*- questions, aH L*+H !H% is found as the most frequent intonation pattern in the analysis. The detailed analysis of patterns and their accents is given in table 4.73. The findings of analysis reveal that Urdu speakers realize doubt in SOV *kya*-question with high starting tone, aH, and end it on downstepped sustained high ending tone !H%, while a bitonal L*+H is realized as pitch accent for the focus of doubt.

Table 0.72 Intonation patterns of Urdu *kya*-questions with SOV sentence structure

Kya+ Sub + Obj+V	**Frequency**
aH L*+H !H%	4
aH L* Ha L* +H !H%	3
aH L*+H La L* L%	1

Table 0.73 Realization of stress patterns of doubt in SOV kya-question *'kyA tumhArE pAs naI hondA gARI hE'* کیا تمہارے پاس نئی ہنڈا گاڑی ہے؟ (Do you have a new Honda car?)

		کیا	تمہارے	پاس	نئی	ہنڈا	گاڑی	ہے	
	0	1	2	3	4	5	6	7	8
		Wh	**SUBJ**	**VBF**	**ADJ/JJ**	**ADJ**	**OBJ**	**V**	
		RB	**PRS**	**VBF**	**ADJ/JJ**	**NNP**	**NN**	**VBF**	
	AP	**kyA**	**tumhArE**	**pAs**	**naI**	**hondA**	**gARI**	**hE**	**IP**
SP1	aH	-	-	-	L*+H	-	-	-	!H%
SP2	aH	-	L*	Ha	L*	+H	-	-	!H%
SP3	aH	-	-	-	L* Ha	L*+H	-	-	!H%
SP4	aH	-	-	-	L*+H	-	-	-	!H%
SP5	aH	-	-	-	-	L*+H	-	-	!H%
SP6	aH	-	-	-	-	L*+H	-	-	!H%
SP6	aH	-	L*	Ha	L*+H	-	-	-	!H%
SP7	aH	-	-	-	L*+H	La	L*	-	L%

4.16.5. Conclusion

The results of analysis reveal that Urdu *kya*-questions are realized with two kinds of intonation patterns when utterances are realized to communicate doubt. aH L*+H !H% is realized as the default pattern of doubt in SOV structure while in SOOV syntactic configuration the default pattern for doubt in Urdu *kya*-questions is aH L* Ha L*+H !H%. However, several other patterns are also found due to grammatical richness and speakers' choice to realize the doubt on various grammatical categories. The discussion based on grammatical relations will be out of the scope of the present study, and the present study is limited to finding the intonation patterns of doubt in this section. The results reveal that the difference in syntactic variation between SOV and SOOV effect the intonation pattern of doubt in Urdu *kya*-questions. The final intonation patterns are given below in table 4.74.

Table 0.74 Intonation pattern of doubt in Urdu *kya*-questions

Intonation Patterns of Doubt in Urdu kya-questions
aH L*+H !H%
aH L* Ha L*+H !H%

4.1.7. Intonation Pattern of Taunt in Urdu *kya*-Questions

Five different sentences based upon grammatical variations and having syntactic structure SOOV and SOV are analyzed to find out the intonation pattern of Urdu kya-questions when these questions are uttered not for seeking information but for there is a realization of taunt in the utterance. 32 utterances against 10 speakers are analyzed. The list of five different grammatical structures is provided in section 4.5. The detailed analysis of these utterances is discussed in the following sections.

4.1.7.1 Intonation Pattern of Taunt in Urdu kya-Questions with SOOV Structure

Table 4.75. demonstrates the frequency of different intonation patterns found for SOOV *'kyA Aap merE sAth bAzAr calyN gE'* کیا آپ میرے ساتھ بازار چلیں گے؟ (Will you go to market with me?) with grammatical distribution kya+ Sub+ Obj.1+ Obj.2+ V+AUX when realized for taunt. The most frequent tonal pattern is aH L*+H L%. which means that aH is realized as a high starting tone, and L% is realized as a low final boundary (IP). Pitch accent L*+H is realized on subject *'Aap'* آپ (you). Table 4.76 represents the frequency of pitch accents on different syntactic categories. Analysis of this structure reveals that subject of the sentence is the most frequently accented word having the focus of taunt in it.

Table 4.75 Intonation patterns of taunt in Urdu *kya*-question 1

***kya*+ Sub+Obj.1+Obj.2+V+AUX**	**Frequency**
aH L*+H L%	3
aL L*+H La L* LH%	1
aH L*+H La L* L%	1

Table 0.76 Stress patterns of taunt in *kya*-question 1

Grammar	**SUB**	**PSP**	**D.OBJ**
Syntax Urdu.	**PRP**	**PSP**	**NN**
Transliteration	**Aap**	**sAth**	**bAzAr**
tone count	L*+H 5	La 2	L* 2

Intonation Pattern of Taunt in Urdu *kya*-Question *'kyA tum merA kamrah jhARU sE sAf krO gI'* *کیا تم میرا کمرہ جھاڑو سے صاف کرو گی؟ (Will you clean my room with broom?)* with structure *Kya*+ Sub+ Obj.1+ Obj.2 +Adj+ V+ AUX is realized with four different intonation patterns. Three patterns are realized with low starting tone aL, while, one pattern is realized with high starting tone aH. Three patterns are realized with L% and one is realized with H% at the final boundary tone position. Two patterns represent one accented phrase which is bitonal L*+H, while, the rest of the two patterns are realized as having two places of focus for taunting in a sentence. The frequency of these patterns is shown in table 4.77. While the frequency of accented words and their tones across sentences are given in table 4.78. However, the data set reveals that wh category '*kyA'* کیا and Subject *'tum'* تم (you) have the most frequent realization of accented focus for taunt in this syntactic structure.

Table 0.77 Intonation patterns of taunt in *kya*-question 2

***Kya*+ Sub+ Obj.1 + Obj.2 + Adj+ V+ AUX**	**Frequency**
aL L*+H L%	2
aH L*+H L%	1
aL H* La L* H%	1
aL H* La L* L%	1

Table 4.78 Stress patterns of taunt in *kya*-question 2

Grammar	**Wh**	**SUBJ**	**PRS**	**OBJ**	**V**
Syntax	**RB**	**PRP**	**PRS**	**NN**	**VBF**
Urdu.					
Transliteration	**kyA**	**tum**	**merA**	**kamrah**	**krO**
tone count	L* 2	L*+H 1	H* La 1	L* 1	L* 1
tone count	H* La 1	+H 2			

The analysis for intonation Pattern of Taunt in Urdu *kya*-Question *'kyA tm sAlAnA ImtehAn nyN pAs hO gaE hO'* *کیا تم سالانہ امتحان میں پاس ہو گئے ہو؟ (Have you passed in final exams?)* with structure *Kya*+ Sub+ Adj+ Obj.1+ V+ Obj.2+ Aux reveals five different intonation patterns. Four have starting aL while one has aH as starting tone. All intonation patterns have end tone L%. While the variation in patterns is due to the presence and arrangement of different grammatical categories. That is shown in table 4.79. and table 4.80. respectively. However, the most frequent accented word is H* which is realized on Subject *'tum'* تم (you) of the sentence.

Table 0.79 Intonation patterns of taunt in *kya*-question 3

Kya+ Sub+ Adj+ D.Obj+ V+ I.Obj+ Aux	**Frequency**
aL H*+L L%	2
aH H*+L L%	2
aL L*+H La L* L%	1
aL H* L%	1
aL L*+H L%	2

Table 0.80 Stress patterns of taunt in *kya*-question 3

Grammar	**Wh**	**SUBJ**	**ADJ**	**OBJ**	**VBF**
Syntax	**RB**	**PRP**	**ADJ/JJ**	**NN**	**VBF**
Urdu. Transliteration	**kyA**	**Tum**	**sAlAnA**	**ImtehAn**	**pAs**
tone count	L* 2	H* 3	H*+L 2	+L 1	+L 1
tone count		L*+H 1	La	L* 1	
tone count		+H 1	+H 1		

The analysis of Intonation Pattern of Taunt in Urdu *kya*-Question *'kyA Aaj Ali hmArE lyE khAnA pakAE gA'* *کیا آج علی ہمارے لیے کھانا پکائے گا؟ (Will Ali cook meal for us today?)* with structure *Kya*+ Sub+ Adj+ Obj.1 + Obj.2+ V+ Aux reveals various intonation patterns with the equal distribution shown in table 4.81. However, all patterns are similar in their realization of starting tone aL and ending tone L%. The variation in stress patterns and frequency of their tonal patterns is demonstrated in table 4.82. While the most frequent realization for the focus of taunt is noticed on subject 'Ali' of the sentence, which carries two kinds of accents, L* and L*+H on them, in different sentences.

