

AN ACOUSTIC STUDY OF THE INFLUENCE OF URDU ON THE INTONATION PATTERNS OF ENGLISH IN PAKISTAN

By
Farhat Jabeen
2010-GCUF-4468-233

Thesis submitted in partial fulfillment of
the requirements for the degree of

MASTERS IN PHILOSOPHY
IN
APPLIED LINGUISTICS



DEPARTMENT OF ENGLISH LINGUISTICS
GC UNIVERSITY, FAISALABAD.

October 2010-12

DECLARATION

The work reported in this thesis was carried out by me under the supervision of Muhammad Asim Mahmood, Assistant Professor, Department of English Linguistics, G.C. University, Faisalabad, Pakistan.

I hereby declare that the title of thesis An Acoustic Study of the Influence of Urdu on the Intonation Patterns of English in Pakistan and the contents of thesis are the product of my own research and no part has been copied from any published source (except the references, standard mathematical or genetic models /equations /formulas /protocols etc). I further declare that this work has not been submitted for award of any other degree /diploma. The University may take action if the information provided is found inaccurate at any stage.

Signature of the Student/Scholar

Registration No. : 2010-GCUF-4468-233

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I certify that the contents and form of thesis submitted by Ms. Farhat Jabeen, Registration No. 2010-GCUF-4468-233 has been found satisfactory and in accordance with the prescribed format. I recommend it to be processed for the evaluation by the External Examiner for the award of degree.

Signature.....

Name: Dr. Muhammad Asim Mahmood

Designation with Stamp.....

Signature.....

Name: Dr. Sarmad Hussain

Designation with Stamp.....

Chairperson

Dean / Academic Coordinator,

SUPERVISORY COMMITTEE

Supervisor

Signature.....

Name: Dr. Muhammad Asim Mahmood

Designation with Stamp.....

Member-1

Signature.....

Name:

Designation with Stamp.....

Member-2

Signature.....

Name:

Designation with Stamp.....

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ACKNOWLEDGEMENTS

First and foremost, I want to thank Prof. Dr. Sarmad Hussain for hearing out my half baked ideas with patience. I really appreciate his guidance and the critical input he gave to my work. I am especially grateful to him for giving his feedback on time and helping me meet the deadlines. I have been lucky to have him as my co-supervisor and guide.

Then I want to thank my supervisor Dr. Muhammad Asim Mahmood for all those times when I used him as a sounding board for my doubts and uncertainties. I express my gratitude to him for putting me on the tortuous path of research and showing me that group work is the best strategy. He made me a staunch believer in joint efforts and peer cooperation. He has always been accessible and helped me make sense of the nuances of research.

I owe immense gratitude to all my teachers at the Department of Applied Linguistics G.C.U.F. for being there whenever I needed their guidance. I specially want to thank Mr. Sayed Kazim Shah and Mr. Javed Iqbal who taught me the fine points of research and guided me through this maze. My heart-felt gratitude goes to Mr. Kazim Shah for teaching me how to put my research into perspective, how to establish the niche for my research and see my work in perspective of the ‘Big Picture’. It has been a privilege to have these people as teachers.

I wish to thank Mr. Waheed from Department of Industrial Management, G.C.U.F. for teaching me all I know about statistical analysis. Although, it did not help me directly in this thesis but all the hours he had spent teaching me SPSS certainly paid off in my research.

I do not think I can thank my parents enough for all their cooperation and fortitude. They suffered my long absence from home with patience and relinquished their demand on my time and attention. Only their tolerance allowed me to go along and put maximum effort into this thesis. They have been a tower of strength and a source of motivation for me.

Finally I want to thank my very dear friend Ansa Sattar for being there whenever I needed her. I also thank her for reminding me that I am only human and there is more to life than books and thesis. My special gratitude goes to Saira Zahid for all her extensive discussions and late night conversations which helped clear my concepts and put things in perspective for me. I also appreciate her competitiveness which urged me to outdo myself. We have been ‘fellow sufferers’ in this and her friendship kept me going when I would have stopped and given up. And my gratitude to Aqeela Batool for reminding me time and again that I have work to do and deadlines to meet. All of you have been a gift sent to me by God and I am proud to count you among my friends.

Thank you my students! Especially Nadia Rafiq, Usman Rana and Afsheen, the participants of my research, who gave me their precious time and went through the laborious process of recordings patiently.

ABSTRACT

This study aimed to explore the intonation patterns of English used by Urdu speakers in Bahawalnagar, Pakistan. This research hypothesized that the intonation patterns used by Pakistani speakers of English were different from those of the native speakers. It further hypothesized that Pakistani English speakers' intonation patterns were affected by their mother tongue i.e. Urdu in this case. In order to check the validity of these hypotheses, the intonation patterns of Urdu and Pakistani English were studied. Furthermore, the intonation patterns of Pakistani English were compared with those of Urdu, American and British English. For that purpose, only declarative and interrogative sentences with intransitive, transitive and ditransitive verbs were selected. Stress pattern alternated between the first and the last word of the sentences in the data. Two female and one male respondent with Urdu mother tongue were selected from district Bahawalnagar, Pakistan. The data set was recorded through PRAAT and saved in wav. format. The sound files were run on PRAAT and manipulated to eliminate redundant points in the intonation patterns of the recorded sentences. The final intonation contour was saved in the form of pictures which were later labeled according to the conventions of ToBI model of intonation. Then the intonation contour of Urdu language and Pakistani English spoken by Urdu speakers were compared. The frequency of the occurrence of each contour was generated and saved in the form of tables. The results of previous researches about American and British speakers' use of intonation patterns were used for the sake of comparison. In the final analysis, we mapped the intonation contour of Pakistani English on that of Urdu language, American and British English. The results indicated that the intonation pattern of declarative sentences in Urdu and Pakistani English was the same. It also showed that there was a clear difference in the American, British and Pakistani English speakers' use of intonation patterns for declarative sentences. Same was the case for yes/no and wh-questions as the impact of Urdu language on

the intonation patterns of English in Pakistan was apparent. This proved that Urdu speakers of English in Bahawalnagar transferred their mother tongue's intonation patterns to English which was a foreign language for them. It also verified that the intonation patterns used by Urdu speakers of Pakistani English in Bahawalnagar were very different from those of the American and British speakers. This research highlighted the need for language teachers to include a detailed discussion of intonation patterns in the ELT classroom to underline the difference between Pakistani, American and the British speakers' use of intonation patterns in English.

INTRODUCTION

The present study claims that Pakistani English is one of the nativized varieties of English that needs to be further explored and recognized as a separate variety. This research aims to explore a dimension of Pakistani English that distinguishes it from British and American varieties. Previously most of the research on Pakistani English has been concerned with the deviation paradigm where the non native varieties were portrayed as somehow inferior or lacking in comparison with the native varieties. This research, however, is concerned with the difference paradigm and studies Pakistani English as a variety different from but not inferior to the native British and American varieties. Moreover, it attempts to move one step further and analyse Pakistani English according to the endonormative standards.