Table 0.81 Intonation patterns of taunt in *kya*-question 4

Kya+ Sub+ Adj+ Obj1. Obj.2+ V+ Aux	**Frequency**
aL L*+H La L* L%	1
aL L*+H L%	1
aL L* Ha L* L%	1
aL L* Ha L*+H L%	1

Table 0.82 Stress patterns of taunt in *kya*-question 4

Grammar	**SUB**	**PSP**	**OBJ.2**	**V**
Syntax	**NNP**	**PSP**	**NN**	**VBF**
Urdu.				
Transliteration	**Ali**	**lyE**	**khAnA**	**pakAE**
tone count	L*+ H 2	La 1	L* 1	L* 1
tone count	L* Ha 2		L*+H 1	

4.1.7.2 Summary of Intonation Pattern of Taunt in Urdu kya- *Questions with Structure SOOV*

The summary of various intonation patterns for SOOV *kya*-questions is given in table 4.83. The most frequent intonation pattern for SOOV in Urdu *kya*-questions are aH L*+H L% and aL L*+H L%. This shows that irrespective of starting intonation the L*+H L% is the default intonation pattern of taunt when the negative emotion of taunt is realized in SOOV *kya*-questions. The detailed analysis of one of the *kya*-question statements uttered for taunt in SOOV with various intonation patterns are presented in table 4.84. However, the results reveal that the variety of intonation patterns is due to speakers' choice of realizing doubt on different grammatical categories and illustrating the focus of taunt on more than one lexical item in the sentence, but analysis reveals that such kind of patterns is unique.

Table 0.83 Intonation patterns of taunt in *kya*-questions with SOOV structure

***kya*+ Sub+Obj.1+Obj.2+V**	**Frequency**
aH L*+H L%	4
aL L*+H La L* LH%	1
aH L*+H La L* L%	1
aL L*+H L%	5
aL H* La L* H%	1
aL H* La L* L%	1
aL H*+L L%	2
aH H*+L L%	2
aL L*+H La L* L%	2
aL H* L%	1
aL L* Ha L* L%	1

Table 4.84 Realization of L*+H in SOOV *kya*-question when uttered for taunt in *'kyA Aap merE sAth bAzAr calyN gE'* کیا آپ میرے ساتھ بازار چلیں گے؟ (Will you go to market with me?)

		کیا	**آپ**	**میرے**	**ساتھ**	**بازار**	**چلیں**	**گے**	
	0	1	2	3	4	5	6	7	8
		Wh	**SUB**	**OBJ.1**	**PSP**	**OBJ.2**	**V**	**AUXT**	
		RB	**PRP**	**PRS**	**PSP**	**NN**	**VBF**	**AUXT**	
	AP	**kyA**	**Aap**	**merE**	**sAth**	**bAzAr**	**calyN**	**gE**	**IP**
SP7	aH		L*+H	-	-	-	-	-	L%
SP3	aH	-	L*+H	-	-	-	-	-	L%
SP1	aH		L*+H	-	La	L*	-		L%
SP5	aH		L*+H	-	-	-	-		L%
SP2	aL		L*+H	-	La	L*	-		LH%

4.1.7.3. Detailed Analysis Intonation Pattern of Taunt in Urdu kya-*Questions with Structure* Kya+ *Sub+ Obj+ V (SOV)*

Table 4.85 demonstrates aH L*+H L% as the most frequent intonation pattern of SOV *'kyA tumhArE pAs naI hondA gARI hE'* کیا تمہارے پاس نئی ہنڈا گاڑی ہے؟ *(Do you have a new Honda car?)* with grammatical construction kya+sub+Adj+Adj+V. Which is realized with a high starting tone aH and ends on L% (low IP). While the intonation pattern carries only one focus of taunt which is bitonal L*+H. The focus of taunt as

shown in table 4.86 is highly frequent on Subject with the realization of monotonal accent L*, and also with bitonal accent L*+H. However, the distribution of L*+H is realized on subject+ Verb '*tumhArE + pAs*' تمہارے پاس (you have) making it one phrase for the focus of taunt.

Table 0.85 Intonation patterns of taunt in *kya*-question 5

Kya+ Sub+ Adj+ Adj+ Obj+ V	**Frequency**
aH L*+H L%	7
aH L*+H Ha L* L%	1
aH L*+H La L* L%	1
aH L*Ha H*+L L%	1

Table 4.86 Stress patterns of taunt in *kya*-question 5

Grammar		**SUBJ**	**VBF**	**ADV**
Syntax Urdu.		**PRS**	**VBF**	**ADV/JJ**
Transliteration		**tumhArE**	**pAs**	**naI**
tone	**count**	L* 4	+H 4	L* 2
tone	**count**	L*+H 5	H*+L 1	
tone	**count**	L* Ha 1	Ha 1	
tone	**count**		La 1	

4.1.7.4. Summary of Intonation Pattern of Taunt in Urdu kya- *Questions with Structure SOV*

Table 4.87 demonstrates the summary of intonation patterns of taunt found against utterances having SOV structure in Urdu *kya*-questions. The most frequent tonal pattern of taunt in this structure is aH L*+H L%. In which aH is high starting tone while L% is low final boundary tone (IP). A bitonal L*+H represents the focus

of taunt in these utterances of Urdu *kya*-questions. Table 4.88 presents one of the examples analyses for realization and distribution of stress patterns for taunt.

Table 4.87 Intonation patterns of taunt in *kya*-questions with SOV structure

***Kya*+ Sub+ O+ V**	**Frequency**
aH L*+H L%	7
aH L*+H Ha L* L%	1
aH L*+H La L* L%	1
aH L*Ha H*+L L%	1

Table 4.88 Realization of stress patterns in SOV kya-question 'kyA tumhArE pAs naI hondA gARI hE' کیا تمہارے پاس نئی ہنڈا گاڑی ہے؟ (Do you have a new Honda car?) uttered for taunt

		کیا	تمہارے	پاس	نئی	ہنڈا	گاڑی	ہے	
	0	1	2	3	4	5	6	7	8
		Wh	**SUBJ**	**VBF**	**ADV**	**ADJ**	**OBJ**	**V**	
		RB	**PRS**	**VBF**	**ADV/JJ**	**NNP**	**NN**	**VBF**	
	AP	**kyA**	**tumhArE**	**pAs**	**naI**	**hondA**	**gARI**	**hE**	**IP**
SP5	aH	-	L*	+H	-	-	-	-	L%
SP1	aH	-	L*	+H	-	-	-	-	L%
SP1	aH		L*	+H	-	-	-	-	L%
SP2	aH		L*+H	Ha	L*	-	-		L%
SP8	aH	-	L*+H	La	L*	-	-		L%
SP5	aL		L*	+H	-	-	-		L%
SP8	aH	-	L*+H	-	-	-	-		L%
SP6	aH		L*+H	-	-	-	-	-	L%
SP5	aH		L* Ha	H*+L	-	-	-		L%
SP9	aH	-	L*+H	-	-	-	-		L%

4.1.7.5. Conclusion

The findings of analysis for the data set of Urdu *kya*-questions illustrated in the realization of taunt reveal that in kya-questions with SOV and SOOV structure only one intonation pattern is realized which is aH L*+H L%. The results reveal that the difference in syntactic structure which is SOV and SOOV does not affect the intonational pattern of taunt. The final intonation pattern drawn out of the complete

data set of *kya*-questions uttered to communicate taunt and its frequency is given below in table 4.89.

Table 4.89 Intonation pattern of taunt in *kya*-questions

Intonational Pattern of Taunt in Urdu *kya*-questions
aH L*+H L%

4.8 Summary

The discussion of this chapter was based on results drawn out of analysis of four themes assertion, declaration, taunt and doubt in two types of Urdu statements which were assertive and declarative statements and *kya*-question statements. The results reveal no significant difference among tonal patterns of Urdu assertive and declarative sentences. However, simple *kya*-questions show different intonation pattern in respect to their final boundary tone IP. The analysis also reveals various tonal patterns of taunt and doubt in these statements. Most frequent tonal patterns are selected as default intonation patterns for both kind SOV and SOOV syntactic structures realized against each theme. Herein, Chapter 5 will throw light upon the findings of this study based on these results.

Chapter 5

5.1. Discussion

Chapter four has presented the results of various intonation patterns realized for assertive and declarative sentences and for *kya*- questions. Also, the intonation patterns of doubt and taunt are discussed in chapter four realized against these Urdu statements and *kya*-questions. This chapter in following sections will discuss the results of my study based on comparative analysis of all the themes and types of statements designed to inquire research questions.

5.1.1. Intonational Cues of Taunt and Doubt in Urdu Declarative and Assertive Statements, and *Kya*-Questions

This section is designed to give a summary of the comparison of intonation of taunt and doubt in assertive and declarative statements and also in *kya*-questions. These cues are discussed step by step through comparative discussion and representation of intonation patterns of themes with in same and across designed statements and *kya*-question.

5.1.1.1. The Intonation of Taunt and Doubt in Urdu Assertive and Declarative Statements

The table. 5.1. demonstrates the comparison of intonation of taunt and doubt realized in Urdu assertive and declarative statements. There is a significant difference between intonation of taunt and doubt. The tonal pattern of doubt is realized with both high starting tone and low starting tone, which are aH and aL respectively. And, in

doubt starting high and low does not affect the remaining pattern of intonation. While the tonal pattern of taunt has always low starting tone, which is aL. Although both the patterns carry bitonal pitch accents but doubt is realized with L*+H, which illustrates the realization of valley at L* and further precedes a rise. On the other hand, the intonation pattern of taunt is realized with H*+L bitonal pitch which illustrates a sharp rise on accented syllable and then precedes a low fall. However, the intonation of taunt and doubt of Urdu assertive and declarative statements is also different that of taunt and doubt.

Table 5.0.1 Intonation patterns of doubt Vs. taunt in Urdu statements

Intonation pattern of doubt in Urdu statements	**Intonation pattern of taunt in Urdu statements**	**Most Frequent Patterns across Urdu declarative and assertive sentences**
aH L*+H !H% aL L*+H !H%	aL H*(+L) L%	aH L*(Ha L*(+H)) L%

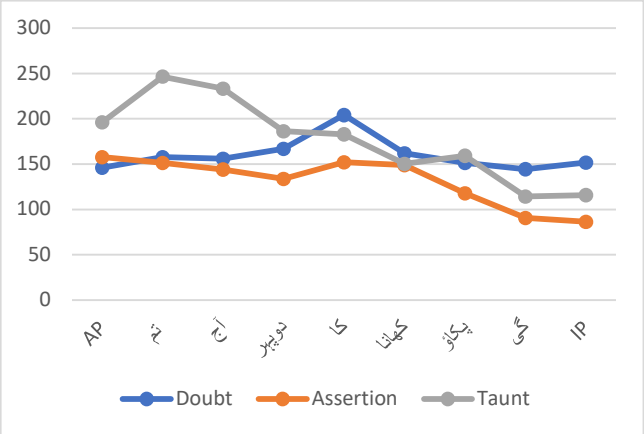

Figure 5.1 Illustration of Intonation patterns of doubt Vs. taunt in Urdu statement *'tum Aaj dOpehar kA khAnA pakAO gI'* تم آج دوپہر کا کھانا پکاؤ گی (You will cook lunch today).

5.1.1.2. The intonation of Taunt Vs. Doubt in Urdu kya-questions

Table. 5.2. demonstrates the comparison of intonation patterns of doubt and taunt. Also represented in Figure 5.2 The intonation pattern of taunt and doubt in *kya*-questions are significantly different in respect to their final boundary tone which is !H% (downstepped sustained high) in doubt and L% (low IP) in case of taunt. Also, *kya*-questions in realization with doubt may reveal with two pitch accents, that is L* on the first focus of doubt while the second focus of doubt is realized with bitonal L*+H on the other hand, there is only one default tonal pattern of intonation for taunt.

Table 5.0.2 Intonation patterns doubt Vs. taunt in Urdu *kya*-questions

Intonation Pattern of doubt in Urdu *kya*-questions	**Intonation Pattern of taunt in Urdu *kya*-questions**	**Final tonal pattern of *kya*- questions**
aH L*+H !H% aH L* Ha L*+H !H%	aH L*+H L%	aH L* H%

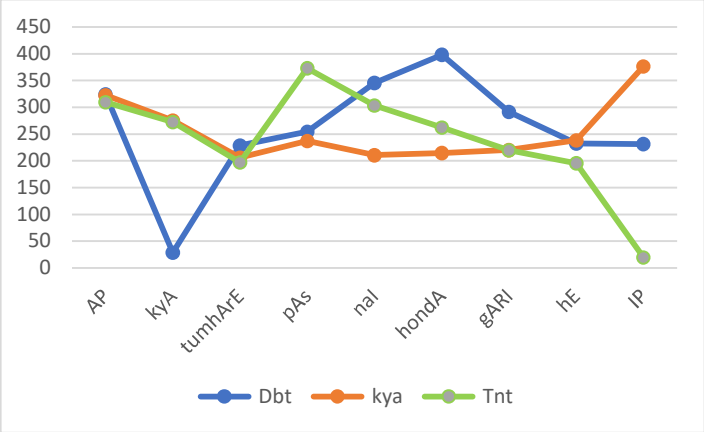

Figure 5.2. Illustrates the pitch curve of F0 values of a kya-questions *'kya tumhArE pAs naI hondA gARI hE.'* کیا تمہارے پاس نئی ہنڈا گاڑی ہے؟ (Do you have new Honda car?) of one speaker against utterances of simple *kya*-question, taunt, and doubt. AP denotes utterance starting and IP denotes ending boundaries.

5.1.1.3. Comparison of Intonation of Taunt in Urdu Statements and kya-Questions

The results of intonation patterns of taunt in Urdu statements and *kya*-questions uttered for taunt have been discussed in chapter four. It concludes that Urdu statements, when realized with the intonation of taunt, reveal two tonal patterns shown in the table 5.3. While only one tonal pattern is realized for taunt in *kya*-questions, also shown in table 5.3. The comparative analysis of Urdu statements and *kya*-questions reveals that Urdu statements with emotion of taunt are realized with low starting tone, which aL, while taunt in *kya*-questions, is realized with aH which is high starting tone. Both Urdu statements and Urdu *kya*-questions with taunt are realized with low IP, which is L%.

However, the significant difference between these two tonal patterns is the realization of high accented pitch H* and realization of bitonal high H*+L in Urdu statements, and the realization of bitonal L*+H in *kya*-questions. The realization of H*+L in the Urdu language is another additional finding of this study. As this study is limited to finding the intonational patterns and phonetic details are wider than the scope of this study. So, the present research does not analyse data to configure phonetic details of H*+L. Herein, a future study foresees the investigation of its phonetic details and F0 configuration in the Urdu language.

Table 5.0.3. Comparison of intonation patterns of taunt in Urdu statements and *kya*-questions

Intonation Pattern of taunt in Urdu statements	**Intonation Pattern of taunt in Urdu *kya*-questions**
aL H*(+L) L%	aH L*+H L%

5.1.1.4. Comparison of Intonation Patterns of Declarative and Assertive Vs. kya-questions

The detailed analysis of intonation patterns revealed for Urdu declarative and assertive statements has been discussed in chapter 4. The previous chapter represents the detailed analysis of taunts and doubts for the same statements when uttered in the elicited context of taunts and doubt. The summary of the difference between Urdu assertive and declarative statements is discussed in 4.1.2.3. has concluded that there is not any intonational difference found in Urdu assertive and declarative statements, but there is emphatic stress that makes declarative statements assertive statements. Table. 95. also presents a comparative demonstration of Urdu assertive and declarative statements and Urdu *kya*-questions. This clearly shows that the intonation pattern of Urdu assertive and declarative statements of Urdu native speakers is the same. While the tonal pattern of *kya*-questions is significantly different regarding its final boundary tone (IP) which is H%.