For this purpose, three Urdu speakers' use of intonation patterns was studied. The data consisted of intransitive, transitive and ditransitive declarative and interrogative sentences in Urdu and English language. The data set was recorded and analysed to study the intonation patterns of Urdu language in the given context. Furthermore, the recordings of English dataset were studied in order to analyse the influence of Urdu language on the intonation patterns used for English language in Pakistan. The results indicated that the intonation patterns used for Urdu language affect the structure of intonation patterns used in Pakistani English. Hence, the prosodic transfer of mother tongue structures into English as a second language was proved in Pakistani context.

1.1. Background

The concept of World Englishes has long been a subject of debate. It has attracted many supporters and earned staunch opponents. The sociolinguists insist that the global status of English has resulted in many indigenous varieties of this language. The recognition of this concept has resulted in the establishment and acknowledgment of regional varieties of English such as Cameron English, Indian English, and Chinese English etc. Yano (2006) has

claimed that with changes in time and space, the wide spread use of English has resulted in many varieties of English which are very different from the so called British Standard English. According to him, this new trend in English was developed by

...adopting and adapting to local languages and cultures in its process of inevitable localization and internalization. English, or should I say ‘Englishes,’ has adopted concepts and forms of indigenous languages and incorporating local cultures and traditions in order to accommodate local needs and for the sake of identities. (p. 3)

Kandiah (1998) has cited colonization as a reason for the development of new inter and intra-national varieties of English language. These varieties of English differ from each other on levels of pronunciation, grammar, vocabulary, idioms, and discourse (Jenkins, 2003). Kamwangamalu (2010) has enumerated various stages in the development of an indigenous variety of English moving from the foundation of a variety and its progress from exonormative stabilisation to nativization and then to the establishment of endonormative standards. Yano (2006) has dubbed this phenomenon as “de-Anglo-Americanisation” of English language.

Today the number of non native speakers of English far exceeds the number of native speakers. English is not just the language of the English or Americans any more. It is now the language of more than 1500 million non native speakers (Graddol, 1998). Yet the number of non native speakers keeps on increasing and Crystal (2004) claims that three out of four speakers of English are non natives. This wide spread use of English has drawn the attention of linguists and researchers alike. Many renowned linguists have acknowledged their deep interest in the varieties of English (Bolton, 2006). Not only that, many international forums and organisations such as TESOL have been established to study these varieties systematically.

1.2. Statement of the Purpose

Hence, this study attempts to discover the impact of Urdu intonation patterns on English and how this impact adds to the flavour of Pakistani English. For that purpose, we have concentrated on the intonation patterns used by Urdu speakers of Pakistani English. We intuitively know that there is a strong difference in the intonation patterns used by native British and American speakers. In this study, we hypothesise that this difference in intonation patterns is caused by the influence of mother tongue intonation patterns under the theory of language transfer.

1.3. Research Questions

This research aims to find answers to the following questions:

1. What are the intonation patterns of Urdu declarative and interrogative sentences?
2. What are the intonation patterns of English declarative and interrogative sentences spoken by Urdu L1 speakers?
3. Are the intonation patterns of Pakistani English speakers similar or different from the intonation patterns of British and American speakers of English?

1.4. Research Objectives

This research aims to study the intonation patterns of declarative and interrogative sentences in Urdu language and how they influence the intonation patterns of declaratives and interrogatives in English spoken by Urdu speakers in Pakistan. It also intends to explore the difference/similarity between the intonation patterns used by the speakers of American and British English and native Urdu speakers of Pakistani English as a second language.

1.5. Significance of the Study

This research has been conducted under the canon of World Englishes. The aim of this research is to explore the use of intonation patterns in Pakistani English. This study intends to

explore the difference in the intonation patterns of Pakistani English and the British and American speakers' English. The results of this research may be used to study intonation as one of the causes of communication failure between American and British speakers and Urdu speaking English users in Pakistan.

The nuances of Pakistani English have scarcely been explored over the years. This research is an attempt to investigate a particular feature of Pakistani English i.e. the use of intonation patterns in various grammatical contexts. It might help us determine the differences and similarities between the native and non native speakers' use of intonation patterns in English that can be concentrated upon while addressing the issues of intelligibility (Raza, 2008). Moreover, this research has pedagogical implications too as it may give the language teachers a better insight into the nature of systematic intonational variation that distinguishes Pakistani English from British and American varieties of English. It also helps provide a guideline to the language teachers of advanced learner groups who aim for native like proficiency. It may guide language teachers to device appropriate teaching methods and strategies that accommodate and highlight the nuances of Pakistani English. Lastly, this study is important as it helps establish the claim that Pakistani English is a separate variety and not just a slightly altered or incorrect form of British or American English as many sceptics claim it to be (Mahboob & Ahmar, 2004). Thus it may help create tolerance among teachers, learners and language users of the nativized form of English language spoken around them. This research has future implication too as it may lead to other researches concerning the acquisition of intonation patterns by Pakistani English language learners. Furthermore, it may help design a longitudinal study to trace the pattern of intonation acquisition among beginners and the advanced language learners.

1.6. Delimitations of the Study

The study of intonation is concerned with the analysis of stress patterns and intonation patterns. But due to limitations of time and resources, this study has been limited to the analysis of pitch contours in controlled stress situations. So for the purpose of this study, sentence stress has been limited to two positions: first and the last word of the sentence. Thus the discussion in this study primarily moves around the study of pitch contours although stress also plays a prominent role in determining the results of this research.

This study has been narrowed to the analysis of the use of intonation patterns in laboratory atmosphere. So the data has been collected in artificial situations. Our choice of participants has also been limited as we have used participants who speak Urdu at home while their parents' mother tongue is Punjabi. Moreover, we have limited our analysis to only declarative and interrogative sentences in English and Urdu languages.

1.7. Rationale of the Study

This study has important pedagogical implications as it may help the language teachers understand the intonation patterns of Pakistani language users. It may also provide the Pakistani learners with an understanding of complicated and problematic intonation patterns and assist teachers to identify an area that may create communication problems. This research also helps substantiate the claim that Pakistani English is a separate variety and it needs to be further explored and studied.

Chapter Two

REVIEW OF LITERATURE

This chapter presents the review of the theoretical and practical studies related to the topic of this study. It starts with the various definitions of intonation and then discusses the role of stress in determining the intonation contour of an utterance. It also elaborates the diverse functions performed by intonation. Then various models of intonation are discussed. This discussion gives way to the application of those models and theories in the field of ELT. Then the nuances and theories of world Englishes are discussed to put this research in perspective. This leads to the arguments concerning Pakistani English and the practical studies conducted in the field.

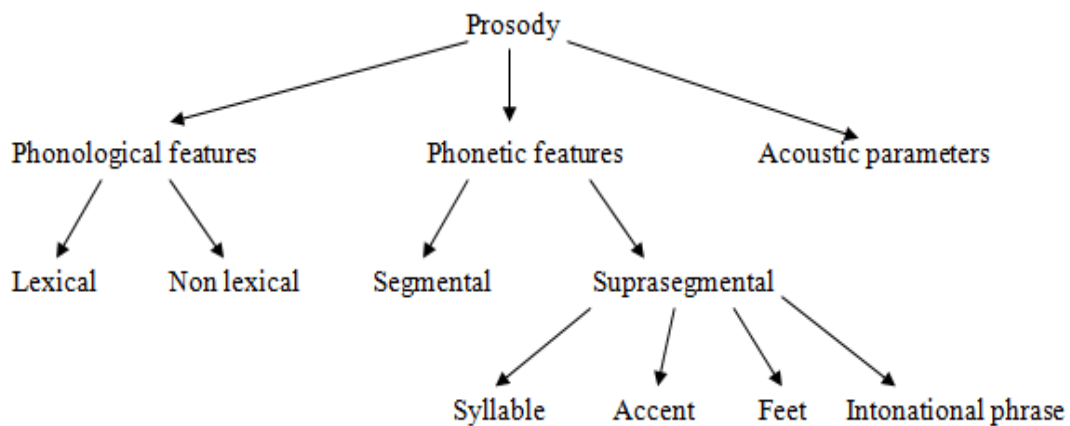
2.1. Definition of Intonation

Intonation is one of the widely read and discussed features of suprasegmental phonology. It is a feature of prosody which pays attention to the suprasegmental features of pitch, duration and stress. This relationship becomes apparent in Cruttenden's (as cited in Banziger & Scherer, 2005, p. 253) definition of prosody:

The prosody of connected speech may be analysed and described in terms of the variation of a large number of prosodic features. There are, however, three features which are most consistently used for linguistic purposes either singly or jointly. These three features are pitch, length, and loudness. [. . .] Pitch is the prosodic feature most centrally involved in intonation ...

Wagner (2008) gives his own classification of prosody and its related fields which clarifies the relationship between prosody and suprasegmental features:

Figure 2.1. Wagner’s Classification of Prosody



Source: From “*A comprehensive model of intonation for application in speech synthesis*” by Agnieszka Wagner, 2008, Poland: Adam Mickiewicz University.

Garding (1989) also supports this view of intonation and further elaborates it in the following words:

Intonation will be used as a general term for the fundamental frequency pattern of a stretch of speech. Defined in this way intonation co-varies with a rhythmic pattern formed by the sequence of accented and unaccented syllables. The main points of coordination between intonation and segments are the accented syllables and the boundaries. (p. 63)

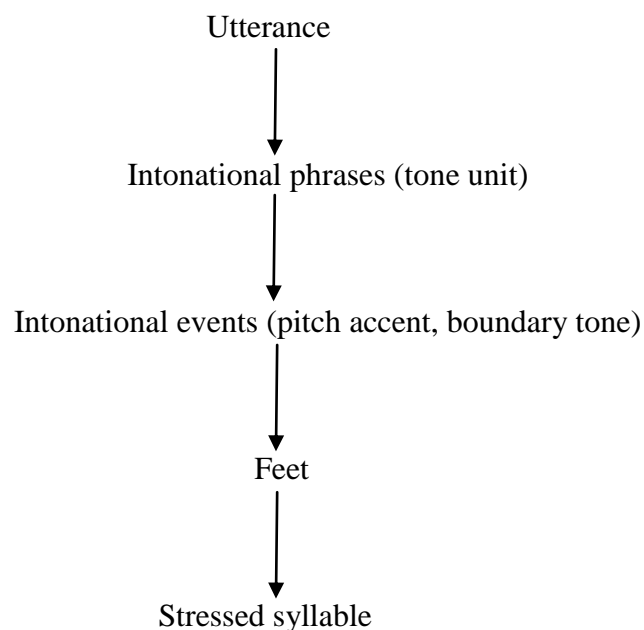
Thus intonation is primarily concerned with the movement of vocal cords (Sethi & Dhamija, 2004) and pitch contours (Cruttenden, 2008; Roach, 1983; Skandera & Burleigh 2005; Trujillo, 2006). Birjandi and Salmani-Nodoushan (2005) describe intonation as the selection of pitch ranges available to the speakers. They elaborate that intonation includes the:

(a) categories of pitch 'peaks' and 'valleys' as well as their combinations at each sentence stress position (i.e., the last content word of the sentence), (b) types of pitch category concatenation, and (c) pitch of sentence fractions occurring before the first sentence stress. (p. 118)

Ranalli (2002) also defines intonation as “the movements or variations in pitch to which we attach familiar labels describing levels (e.g. high/low) and tones (e.g. falling/rising), etc.” (p. 1)

The nature of intonation is further discussed in broad and narrow sense (Ladd, 1996; Wagner, 2008). Wagner claims that the discussion of intonation in a broad sense includes features such as stress, tone and accent whereas in its narrow sense, intonational studies deal with the overall meaning of a phrase or sentence. He dubs the narrow sense as the “intonation proper” (p. 4). He has come up with his model of the hierarchal prosodic structure of intonation which may be illustrated as follows:

Figure 2.2. Wagner’s Model of the Hierarchal Prosodic Structures of Intonation



Source: From “*A comprehensive model of intonation for application in speech synthesis*” by Agnieszka Wagner, 2008, Poland: Adam Mickiewicz University.

Ladd also supports the narrow view of intonation and explains that intonation is concerned with the "meanings that apply to phrases or utterances as a whole, such as sentence type or speech act, or focus and information structure" (Ladd, 1996, p. 7).

Wagner further classifies intonation on the basis of presentation and analysis. He divides it into four levels i.e. phonetic, physical, phonological and surface phonological. The physical level consists of the acoustic signals of pitch, intensity, duration, stress etc. whereas the phonetic level is concerned with the issues of microprosody. According to Wagner, the phonological level deals with the linguistic and cognitive issues of intonation which are context bound. The last level namely the surface phonological is related to the discussion of surface elements such as the form and contours of intonation. Most of the intonation researches and analyses are concerned with more than one of these levels.

Many researchers claim that it is almost impossible for people to speak continuously in a monotone (Ladefoged, 2001; Roach, 1983; Sethi & Dhamija, 2004). Therefore intonation occupies central position in speech production and perception. It also plays a vital role in discussion surrounding the issues of intelligibility. According to Hawkins and Warren (as cited in Ladd, 1996), the intelligibility of an utterance is affected by its accentedness.

Ladd (1996) gives an elaborate description of the term intonation that encompasses both its form and function. He defines it as "... the use of suprasegmental phonetic features to convey 'post-lexical' or *sentence-level* pragmatic meaning in a *linguistically structured* way." (p. 6)

At the suprasegmental level, he elaborates, intonation is concerned with pitch (f_0), stress, duration and the issues of quantity. Moreover, intonation, according to him, is not concerned with segment or word level meanings of an utterance; instead, it is concerned with the pragmatic meanings of a phrase or an utterance. The third entity mentioned by Ladd is that intonation is linguistically structured. It conveys linguistic and paralinguistic information about the intonational features such as tempo and relations.

The overall pitch contour of an utterance is usually denoted as a tone (Roach, 1983; Trujillo, 2006). The tones can adopt various contours depending on the frequency of pitch

movements. The pitch contour in an utterance may be rising, falling, falling-rising, rising-falling, level, high key and take-off (Birjandi & Salmani-Nodoushan, 2005; Cruttenden, 2008; Roach, 1983; Sethi & Dhamija, 2004; Skandera & Burleigh 2005; Trujillo, 2006).