The findings reveal that in comparison with assertive and declarative statements the tonal pattern of the Urdu *kya*-question end on a high boundary tone.

Table 5.0.4 Comparison of tonal patterns of Urdu assertive statements, declarative statements and *kya*-question

Final tonal pattern of assertive statements	**Final tonal pattern of declarative statements**	**Final tonal pattern of *kya*-questions**
aH L* (Ha L*(+H)) L%	aH L* (Ha L*(+H)) L%	aH L* H%

5.1.1.5. Comparison of Intonation of Doubt in Urdu Assertive and Declarative Statements and Kya-Questions

The detailed analysis and its summary of intonation of doubt in Urdu statements have been discussed in chapter 4. However, results conclude that L*+H !H% is default pitch accent for Urdu statements when realized with the emotion of doubt. Because the effect of aL or aH as starting tone does not interrupt the mechanism of overall pitch contour of doubt. Also, the detailed analysis and results concluded in chapter 4 has reported that Urdu *kya*-questions, when uttered with emotion of doubt, are realized with two intonation patterns, which are aH L*+H !H% or aH L* Ha L*+H !H%, also demonstrated in table.5.5. It clearly shows that the tonal pattern of doubt is same for statements and *kya*-questions. The only difference revealed in this analysis is that in questions the speaker realizes the focus of doubt on two lexical items of the sentence in the case when the first focus is identified on Urdu wh category *'kya'*, which bears stress L* and makes its accentual phrase as L* Ha. While the second focus of doubt is realized always on the word or syntactic category where the speaker intends to reveal doubt.

Table 5.0.5 Comparison of intonation patterns of doubt in Urdu statements and *kya*-questions

Intonation pattern of doubt in Urdu statements	**Intonation pattern of doubt in Urdu *kya*-questions**
aH L*+H !H%	aH L*+H !H%
aL L*+H !H%	aH L* Ha L*+H !H%

5.1.2. Effect of Subject Vs. Object Focus in the Intonation of Doubt and Taunt

The overall analysis of data also answers the third research question of the present study, which was to find the relationship between a shift of Subject Vs. Object focus in realization of tonal patterns of Taunt Vs. doubt. The discussion in section 5.1.2.1 and 5.1.2.2 highlights the difference between subject and object focus a cue of difference of intonation patterns of doubt and taunt.

5.1.2.1. Difference in Intonation Patterns in Urdu (Assertive and Declarative) Statements of Doubt and Taunt due to Difference of Subject Vs. Object Focus

Analysis of the data reveals a significant difference in the intonation patterns of doubt and taunt in Urdu statements. The present study aimed also to see the impact of Subject Vs. Object focus in these statements. The findings reveal aH L*+H !H% and aL L*+H !H% is the default pattern of doubt in Urdu assertive and declarative statements. Although, the difference between aL and aH could not bring out any significant impact on the proceeding tone. The dataset of the present study configures L*+H !H% as the default pattern of doubt in Urdu statements irrespective of the difference in starting tone aL and aH, and grammatical variation. The whole analysis depicts the realization of L*+H, a bitonal pitch accent, only on Object.1 or Object.2, and not a single L*+H is realized on the subject in doubt statements.

However, the dataset analyzed for taunt reveals aL H*L% and aL H*+L L% as default pitch patterns for taunt. The difference between H* and H*+L is realized on grounds of types of focus. H* pitch accent is realized in case of broad focus of taunt in the statement, where speaker keeps the tonal impact of taunt throughout the sentence. Although, the realization of taunt with H* is usually found as Subject and post subject noun position which gradually falls at the phrase end position. The falling pattern in such a case is observed as a regular tonal declaration pattern. While, H*+L as bitonal pitch accent is realized in the case of narrow focus, where the focus of taunt is not on a complete sentence but a part of the sentence is realized as a focus of taunt. Herein, the discussion is based upon the difference between narrow Vs. Broad focus in the case of H* and H*+L will be out of scope for the present study; hence, this dimension of research can be carried out further for future studies. Although Jabeen (2019) has thrown the light on the difference between narrow Vs. broad focus on Urdu SOV statements.

Summary

The difference in intonational patterns in taunt Vs. doubt at phonological level reveals the subject focus is realized with an accented pitch accent H* and bitonal pitch accent H*+L that proceeds a gradual tonal declaration pattern to L%. While the focus on the object is realized with bitonal L*+H pitch accent which sustains high after downstepping and is illustrated as !H% in the present study. Although, !H% was not present in the Urdu inventory prescribed by Urooj et.al. (2019). However, Jabeen (2019) and Khan (2008, 2011) has also used !H to illustrate downstepped high sustained pitch pattern in Urdu and Hindi at the level of AP.

5.1.3. Difference of Intonation Patterns in Urdu *kya*-Questions Communicating Doubt and Taunt due to Difference of Subject Vs. Object Focus

The analysis reveals that there is a significant difference in intonation patterns of taunt and doubt also in Urdu *kya*- questions. Although both patterns are realized with the same starting tone which is aH (High). Both the patterns bear L*+H bitonal pitch accent but the realization and location of focus are different. In the statements having the realization of doubt, L*+ H is realized on Object in case of narrow focus. While in the case of broad focus L*+H is realized as an expanded pitch accent on an Object and its post position adjective or verb. In the analysis of the Urdu kya-question when realized with doubt *'kyA Aap mere sAth bAzAr calyN gE'* کیا آپ میرے ساتھ بازار چلیں گے (Will you go to bazar with me?) L*+H is always realized on Object.1 'merE' میرے (me) or Object.2 *'bAzAr'* بازار (market) in case of narrow focus. However, L*+H is realized also as broad focus in which L* is realized on Object.1 *'bAzAr'* بازار (market) while +H is realized on verb '*calyN*'چلیں (go) making '*bAzAr calyN'* بازار چلیں (go to bazar) one phrase for the focus of doubt. A similar pattern is found in another dataset of doubt as well.

However, *kya*-question uttered with taunt always realize L*+H on the subject in case of narrow focus. However, in the case of a broad focus of taunt L*+H has two different configurations. At first L* is realized on wh category '*kyA*' کیا while +H is realized on subject of sentence. While, when L* is realized on subject in case of broad focus of taunt +H is realized on its verb. As in Urdu question:

'kyA Aap mere sAth bAzAr calyN gE' کیا آپ میرے ساتھ بازار چلیں گے (Will you go to bazar with me?) L*+H is always realized on subject '*Aap*' آپ(you). While in question:

'*kyA tum merA kamrah jhARU sE sAf krO gI*' کیا تم میرا کمرہ جھاڑو سے صاف کرو گی (Will you clean my room with broom?) L*+H is realized as narrow and broad focus both. In case of narrow focus L*+H is realized on subject 'tum'. While, in case of broad focus L* is always realized on '*kyA*' کیا, while, +H is realized on subject '*tum*' تم , hence making '*kyA tum'* کیا تم a single phrase accent. In the tonal pattern of doubt aH L* Ha L*+H !H% the realization of L* Ha is always found on the subject while the second accent L*+H is found on Object.

Summary

The results reveal that the realization of L*+H on the subject in *kya*-questions represents the focus of taunt which precedes a low boundary tone L%. While the realization of L*+H as a focus pitch accent of doubt on Object, and Object +Verb or Object + adjective precedes a down stepped boundary tone !H%.

5.1.4. Additional finding, realization of !H% in Urdu intonation of doubt

The present study demonstrates the realization of !H% IP in Urdu statements carrying doubt while this !H% boundary is found in simple doubt statements and also Urdu "*kya*" Question statements illustrating emotions of doubt.