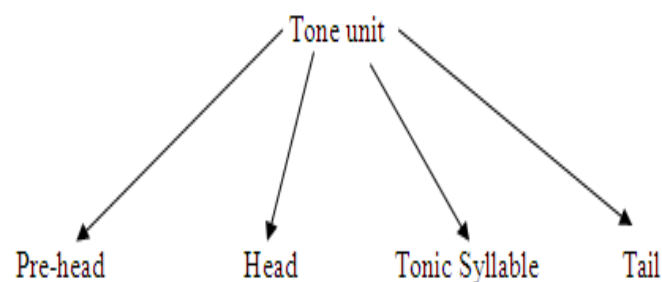
According to Ladd (1996), the relations of prominence and the notion of tune lie at the heart of intonation. A tune can either be monotonal such as rising and falling, or it can be bitonal e.g. falling-rising and rising-falling (Queen, 2001). These tones perform various linguistic and paralinguistic functions that are recognised not only on the basis of the pitch contour of an utterance but also on the basis of phrase and utterance boundary tones. Ladd claims that the “relative prominence” (p. 9) of an utterance does not affect the lexical meanings of an utterance. It is, in fact, an entity that determines the overall meaning of an utterance. Hence, it is called a suprasegmental feature.

Gussenhoven (2007) defines intonation as “the structured variation in pitch which is not determined by lexical distinctions.” (p. 253) Since speech cannot convey meanings without appropriate accompanying pitch, intonation is an integral feature of communication. Languages of the world are divided on the basis of their intonation patterns. Those languages which have a fixed sentence order use pitch movements to convey meanings and emotions (Birjandi & Salmani-Nodoushan, 2005). Generally pitch carries emotional information and the change in pitch does not change the meaning of an utterance. But there are certain languages of the world in which change in pitch contours results in change of meaning (Skandera & Burleigh, 2005). These languages are called tone languages and Punjabi is one of them (Bhattia, 2006). English, however, is not a tone language. Therefore, pitch in English language is a superimposed feature which adds to the richness of meaning. Sethi and Dhamija (2004), though, do not agree with this and claim that pitch in English language is a part of meaning as utterances produced in a monotone do not have any communicative value.

2.2. Structure of a Tone Group

As for its structure, pitch contour is divided into various constituent parts. An utterance with a single pitch pattern is called a tone group, a tone unit (Sethi & Dhamija, 2004; Skandera & Burleigh, 2005) or an intonational phrase (Cruttenden, 2008; Ladefoged, 2001). A tone unit is further divided into many parts which are described in the figure 2.3.

Figure 2.3. The Structure of a Tone Unit in British Intonation Tradition



Among all these parts, tonic syllable is the most essential part of a tone unit; the rest of the constituents are redundant. Tonic syllable is the stressed syllable in an utterance that carries major intonation contour (Ladefoged, 2001). Sometimes the pitch contour does not end with the tonic syllable and the pitch movement is carried to other syllables after the tonic syllable. Those syllables are called tail. The head of a tone unit starts with the first stressed syllable and continues up to the tonic syllable. The unstressed syllables of an utterance before the head constitute pre-head (Roach, 1983; Sethi & Dhamija, 2004; Skandera & Burleigh, 2005; Trujillo, 2006). Thus we see that an utterance such as 'go' is made of one tone unit and this tone unit consists of only one tonic syllable. Whereas the following tone unit contains all the constituent elements.

Figure 2.4. The Constituent Elements of a Tone Unit

Pre-head	Head	Tonic syllable	Tail
Do you	think I should	apologise	to her?

According to Ladefoged (2001) it is not possible to predict the position of a tonic syllable. It is, however, possible to claim that tonic syllable is always stressed, though not all stressed syllables may carry pitch contours.

2.3. Stress and Intonation

This brings us to the role of stress in intonation pattern. Intonation pattern is basically realised through prominence. So intonation pattern is the sharp rise or fall of prominence on tonic syllable. Stress, as we know, also deals with prominence. Schane's (1979, p. 483) definition of stress stipulates that: "Prominence is manifested as intensity, pitch, duration, and/or through vowel quality. In English, a combination of these features is responsible for the perceptual unit of prominence known as stress,"

So in order to study intonation, we have to consider the primary and secondary stress patterns in an utterance (Cruttenden, 2008). As we have seen earlier, the whole tone group is divided in various constituents on the basis of stressed and unstressed syllables (Roach, 1983). Kingdon (as cited in Lopez-Folgado, 1991) also differentiates between static tones which fall on non nuclear syllables and kinetic tones which align with syllable stress.

2.4. Functions of Intonation

The intonational function is a widely researched area. This phenomenon has been studied with the help of laboratory phonology and perception based studies. By exploiting various pitch contours, speakers convey linguistic and paralinguistic information (Ladd, 1996). The linguistic information conveyed by pitch includes the sentence structure and the types of

sentences and messages sent by the speaker. It helps us determine whether the speaker is requesting or questioning (Wagner, 2008). It also assists us to decide about the nature of speech acts and the codes formulated by the speaker. Whereas the paralinguistic code “signals or helps signal information about our sex, our age, and our emotional state” (Ladd, 1996, p.1). However, Wagner (2008) deviates from Ladd’s categorization of intonation functions. He mentions three functions of intonation: linguistic, paralinguistic and extralinguistic. According to him, the linguistic function clarifies the nature of the linguistic code; paralinguistic function conveys information about the emotional state of the speaker while extralinguistic features describe the demographic features of the speaker such as their age, sex etc.

Lopez-Folgado (1991) divides the functions of intonation into three groups: the demarcative, the grammatical and the pragmatic functions. The demarcative function conveys paralinguistic information; the grammatical function provides linguistic information and the pragmatic function is related to the semantic component of an utterance e.g. how certain intonation patterns are associated with certain speech acts.

The two approaches to study intonational function are specified as covariance and configuration approach (Ladd, 1996; Mozziconacci, 2002). The configuration approach advocates the separation of linguistic and paralinguistic functions of intonation. Whereas the covariance approach claims that the two functions can be studied together and the “treatment of linguistic and paralinguistic matters could be done in parallel” (Mozziconacci, p. 6). Another view favours the amalgamation of both the theories as evidence suggests that none of the two theories can be completely rejected or accepted. Mozziconacci claims that covariance approach can be used to study the paralinguistic and extralinguistic functions of intonation while configuration approach may be useful to study linguistic functions.

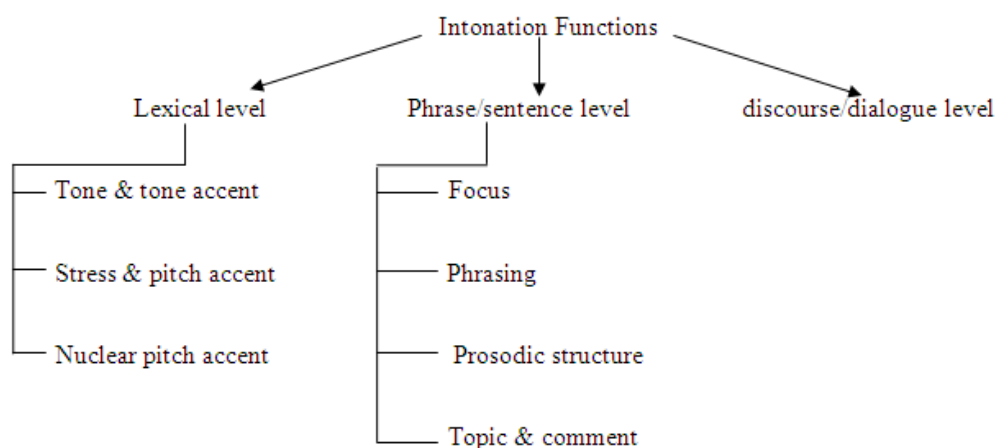
Intonation pattern performs various functions in a language. Roach (1983) and Skandera & Burleigh (2005) divide these functions into four categories: structural, accentual, discourse and attitudinal function. Trujillo (2006) also agrees with this classification while Sethi & Dhamija (2004) also mention the linguistic function and claim that intonation is a part of the linguistic structure just as tense and mood are. Sethi and Dhamija mention the grammatical, attitudinal and discourse functions of intonation. On the other hand, Ladefoged (2001) has discussed the emotional and the linguistic function of intonation. Hirst (2005) adds to this list of functions and elaborates that intonation determines the lexical identity of an utterance, conveys the impression of prominence and finality/non finality as well as the discourse and pragmatic structure of an utterance. Boyce and Menn (1979), in addition, agree that intonation patterns such as falling boundary tone convey an element of finality whereas the rising contour shows that the speaker has not finished yet. The sentence focus maintained through pitch contours also helps highlight the difference between new and given information. Thus intonation is closely related to all the linguistic, paralinguistic and extralinguistic features that make communication possible.

Ranalli (2002) has discussed a detailed list of intonation functions propounded by Crystal. He enumerates six functions of intonation: “emotional, grammatical, informational, textual, psychological and indexical.” (p. 2) Ranalli also adds the conversation-management function of intonation which is concerned with the speech conventions of pause, turn taking and floor keeping etc. Based on his study of intonation functions, Ranalli comes up with his own classification and catalogues four functions of intonation:

- **Linguistic form-based:** i.e. grammatical (the intonation of Yes/No or Wh-questions) or lexical (intonation on modifiers like really or absolutely);
- **Attitudinal or Interpersonal:** e.g. sounding enthusiastic, interested, polite; showing disbelief;
- **Accentual:** especially in contrasts, e.g. ‘special stress’, emphasizing, correcting;
- **Conversation management-related:** asking someone to repeat something, disagreeing strongly. (p. 5)

These levels of intonation functions have also been discussed by Wagner (2008) who divides intonation functions into three levels:

Figure 2.5. Wagner’s Classification of Intonation Functions



Source: From “*A comprehensive model of intonation for application in speech synthesis*” by Agnieszka Wagner, 2008, Poland: Adam Mickiewicz University.

Different pitch contours are used to perform these functions. Falling tone is believed to be the most neutral tone (Cruttenden, 2008; Skandera & Burleigh, 2005; Trujillo, 2006) and it is used for declarative sentences and simple statements. The other sentence types may also be perceptually determined by discerning the tone of an utterance. For example, Birjandi & Salmani-Nodoushan, 2005; Cruttenden, 2008; Ladefoged, 2001; Roach, 1983; Sethi & Dhamija, 2004; Skandera & Burleigh, 2005; Trujillo, 2006 consider that the following

sentence types are conveyed by given tones: wh- questions usually end with a falling tone whereas yes-no questions are delineated with a rising tone. Similarly, commands and exclamatory sentences are distinguished with a rising- falling tone; requests make use of rising tone and pleading tone carries falling-rising contour. Listing is marked by the use of rising tone at each item in the list and the sentence concludes with a falling tone indicating that the list ends there (Ladefoged, 2001). Moreover, it is claimed that subordinate clauses in an utterance ending with a rising tone show that the utterance is yet incomplete. According to Cruttenden (2008) and Birjandi and Salmani-Nodoushan (2005), tag questions can receive either falling or rising tones depending on the attitude of the speaker. The use of rising tone indicates that the speaker leaves room for disagreement whereas a falling one demands agreement.

Intonation, as we have discussed earlier, is not limited to providing grammatical information. Pitch contour also affords extra attitudinal information which cannot be conveyed by the grammatical structure of an utterance (Sethi & Dhamija, 2004). Emotions such as politeness, rudeness, anger, sadness, surprise, joy, boredom and even neutrality are transmitted by changing and manipulating the pitch contours of an utterance. Falling tone is usually associated with sincerity, politeness and boredom (Cruttenden, 2008; Roach, 1983, Sethi & Dhamija). Cruttenden (2004) and Skandera & Burleigh (2005) claim falling tones are linked with the element of finality. So the degree of finality in an utterance is directly proportional to the degree of fall in the intonation pattern. Similarly, rising tones are used to convey complaints and requests. Falling-rising tone depicts reproach, concern and reservation while the rising-falling tone transmits enthusiasm, suspicion, sarcasm, surprise, haughtiness or that the speaker is impressed (Birjandi & Salmani-Nodoushan, 2005; Cruttenden, 2004; Ladefoged, 2001; Roach, 1983; Sethi & Dhamija; Skandera & Burleigh). Likewise, level tone conveys a feeling of jocularity (Cruttenden, 2008) whereas high key tone is used to convey

surprise and strong agreement or disagreement (Skandera & Burleigh). Birjandi and Salmani-Nodoushan claim that take-off tone is used to convey “negatively-charged emotions. [such as] Cursing, grumbling and blasphemy” (p. 124). They also claim that level tone is restricted to those situations where a monotonous style is acceptable e.g. church and court of law. Thus a range of emotive functions may be performed simply by manipulating the pitch contour of an utterance.

2.5. Models of Intonation

Intonation is frequently described as rising or falling pitch movement. Over the decades, many models of intonation have been proposed and then revised to study the phenomenon and accommodate later changes in the theory. These models have concentrated on various aspects of intonation such as form, function, f₀ contours and some have been formulated only for the benefit of speech synthesis systems. Espesser (as cited in Wagner, 2008, p. 5) proposes that an intonational model should concentrate on the following points:

- “a) description/representation of intonation in terms of some theory
- b) a method of mapping this description onto pitch targets
- c) a method of deriving the description of intonation from a continuous f₀ curve”

Cardeñoso and Escudero (2004) point out another dimension of intonation models.

“Models of intonation attempt to find out the relationship between a set of linguistic prosodic features (LPFs) of the message and intonation patterns ...” (p. 1)

Most of the models on intonation have been devised to study particular languages but with slight modification, they have been used to study other languages as well. These models facilitate the analysis and understanding of intonation and offer further possibilities for modifications and adaptations (Mozziconacci, 2000).

Wagner (2008) offers a very comprehensive discussion of intonational models. He divides them into superpositional, sequential and level based models. The superpositional

models study intonation as the superposition of two distinct entities such as accent and phrase. Garding (1993) argues that the root of superpositional models lays in the claim that intonation is a combination of global and local pitch movements. The sequential model, on the other hand, describes intonation as a sequence of discrete elements e.g. pitch accent, phrase accent and boundary tones. Thirdly, the level based model claims that intonation contour may be analysed on the basis of phonetic and phonological levels. Wagner further elaborates analytical and generative models on the basis of the direction of analysis. Generative models of intonation deal with the top down approach starting with the categories higher than f_0 and then move down to pitch contour while the analytical models concentrate on bottom up analysis. Furthermore, Wagner mentions the rule based and the data driven models of intonation. The rule based models are based on descriptions of intonation offered by the analysts. On the other hand, the data driven models are influenced by the techniques of speech synthesis (e.g. SRM) and use those techniques to study pitch contours.