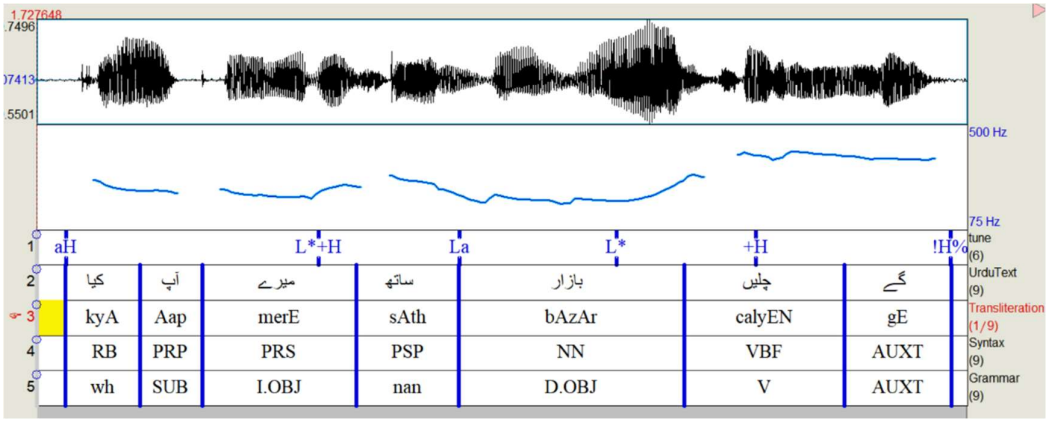

Figure 5.3 Urdu *Kya*-question calling doubt, illustrating bitonal high sustained pitch across more than one word represents mid boundary tone and is marked with !H% as mid boundary tone.

Khan (2008) in Figure.84 and 85, illustrates the downstep in Bengali due to the preceding rising pitch accent L*+H which is marked as high ip !H-. Although he tentatively leaves this discussion open for future studies without adding down step !H% boundary tone in his study. (Khan, 2008; pg,178).

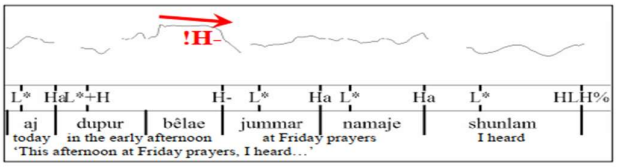

Figure 84. The high ip boundary tone (H-) borne at the right edge of the adverbials [adz ɖupuɹ belaɛ] 'this afternoon' is downstepped due to the preceding rising pitch accent (L*+H). The boundary tone is realized as smoothly falling high-mid pitch. [Jo49]

The sentence in Figure 84 above was produced by another speaker with two downstepped high ip boundary tones (!H-), illustrated below in Figure 85.

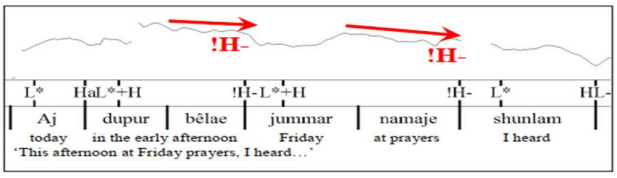

Figure 85. The high ip boundary tones (H-) borne at the right edge of the adverbials [adz ɖupuɹ belaɛ] 'this afternoon' and [dzum:aɹ namadze] 'at Friday prayers' are downstepped due to the preceding rising pitch accents (L*+H). The boundary tones are realized as smoothly falling high-mid pitch. [Ro49]

Figure 5.4; Khan (2008, Figure 84 and 85)

Khan (2008) adds that the difference between various versions of high phrase boundaries as high H- or downstepped (!H-) or upstep can be ignored without considering the shift of focus. The present study, however, is dealing with the prosodic intonational contour in which the shift of focus among lexical items and words or phrases is part of the discussion to find the difference between intonational phrases (IP), also Arvaniti et al. (2000, 2015) and Preito et al. (2015) and Calatan and Frota (2014; as cited in Preito et al., 2015) has used !H% in prosodic IP to represent downstep and medial level high sustained pitch. The downstepped high boundary pitch !H% is realized during the alignment of intonation in the corpus of 263 Urdu sentences uttered by 10 Urdu native speakers. The !H% is found at phrase final position IP preceding a rising F0 contour L*+H. The realization of L*+H as focus pitch contour is realized, also noticed by (Khan,2008; Jabeen et al, 2018, Jabeen, 2019). The stylized version of rising contour sustains high on more than three words when the focus is on the preverbal nouns.

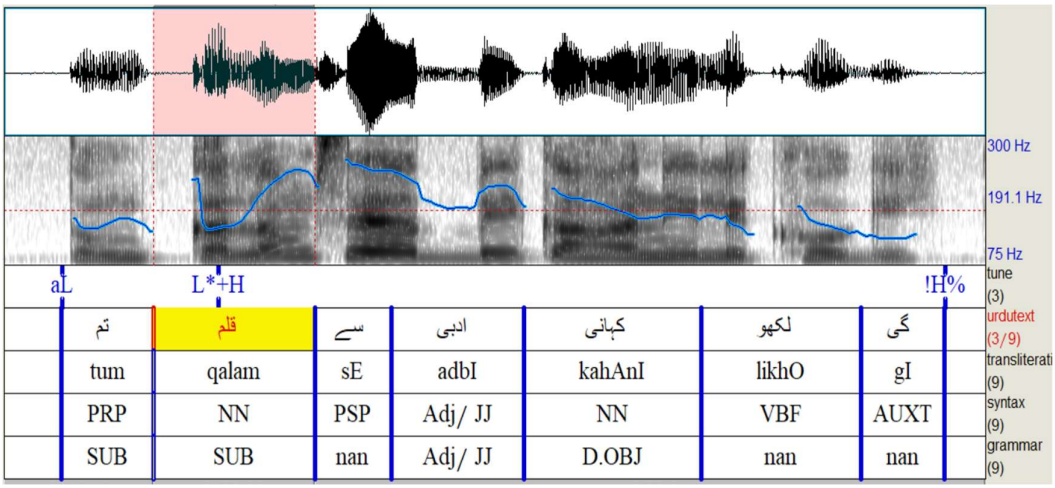

Figure 5.5 Illustrates focus on noun 'qalam' (English; Pen) realized with a bitonal accentual pitch accent L*+H, while a sustained high tone is realized at phonological level with a down stepped pattern, and ends on its final IP boundary as !H% with completion of sentence.

Also, the same pattern of sustained high boundary is found when the speaker realized two places of focus in the same sentence as shown in Figure 5.5 and Figure 5.6. The pattern of sustained high intonational F0 contour is observed proceeding only L*+H accent irrespective of the grammatical or syntactical position of accentual phrase.

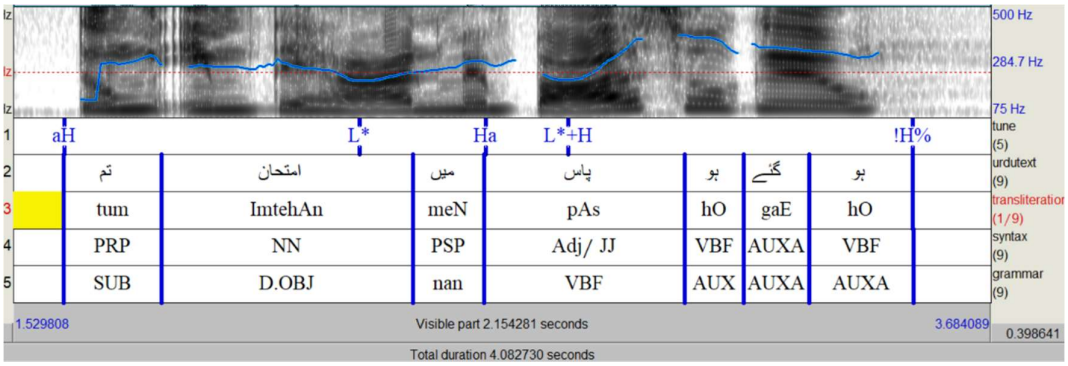

Figure 5.6 Illustrates the realization of !H% sustained high boundary tone at IP preceding L*+H at verb 'pAs' (English, passed).