In the next section, we will discuss some models used to study intonation patterns of various languages.

2.5.1. Halliday's Model of Intonation

One of the earliest models of intonation was offered by Halliday (1963). He divided intonation into three important components; tonality, tonicity and tone (Ouafeu, 2006). The details of the model are given in figure 2.6 (p. 145):

Figure 2.6. Halliday’s Model of Phonological Categories Involved in Intonation

<i>Tonality</i>		
Distribution of utterance into tone groups (location of tone group boundaries).		
<i>Tonicity</i>		
Distribution of tone group into tonic and pretonic (location of tonic foot).		
<i>Tone (primary ; pitch movement on tonic)</i>		
	1	fall
	2	rise ; sharp fall-rise
	3	low rise
	4	fall-rise
	5	rise-fall
	13	fall plus low rise
	53	rise-fall plus low rise
<i>Tone (secondary)</i>		
	<i>Pretonic</i>	<i>Tonic</i>
1	1 even (level, falling, rising)	} × {
<u>1</u>	1 uneven (low “spiky”)	
. . . 1	suspended (“listing”)	
		{ 1+ high fall
		{ 1 mid fall
		{ 1- low fall
2	2 high (level, falling, rising)	} × {
<u>2</u>	2 low (level, rising)	
		{ 2 rise
		{ <u>2</u> sharp fall-rise
3	3 mid (level)	
<u>3</u>	3 low (level)	
4		4 high fall-rise
		<u>4</u> low fall-rise
5		5 high rise-fall
		<u>5</u> low rise-fall

Source: From “Intonation in English grammar” by Michael A. K. Halliday, 1963, *Transactions of the Philological Society*, 62, pp. 143-169.

This model lies at the heart of the British nuclear tone model which will be elaborated in the next lines. Halliday has tried to formulate this model on the syntactic structures too.

2.5.2. Fujisaki’s Superpositional Model

One of the best known superpositional models is that of Fujisaki (Ladd, 1996). It combines pitch and biomechanical movements to explain the phenomenon of intonation. It is based on two components i.e. phrase component and accent component (Wagner, 2008). These two components are superpositioned to create f0 movement, hence the name superpositional.

Ladd (1996) describes phrase component as an impulse response moving in peaks and valleys whereas the accent component moves in up and down steps. Both the components are aligned with the amplitude and timing of an utterance.

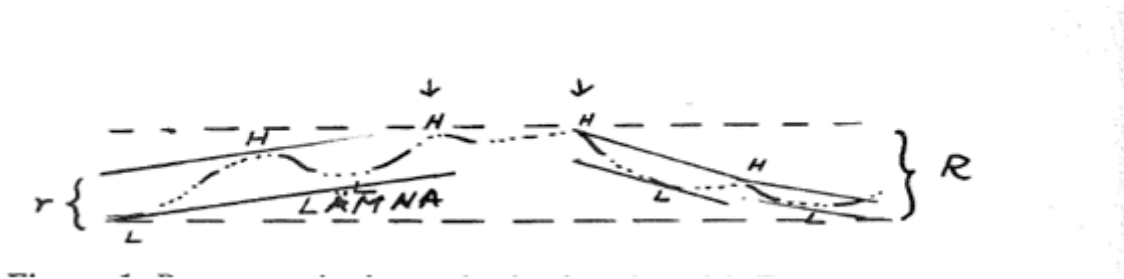
The phrase component uses parameters such as amplitudes and timing of phrase commands and damping factors of the phrase control mechanism.... The accent component uses parameters such as amplitudes and timing of the onsets and offsets of accent commands, and damping factors of the accent control mechanism. (Wagner, 2008, p. 45)

2.5.3. Garding's Model of Swedish Intonation

Another superpositional model has been proposed by Garding (1989; 1993) to describe Swedish intonation. She divides her model into demarcative and connective features (1989). The demarcative features include pauses, pitch range and direction etc. whereas the connective features mark the reduction of pitch and accent movements to create special pitch patterns. Garding (1993) has described Swedish intonation as a sequence of accents on word, phrase and sentence level. Sentence intonation is depicted with the help of a tonal grid (Ladd, 1996). The word and phrase accents are superimposed on that tonal grid to show pitch movements. The pattern and slant of the grid conveys information about the global contours such as declination and the local features such as pitch accents. The relationship is shown in figure 2.7. Here the two dotted top and bottom lines depict the range of sentence intonation marked by R and r. The capital 'R' indicates the range of the exterior grid while the small 'r' shows the interior grid range (Garding, 1993). The H and L contours denote the 'turning points' or the pivots in pitch pattern. They also indicate the pitch maxima and minima. Thus the model assumes a hierarchal nature and tonal grid is used as a basis. The word accent is dominated by the pitch accent which is modelled on the sentence grid (Garding, 1989). This

model follows the top down approach to studying intonation as it starts with the global category of range and moves on to the local features of maxima and minima.

Figure 2.7. Garding’s Model of Global Pitch Range and Local Maxima and Minima



Source: From “On parameters and principles in intonation analysis” by E. Garding, 1993, *Lund Working Papers in Linguistics*, 40, p. 25-47.

Garding (1993) summarises the basic assumptions of the model thus:

The basic string is an utterance represented by segments including marks for quantity, marks for accents on three levels, boundaries of different weight and modality. This string reflects the intention of the speaker and is the blueprint for the final contour.

The rest of the program is the phonetic implementation. (p. 43)

2.5.4. IPO Model of Intonation

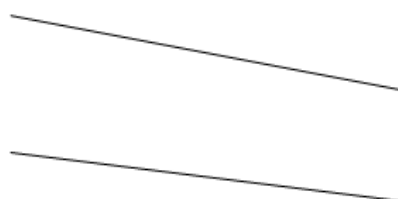
The Institute for Phonetic Perception (IPO) planned to develop a model of intonation to describe intonation patterns in the Dutch language. In the 60s they came up with an organised model which was devised for use in speech synthesis (Ladd, 1996). This model became the basis for 't Hart, Collier and Collins' intonation model to study intonation pattern in Dutch. It is based on the idea that all pitch movements may be studied and described as relatively high and low. Collier and t' Hart (as cited in Ladd, 1996) describe that the theoretical assumption behind the formulation of this model is that “the most elementary aspect of pitch variation is the difference between a relatively high and a relatively low pitch level” (p. 15). The model is divided into five rising tones delineated with 1-5 and five falling tones described through A, B, C, D, E. These tones are further broken up on the basis of prominence. There are

prominence-lending tones which coincide with the lexical stress and non prominence-lending tones in the IPO model of Dutch intonation which occur at boundary level. According to Wagner (2008), the IPO model divides an intonational phrase into three units: prefix, root and suffix. This division corresponds to some extent to the British system of intonation with the pre-head, head and tail. Just like pre-head and tail in the British system, these three units combine to make up large intonational units but they are by no means obligatory. The root, equivalent to head, is the only obligatory element in an intonational phrase as we know that utterances as short as ‘No!’ may form an intonational unit but there is no prefix or suffix in this intonational phrase.