5.2. Research contribution and future implications to research

In Urdu phonetics Hussain (1997) worked on Urdu stress and later Urooj, Mumtaz, and Hussain's (2019, 2021) work on intonation phonology is a significant contribution to defining Urdu intonation at the phonetic and phonological level. The present study has explored and defined the intonation patterns of negative implicature of taunt and doubt in contrast with assertive, declarative, and simple questions. Because of limited time and space, the research and its discussion are limited to defining intonation patterns of taunt and doubt, when realized in the same statements that are spoken as assertive or declarative and also in yes/no category *kya*-questions. Also, the results of the study suggest intonational patterns for Urdu assertive and declarative statements. And the intonational pattern in Urdu *kya*-questions. Also, the intonation patterns of doubt and taunt in Urdu assertive and declarative statements and *kya*-questions spoken in the elicited relevant context.

The results of the study add scope to explore several phonetic dimensions. The realization of a high bitonal pitch accent is reported in this study but its phonetic realization and configuration can be identified and explored in future research. Adding the !H% to the phonetic inventory of intonation phonology is one of the contributions of present research that can be further investigated on the phonetic layer. Also, the realization of narrow Vs. broad focus and its relationship with pitch accents and determining the phonetic and acoustic configuration of such focus is another dimension of this research that would be explored in the future studies. Similarly, the relationship of syntactic categories with focus at the phonetic level can be another dimension to be explored in future research. Thus, this research can be

taken as preliminary research leading to further modeling and concluding interesting findings in the coming future.

6. Summary

Intonational Phonology deals with the stress patterns of the language that creates significant tonal patterns and different meanings in different contexts for the same utterance. Prosodic hierarchy includes the study of these intonational patterns on phonological and phonetic layers while analyzing F0 contour of stress patterns. Different theories have been developing throughout history to find out the relationship between intonation and meaning of utterances. Also, several researchers (Selkirk, 1986; Garding 1993, Buring, 2008; Gussenhoven, 1973; Goldsmith 1979, Ladd 1983, 2008; Pierrehumbert, 1988, 1993) have presented the theory of stress and intonational patterns in their languages. Khan (2008, 2014), Keane (2014) Jabeen (2010, 2018, 2019) among several others have been investigating the intonation of South Asian languages.

Hussain (1997, 2015) has presented the stress theory and patterns of Urdu language at phonetic level. Recent research in Urdu intonation Urooj et al. (2019, 2021) has contributed to defining intonation of Urdu languages. Present study situated itself in the developing theory of Urdu intonational phonology to define the patterns of emotions of assertion, doubt, and taunt in Urdu declarative and assertive statements and Urdu-*kya* questions. The scope of study is limited only to finding the phonological correlates of designed research questions due to its limitation of time and space as an M.Phil dissertation.

The research was designed to find the intonational patterns of doubt, taunt, and assertion in Urdu declarative, assertive, and kya-questions. In our natural speech, the

meanings of statements may vary due to stress patterns that we choose while making our speech. These stress patterns can be based upon emphatic stress or tonal patterns of that language. The study aimed to define the tonal cues and patterns that create the difference between assertion and declaration in Urdu simple statements. We also aimed to analyse the tonal patterns of simple *kya*-questions to make a comparison for tonal patterns of assertive, declarative, and *kya*-questions.

Moreover, the study moved around analyzing the patterns of doubt and taunts in those assertive and declarative statements. Secondly, the present research aimed to analyze and define the difference in tonal patterns for doubt and taunt for the same assertive and declarative statements, and *kya*-questions, realized in elicited context of doubt and taunt. The study also analyzed the data to find the relationship between a shift of subject Vs. object focus with intonation patterns to illustrate the meaning of doubt and taunt.

This study is an experimental study that is exploratory. The whole experiment took place in a professional Laboratory environment. The data set was designed after the process of piloting. Two professional linguist judges approved the data set to use for an experiment. Ten Urdu native speakers, five male and five female speakers, were selected to record the sentences within elicited context. The study needed sophisticated data to analyze in the laboratory using PRAAT software. For this purpose, the booth room of a professional laboratory was chosen. The participants recorded their utterances in that booth room using a professional amplifier and mic, to meet the parameters of recording required for analysis of speech at its intonational level. To make the speech natural the participants were provided elicited context to

utter the statements and they were provided space and time to shift their speech from one emotion to another according to the elicited context of the dataset.

After the process of recording two experiments took place. To run Experiment A. two linguists as judges and ten Urdu native speakers were selected for perceptual testing of the data. In perceptual testing, 900 utterances were presented to linguist judges and after refining the data 750 utterances were presented randomly to 10 native Urdu speakers with equal distribution of data set. High rated 245 utterances were selected to run Experiment B. In Experiment. B. the data was analysed at its phonological layer to find out the intonational patterns of assertive and declarative statements, and *kya*-questions and emotions of taunt and doubt in these statements and questions.

To perform Experiment B. the data was annotated using ToBI for analysis of phonological intonation. And tonal patterns are analysed under the theoretical framework of the Autosegmental metrical Model of Pierrehumbert (1981) later developed by Ladd (2008). The Word stress patterns are analysed using Hussain's stress theory (1997, 2015) for Urdu language. However, to examine the effect of focus on intonational patterns the concept of 'Narrow and Broad focus' is used, defined by Fery (2007) to analyse the effect of focus in intonational phonology.

The whole analysis was done on two major types of syntactic configuration which are SOV and SOOV, having possible grammatical distribution and variation. To see the effect of grammatic richness and syntactic variation on intonational patterns of certain categories designed for the present study. The results of the study drawn to the conclusion tell that there is a significant difference in intonational patterns of doubt and taunt in assertive and declarative statements, also in intonational

patterns of doubt and taunt in Urdu *kya*-questions. The analysis reveals that there was not any significant difference among intonation patterns of Urdu assertive and declarative statements. However, a significant difference is found among the final IP of assertive and declarative statements, and *kya*-questions, also reported by Urooj et al. (2019). The in-depth, analysis of the difference in intonational patterns of doubt and taunt at the phonological layer reveals focus as one of the cues for the realization of tonal differences in the case of taunt Vs. doubt.

The study opened several dimensions for future studies and research in the area of Urdu intonational phonology. Due to limited time sane, the study was not designed to analyze the phonetic details and configuration of F0 values for these patterns. However, future research seeks to investigate the phonetic details of patterns defined in the present research. Discussing phonetic details of F0 cues to investigate the effect and relationship of focus with tonal patterns for the focus of taunt and doubt and the configuration and distribution of stress patterns is another dimension of this study, which was the out of scope of this study due to the restriction of time and space. Herein, future research opens avenues to carry this study at the phonetic level.

Table 6.1. Summary of research findings intonational patterns of doubt Vs. taunt, assertion Vs. declarative, statements Vs. *Kya*-questions

Intonation Pattern of Urdu Assertive and Declarative statements	**Intonation Pattern of Urdu *kya*-questions statements**
aH L*(aH L*(+H)) L%	aH L* H%
Intonation Pattern of taunt in Urdu statements	**Intonation Pattern of taunt in Urdu *kya*-questions**
aL H*(+L) L%	aH L*+H L%
Intonation Pattern of doubt in Urdu statements	**Intonation Pattern of doubt in Urdu *kya*-questions**
aH L*+H !H%	aH L*+H !H%
aL L*+H !H%	aH L* Ha L*+H !H%

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7. Appendixes

Table 7.1. Appendix. A.