The synthetic version of IPO model consists of steps such as stylization and standardization which results in the generation of an inventory of all possible pitch movements. (Wagner, 2008) This model is superpositional as it advocates a combination of local and global pitch contours.

Ladd (1996) claims that one of the most important concepts propounded by the IPO model is that of declination. Since the IPO model, the term has been exceedingly popular and a major factor in all models on intonation. It is an important feature of Fujisaki’s superpositional model of intonation and Pierrehumbert’s theory of intonation (Arvanti & Ladd, 2009) as well as Garding’s (1993) model of Swedish intonation. Garding describes declination as the global tendency of gradual downfall in pitch movement of all intonational phrases. The declination trend in an utterance is denoted with the help of a top line (\emptyset) and bottom line (0) (Ladd, 1996).

Figure 2.8. The Declining Pitch Movement



Initially, this model concentrated only on the formal aspects of intonation but later researchers have specifically used it to study the emotional information conveyed in Dutch language by the use of pitch contours (Mozziconacci & Hermes, 1997). The IPO model of intonation deliberately avoids discussing the lexical and grammatical functions of various pitch contours. Ladd (1996) defends this choice by pointing out that intonation, being prominently a linguistic feature, is a phonological distinction and not a lexical grammatical feature of a language. Although this model has been designed specifically to study Dutch intonation patterns, it has been used with minor modifications for other languages such as English, Russian and Indonesian (Ladd, 1996).

2.5.5. Nuclear Model & Auto-Segmental Metrical (AM) Theory

Some intonation models have been categorised on the basis of their association with the British nuclear tone tradition of studying intonation or with the American Auto-segmental Metrical (AM) theory. The British tone tradition divides intonation into pre-nuclear, nuclear and post-nuclear tones. Nuclear tone is regarded as carrying primary pitch accent (Skandera & Burleigh 2005; Wagner, 2008) whereas the pre- and post-nuclear pitch accents are optional. Yet Wagner claims that these optional elements help convey paralinguistic information in an intonational unit. In the British tradition, intonation is studied as a system of rising, falling and bitonal falling-rising or rising-falling tones. This model ignores the relative value of boundary tones and concentrates on main pitch contours of an utterance. These different tones perform various linguistic and paralinguistic functions in oral communication. Gussenhoven (as cited in Ladd, 1996) states that there are three basic tones in English language i.e. rise, fall and fall-rise. These basic tones are further combined into bitonal units or go through various processes such as stylization and delay (Ladd, 1996). Stylization is the elimination of pitch points to the relevant contour (Wagner, 2008). According to Wagner, this function is performed by the speech analyser which may be

human as well as a software used for speech analysis. The phenomenon of delay may be described as the late alignment of the tone with the syllable in a scooped fall. Ladd, however, has discussed this delay in the context of AM theory of intonation.

The American AM theory follows the level-based approach. This theory ...assumes that there are two levels of phrasing in English intonation: the intermediate phrase and the full intonational phrase. An intermediate phrase is marked by a phrase accent at its right (or left) edge (H- or L-), and an intonational phrase is marked by a boundary tone at its right edge (H% or L%). (Xu & Xu, 2005, p. 3)

Ladd (1996) presents four basic concepts of the AM theory namely “linearity, distinction between pitch accent and stress, analysis of pitch accents in terms of level tones and local sources for global trends” (p. 42).

The linearity of a tone, according to AM theory, indicates that the pitch movements may be divided into two linear categories of pitch accent and boundary tones. The distinction between pitch accent and stress captures the role of stress in certain languages which use stress as a means of prominence. The third concept i.e. the analysis of pitch accent as level tones indicates that pitch accents are analysed in the form of targets which may be high or low. And lastly the global trends such as declination are studied and explained as the result of the operation of localised features. (Ladd, 1996) The AM theory slightly deviates from the IPO theory which studies pitch accents as prominence-lending and non prominence-lending. Ladd claims that in AM theory, pitch accents are always prominence-cueing. So the pitch accents indicate the presence or absence of a metrically strong syllable instead of being a part of it.

2.5.6. Pierrehumbert’s Theory of Intonation

A very influential theory of intonation proposed by Pierrehumbert in her Ph.D. thesis may be placed within the AM theory. The theory is based on the assumption that all pitch movements

can be studied at two levels: High and Low. These levels may be combined to produce bitonal utterances such as L+H*, L*+H etc. Basically pitch movements in this theory can be divided into two types of tones: pitch accent and boundary accent (Banziger & Sherer, 2005; Hirst, 1992; Ladd, 1996; Queen, 2001). Ladd (1996, p. 46) defines pitch accent as “a local feature of an intonation pattern – usually but not invariably a pitch change and often involving a local maximum or minimum”. He also explains that pitch accents are usually identified due to their alignment with the stressed syllables. However, this is not a universal trend as there are languages such as Italian and French which do not follow this pattern.

The pitch accents have two levels i.e. H(igh) and L(ow). Both these pitch accents are marked with a (*) mark (Hirst, 2005; Ladd, 1996; Xu & Xu, 2005). The boundary accent is divided into two tones; phrase accent and boundary tone. The phrase accent, later called phrase tone (Ladd, 1996), is marked with a ‘-’ symbol combined with a H or L tone whereas the boundary tone is indicated with the help of ‘%’ diacritic mark added to the basic H and L tones (Hirst, 2005). Thus the boundary tones are divided into intermediate boundary and final boundary. These two boundary divisions perform various intonational functions in an utterance. The difference between a pitch accent and an intermediate boundary accent is marked with the help of stress alignment. A pitch accent always aligns with a stressed syllable which determines the intonational contour. The pitch accent in a bitonal utterance is marked in the same way. The starred tone aligns with stress whereas the leading or following tone (e.g. L*+H, L+H*) aligns with the syllables preceding or following the starred tone syllable (Ladd, 1996).

This generates a whole inventory of possible pitch patterns that are available to a speaker. These pitch movements correspond to a large extent with the classification of British model of intonation. Ladd shows the similarities in the form of a table:

Table 2.1. Ladd’s Inventory of British-Style Pitch Movements and Their Corresponding Tones in Pierrehumbert’s Model of Intonation

Pierrehumbert	British-style
H* L L%	Fall
H* L H%	Fall-rise
H* H L%	Stylised high rise
H* H H%	High rise
L* L L%	Low fall
L* L H%	Low rise (narrow pitch range)
L* H L%	Stylised low rise
L* H H%	Low rise
L+H* L L%	Rise-fall
L+H* L H%	Rise-fall-rise
L+H* H L%	Stylised high rise (without low head)
L+H* H H%	High rise (with low head)
L*+H L L%	Rise-fall (emphatic)
L*+H L H%	Rise-fall-rise (emphatic)
L*+H H L%	Stylised low rise
L*+H H H%	Low rise
H+L* L L%	Low fall (with high head)
H+L* L H%	Low fall-rise (with high head)
H+L* H L%	Stylised high rise (low rise?)
H+L* H H%	Low rise (high range)
H*+L H L%	Stylised fall-rise (‘calling contour’)
H*+L H H%	Fall-rise (high range)

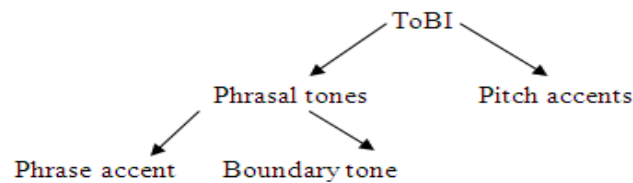
Source: From “*Intonational Phonology*” by Robert Ladd, 1996, Cambridge University Press.