	Glossing of sentences for Analysis and labeling tiers on PRAAT									
S.1.	**Urduwords**	تم	آج	دوپہر	کا	کھانا	پکاؤ	گی		
	Transliteration	tum	Aaj	dOpehar	kA	KhAnA	PakAO	gI		
	Syntax	PRP	NN	NN	PSP	Obj.2	VBF	AUXT		
	Grammar	SUB	ADV	I.OBJ/ Obj.1	PSP	D.OBJ/ Obj.2	V	AUXT		
	English Translation	you	today	noon	PP	Lunch	Cook	Will		
		You will cook the lunch today.								
S.2.	**Urduwords**	تم	امتحان	میں	پاس	ہو	گئے	ہو		
	Transliteration	tum	ImtehAn	meN	pAs	hO	gaE	hO		
	Syntax	PRP	NN	PSP	Adj/ JJ	VBF	AUXA	AUXT		
	Grammar	SUB	OBJ	PSP	VBF	AUXA	AUXA	AUXT		
	English Translation	you	exams	in	pass	---	---	AUXT		
		You have passed the exam.								
S.3.	**Urduwords**	تم	قلم	سے	ادبی	کہانی	لکھو	گی		
	Transliteration	tum	qalam	sE	adbI	kahAnI	likhO	gI		
	Syantax	PRP	NN	PSP	Adj/ JJ	NN	VBF	AUXT		
	Grammar	SUB	SUB	PSP	Adj/ JJ	OBJ	V	AUXT		
	English Translation	You	pen	PP	literary	Story	Write	Will		
		You will write a literary story with a pen.								
S.4.	**Urduwords**	تم	میرے	قریبی	دوست	ہو				
	Transliteration	tum	merE	qarIbI	dOst	hO				
	Grammar	SUB	PRS	Adj	OBJ	VBF				
	Syntax	PRP	PRS	Adj	NN	VBF				
	English Translation	you	my	close	friend	-				
		You are my close friend.								
S.5.	**Urduwords**	تم	روڈ	پر	میری	گاڑی	چلاؤ	گی		
	Transliteration	tum	rOD	par	mErI	gARI	calAO	gI		
	Syntax	PRP	NN	PSP	PRS	NN	VBF	AUXT		
	Grammar	SUB	Obj.1/I.OBJ	PSP	PRS	Obj.2/D.OBJ	VBF	AUXT		
	English Translation	You	road	on	my	Car	Drive	will		
		You will drive my car on road								
Q.1.	**Urduwords**	کیا	آپ	میرے	ساتھ	بازار	چلیں	گے؟		
	Transliteration	kyA	Aap	merE	sAth	bAzAr	calyN	gE		
	Syntax	RB	PRP	PRS	PSP	NN	VBF	AUXT		
	Grammar	wh	SUB	Obj.1/I.OBJ	PSP	Obj.2/D.OBJ	V	AUXT		
	English Translation	wh	You	My	with	Market	Go	will		
		Will you go to market with me?								

Q.2.	Urduwords	کیا	تم	میرا	کمرہ	جھاڑو	سے	صاف	کرو	گی؟
	Transliteration	kyA	tum	merA	kamrah	jhARU	sE	sAf	krO	gI
	Syntax	RB	PRP	PRS	NN	NN	PSP	JJ	VBF	AUXT
	Grammar	Wh	SUBJ	PRS	D.OBJ/ Obj.1	I.OBJ/ Obj.2	PSP	Adj	V	AUXT
	English Translation	wh	You	My	room	Broom	With	clean	---	Will
		Will you clean my room with broom?								

Q.3.	Urduwords	کیا	تم	سالانہ	امتحان	میں	پاس	ہو	گئے	ہو؟
	Transliteration	kyA	tum	sAlAnA	ImtehAn	myN	pAs	hO	gaE	hO
	Syntax	RB	PRP	JJ	NN	PSP	VBF	AUXA	AUXA	AUXT
	Grammar	Wh	SUBJ	Adj	OBJ	PSP	VBF	AUXA	AUXA	AUXT
	English Translation	wh	you	annual	Exam	In	Pass	---	---	Have
		Have you passed in final exams?								

Q.4.	Urduwords	کیا	آج	علی	ہمارے	لئے	کھانا	پکائے	گا؟	
	Transliteration	kyA	Aaj	Ali	hmArE	lyE	khAnA	pakAE	gA	
	Syntax	RB	NN	NNP	PRS	PSP	NN	VBF	AUXT	
	Grammar	Wh	SUB	Adj	I.OBJ/ Obj.1	PSP	D.OBJ/ Obj.2	V	AUX	
	English Translation	wh	today	Ali	our	For	Meal	cook	will	
		Will Ali cook meal for us today?								

Q.5.	Urduwords	کیا	تمہارے	پاس	نئی	ہنڈا	گاڑی	ہے؟		
	Syntax	RB	PRS	PSP	ADJ/JJ	NNP	NN	VBF		
	Grammar	Wh	SUBJ	PSP	ADJ/JJ	ADJ	OBJ	V		
	transliteration	kyA	tumhArE	pAs	naI	hondA	gARI	hE		
	English Translation	wh	you	have	new	Honda	Car	AUX		
		Do you have new Honda car?								

Appendix. B.

A complete Data set designed for the experiment is placed below.

Experiment: Context Based

The following sentences will be recorded by 10 participants (5 male and 5 female) using PRAAT with the illustrated context of doubt, taunt, and assertion.

WH-Questions

In this experiment, the participants were asked to read the context and identify the following stories as Questions, doubt, and taunts. 4 participants were selected to do this experiment 2 participants marked the doubt and taunt according to my classification while the response of 2 participants overlapped between doubt and taunt.

Q: Context for Question
D: Context for Doubt
T: Context for Taunt

۱-

- **Q** : آپ بازار شـــاپنگ کے لیے جا رہے ہیں۔ آپ اپنے ابو کو ســـاتھ لے کر جانا چاہتے ہیں۔ آپ ان ســـے پوچھیں۔
  کیا آپ میرے ساتھ بازار چلیں گے؟
- **D** : آپ بازارشـاپنگ کے لیے جا رہے ہیں۔ آپ کے ابو کو شـاپنگ پر جانا پسـند نہیں مگر وہ آپ کو کہتے ہیں کہ وہ بھی آپ کے ساتھ باہر چلیں گے۔ آپ کا رد عمل ہے
  کیا آپ میرے ساتھ بازار چلیں گے؟
- **T** : آپ بازارشاپنگ کے لیے جا رہے ہیں۔ آپ اور آپ کا بھائی ایک دوسرے کے ساتھ باہر جانا پسند نہیں کرتے۔ مگر آپ کا بھائی آپ کو کہتا ہے کہ وہ آپ کے ساتھ بازار جانا چاہتا ہے۔ آپ کا ردعمل ہے
  کیا آپ میرے ساتھ بازار چلیں گے؟

۲-

- **Q** : آپ کا کمرہ گندہ ہوا ہے۔ آپ اپنی بہن سے مدد لینا چاہتے ہیں آپ اس سے پوچھیں
کیا تم میرا کمرہ صاف کرو گی؟
- **D** : آپ کا کمرہ گندہ ہوا ہے۔ آپ کے امتحان ہو رہے ہیں۔ آپ کی بہن آپ سے پوچھتی ہے کہ کیا وہ آپ کا کمرہ صاف کر دے۔ آپ کا ردعمل ہے
کیا تم میرا کمرہ صاف کرو گی؟
- **T** : آپ کا کمرہ گندہ ہوا ہے۔ آپ کی بہن بھی اسی کمرے میں رہتی ہے اور کبھی بھی کمرہ صاف نہیں کرتی۔ آپ کے امتحان ہو رہے ہیں۔ آپ کی بہن اخلاقاً آپ سے پوچھتی ہے کہ کیا آج وہ کمرہ صاف کر سکتی ہے۔ آپ کا رد عمل ہے
کیا تم میرا کمرہ صاف کرو گی؟

۳۔

- **Q** : آپ کے بھائی کا رزلٹ آیا ہے۔ آپ اس سے پوچھیں
کیا تم امتحان میں پاس ہو گئے ہو؟
- **D** : آپ کے بھائی کا رزلٹ آیا ہے۔ مگر اس نے آپ کو اپنے پاس یا فیل ہونے کے بارے میں نہیں بتایا۔ آپکو شک ہے کہ وہ امتحان میں فیل ہو گیا ہے۔ آپ اس سے پوچھیں کہ
کیا تم امتحان میں پاس ہو گئے ہو؟
- **T** : آپ کے بھائی کا رزلٹ آیا ہے۔ وہ ہمیشہ فیل ہوتا ہے۔ اس بار وہ آپ کوبتاتا ہے کہ وہ پاس ہو گیا ہے۔ آپ کو امید نہیں کہ وہ پاس ہوگیا ہوگا۔ آپ کا ردعمل
کیا تم امتحان میں پاس ہو گئے ہو؟

۴۔

- **Q** : آپ اپنے کچھ دوستوں کے ہمراہ باہر پکنک پر گئے ہیں۔ آپ کے دوست کا نام علی ہے۔ آپ سب سوچ رہے ہیں کہ کون کھانا پکائے گا۔ آپ پوچھتے ہیں
کیا علی کھانا پکائے گا؟
- **D** : آپ کے بھائی کا نام علی ہے۔ آپ کے امتحان ہو رہے ہیں۔ آپ کی بہن آپ کو بتاتی ہے کہ آج آپ کا بھائی کھانا پکائے گا۔ آپ پوچھتے ہیں
کیا علی کھانا پکائے گا؟
- **T** : آپ کے بھائی کا نام علی ہے۔ علی کو کھانا پکانا نہیں آتا نہ ہی علی کو کھانا پکانا پسند ہے۔ آپ کی بہن آپ کو بتاتی ہے کہ آج علی کھانا پکائے گا۔ آپ کا ردعمل
کیا علی کھانا پکائے گا؟

۵۔

- **Q** : آپ کے دوست نے نئی گاڑی خریدی ہے جو آپ نے نہیں دیکھی۔ آپ اس سے اسکی گاڑی کے متعلق پوچھنا چاہتے ہیں۔ آپ پوچھتے ہیں
کیا تمہارے پاس ہنڈا گاڑی ہے؟
- **D** : آپ کے دوست نے نئی گاڑی خریدی ہے۔ آپ کا دوست ہنڈا گاڑی کی بہت تعریفیں کر رہا ہے۔ آپکو محسوس ہوتا ہے کہ اس کے پاس ہنڈا گاڑی ہے مگر آپکو یقین نہیں۔ آپ اس سے پوچھیں
کیا تمہارے پاس ہنڈا گاڑی ہے؟
- **T** : آپ اپنے دوست سے کچھ عرصہ بعد ملے ہیں۔ آپ کے دوست کے مالی حالات شروع سے اچھے نہیں اور آپ یہ بات جانتے ہیں۔ مگر آپ کا دوست یہ بتاتا ہے کہ اس نے ہنڈا گاڑی خریدی ہے۔ آپ کا ردعمل ہے
کیا تمہارے پاس ہنڈا گاڑی ہے؟

ASSERTIVE AND DECLARATIVE SENTENCES:

In this experiment the participants were asked to read the context and identify declarative statements, doubt and taunt. 4 participants were selected to do this experiment 2 participants marked the doubt and taunt according to my classification while the response of 2 participants was overlapped between doubt and taunt.

S: Context for Assertive and Declarative Statement

D: Context for Doubt

T: Context for Taunt

۱۔

- **S** : آپ اور آپ کی بہن کاموں کی تقسیم کر رہے ہیں۔ آپ اپنی بہن کو کہتی ہیں کہ آپ کمرہ صاف کریں گی اور وہ کھانا پکائے گی۔ آپ اپنی بہن سے کہتی ہیں
تم کھانا پکاؤ گی۔
- **D** : آپ اور آپ کی بہن کھانا پکانے کے بارے میں بات کر رہے ہیں۔ آپ کی بہن اس خواہش کا اظہار کرتی ہے کہ آج وہ آپ کے لیے کھانا پکائے گی۔ آپ اس سے پوچھیں
تم کھانا پکاؤ گی۔
- **T** : آپ اور آپ کی بہن کھانا پکانے کے بارے میں سوچ رہی ہیں۔ آپ کی بہن کو کھانا پکانے نہیں آتا نہ ہی اس نے کبھی کھانا پکایا ہے۔ مگر وہ آپ سے کہتی ہے کہ آج وہ کھانا پکائے گی۔ آپ کا ردعمل ہے

تم کھانا پکاؤ گی۔

۲۔

- **S** : آپ کے بھائی کا رزلٹ آیا ہے آپ اسے بتاتے ہیں کہ
تم امتحان میں پاس ہو گئے ہو۔
- **D** : آپ کے بھائی کا رزلٹ آیا ہے وہ پڑھائی میں بہت نالائق ہے مگر وہ آپ کو بتاتا نہیں کہ وہ پاس ہوا ہے یا فیل آپ اس سے پوچھتے ہیں کہ
تم امتحان میں پاس ہو گئے ہو۔
- **T** : آپ کے بھائی کا رزلٹ آیا ہے آپ کو اس کے پاس ہونے کی بالکل امید نہیں مگر وہ آپ کو بتاتا ہے کہ وہ پاس ہو گیا ہے۔ آپ کا ردعمل ہے
تم امتحان میں پاس ہو گئے ہو۔

۳۔

- **S** : آپ اور آپ کی کولیگ ایک کتاب لکھ رہی ہیں آپ اپنی کولیگ سے ایک کہانی لکھوانا چاہتی ہیں۔ آپ اسے کہتی ہیں کہ
تم کہانی لکھو گی۔
- **D** : آپ ایک کتاب لکھ رہی ہیں۔ آپ کی کولیگ آپ کو کہتی ہے کہ وہ ایک کہانی لکھنا چاہتی ہے۔ جبکہ اس نے پہلے کبھی کہانی نہیں لکھی۔ آپ کا جواب ہے
تم کہانی لکھو گی۔
- **T** : آپ ایک کتاب لکھ رہی ہیں۔ آپ کی کولیگ آپ کو کہتی ہے کہ وہ ایک کہانی لکھنا چاہتی ہے۔ جبکہ اسے کہانی لکھنے میں بالکل بھی مہارت نہیں۔ آپ کا جواب ہے
تم کہانی لکھو گی۔

۴۔

- **S** : آپ اور آپ کا دوست ایک دوسرے سے ناراض ہیں آپ اپنے دوست پر اپنا حق جتانا چاہتے ہیں ۔ آپکا دوست آپ سے کہتا ہے کہ آپ بار بار اسے کیوں منا رہے ہیں۔ آپ اسے کہتے ہیں کہ
تم میرے دوست ہو۔
- **D** : آپ کا کلاس فیلو آپ سے informal ہونے کی کوشش کر رہا ہے جب کہ آپ صرف اپنے دوستوں سے informal ہوتے ہیں۔ آپ اسے کہتے ہیں
تم میرے دوست ہو۔
- **T** : آپ کا کلاس فیلو سب کو یہ بتانا چاہتا ہے کہ آپ اس کے دوست ہیں جب کہ آپ اسے ناپسند کرتے ہیں۔ آپ اس کے اس عمل سے بیزاری کا اظہار کرتے ہوئے کہتے ہیں

تم میرے دوست ہو۔

۵۔

- **S** : آپ کی دوست آپ کے ساتھ گاڑی میں سفر کر رہی ہے۔ اچانک آپ ڈرائیونگ سیٹ سے سوئچ کرنا چاہتی ہیں۔ آپ اپنی دوست سے کہتی ہیں کہ
تم گاڑی چلاؤ گی۔
- **D** : آپ اپنی دوست کے ساتھ گاڑی میں سفر کر رہی ہیں۔ آپ کی دوست آپ کو آفرکرتی ہے کہ وہ آپ کی جگہ ڈرائیونگ کر سکتی ہے ۔ آپ اس سے پوچھتی ہیں
تم گاڑی چلاؤ گی۔
- **T** : آپ اپنی دوست کے ساتھ گاڑی میں سفر کرنے جا رہی ہیں۔ آپ کی دوست آپ کو کہتی ہے کہ وہ گاڑی چلانا چاہتی ہے ۔ جبکہ آپ جانتی ہیں کہ اسے ڈرائیونگ نہیں آتی۔ آپ کا ردعمل ہے
تم گاڑی چلاؤ گی۔