An important feature to be discussed here is the downstepping trend. Garding (1993) has discussed two purported reasons for this global trend: physiological and phonological. Pierrehumbert (as cited in Arvanti and Ladd, 2009) refuses the physiological theory of downstep which claims that it is a result of biomechanical activity. Pierrehumbert expounds the phonological factor of downstep as a series of pitch commands controlled by the speaker to convey linguistic and paralinguistic information. In the early version of her theory, she indicated this phenomenon with the help of H+L* tone. Later in the ToBI model, the concept is further clarified and downstep is denoted with the help of diacritic ‘!’.

Wagner (2008) refers to a prominent feature of Pierrehumbert’s theory which he calls as the “strict layer hypothesis” (p. 27). According to this hypothesis, the intonational structures are non recursive and hierarchal. Wagner, however, expounds Ladd’s (1996) Compound Prosodic Domain which facilitates the issues of representation by allowing the element of recursiveness.

In the 90s, Pierrehumbert’s theory of intonation was slightly revised and formulated into a model for speech synthesis (Wagner, 2008). This model is known as Tone and Break Indices (ToBI) (Barnes, Veilleux, Brugosn & Hufnagel, 2010; Ladd, 1996; Ladefoged, 2001). This model has been divided into two entities:

Figure 2.9. The Classification of ToBI Model of Intonation



Source: Adapted from “*A course in phonetics*” by Peter Ladefoged, 2001, Wadsworth Pub Co.

Ladefoged has described this model comprehensively. He describes it as a collection of high and low target pitches. These pitches are used in pre-nuclear and nuclear syllables, phrase accents (tone after the nuclear syllable) and at tone boundaries (at the end of a phrase). There are a maximum of six tones available at pitch accent level: H*, L*, L+H*, L*+H, H !H*, and !H*. Similarly there are two possible phrase accents available namely L- and H-. According to this model, English uses two tone boundaries symbolised as H% and L% (Hirst, 2005; Queen, 2010). These tones are written on the tone tier (above segment tier) of an utterance. The importance of boundary tones to determine the paralinguistic message has also been highlighted by Sherer, Ladd and Silverman (as cited in Ladd, 1996).

Figure 2.10. Range of Tones Available in ToBI

Optional Pre-Nuclear Pitch Accents on Stressed Syllables	Nuclear Pitch Accent	Phrase Accent	Boundary Tone
H*	H*		
L*	L*		
L + H*	L + H*	H-	H%
L* + H	L* + H		
H + !H* (IH*)	H + !H* (IH*)	L-	L%

Source: From “*A course in phonetics*” by Peter Ladefoged, 2001, Wadsworth Pub Co.

This model further describes English intonation with the help of boundary index ranging from one to four. Closely joined words in a tone unit are given the index of one and the boundary index at the end of a sentence is always four (Ladd, 1996; Ladefoged, 2001).

The complete system of break indices has been elaborated by Wagner (2008, p. 63):

- 0 describes the boundary between words which form clitic groups
- 1 marks the boundary between prosodic words
- 2 is used to describe the boundary between two words which has some properties of a phrase boundary but does not constitute a phrase boundary
- 3 indicates intermediate phrase boundary
- 4 is used for labeling of intonational phrase boundaries

This index poses certain problem during speech analysis. Ladd raises the issue of assigning index tones to intermediate pauses. He claims that there may not be any cues for the intermediate phrase boundary. In such cases, should we assign it the value of 3 as purposed by Pierrehumbert’s model even if there is no discernible pause to mark the boundary? The problem, however, was resolved by assigning the break index 2 to denote the presence or absence of cues to intermediate boundary break. Wagner (2008) also proposes that the vowel length and stress at the last syllable can be cues for boundary at phrase and sentence level. Another solution to this complexity has been offered by Grice, Reyelt,

Benzmuller, Meyer, & Batliner (1996) who have used ToBI to study intonation in German language. They have used the boundary index only when there are anomalies in the break index such as long pauses and breaks in the intermediate phrase.

ToBI is erroneously believed to be the equivalent of IPA in the field of intonation. Probably, this misconception was created because the developers of this model wanted to develop a fairly universal model of intonation to develop speech synthesis systems. However, the home page of the web site dedicated to ToBI clearly states that ToBI should not be misunderstood as the equivalent of IPA. Yet with slight modification, this model has been used to study the intonation system of other languages such as German (Grice, Baumann & Jagdfeld, 2009; Grice et al., 1996; Wagner, 2008); Korean (Jun & Oh, 2000); French and Japanese. But Hirst (2005) warns against the indiscriminate use of ToBI to explain the intonation pattern of every language. He agrees with Pierrehumbert who advises that the complete inventory of a language should be explored before applying ToBI as the model is only a labelling system for speech data base and by no means an exhaustive inventory of all possible pitch contours available in a language.

2.5.7. Brazil's Discourse Intonation Model

Another landmark model of intonation is Brazil's model of discourse intonation. Pickering (2004) has discussed this model in detail. He specifies that Brazil's model may be classified into three major units i.e. tone, key and termination. Tone has three possibilities and it may be high, mid or low. The key and termination are related with the stressed syllables in a tone unit. Key is always aligned with the onset syllable i.e. the first stressed syllable, whereas the termination is aligned with the nuclear syllable. Thus key and termination are always studied in relevant proportion such as 'higher than or lower than'. Key and termination units are combined with the tone choices to perform various functions. Stibbard (1996, para 14)

summarises the whole range of available choices for key, tone and termination and their realization in the form of f0 contour.

Table 2.2. Functions and Notations in Brazil’s Discourse Intonation Model

Function	Role of speaker	Notation (Brazil, 1985)	Realised as
Referring to common ground	Non-dominant	R	Fall-rise tone
	Dominant	r+	Rising tone
Proclaiming new information	Non-dominant	P	Falling tone
	Dominant	p+	Rise-fall tone

Source: From “Teaching English intonation with a visual display of fundamental frequency” by Richard Stibbard, 1996, *The Internet TESL Journal*, 2.

The functions in Brazil’s model are slightly different from those mentioned in other models of intonation. For example, Pickering explains that the high key can determine the newness or givenness of the information content in an utterance. Similarly the mid-level termination expects agreement from the listener and low termination cues finality. According to Brazil’s model, pitch contour coincides with the paragraph unit of written language. Pickering (2004) defines it thus:

This is a stretch of consecutive tone units that fall between two low termination choices; they typically delimit longer sections of speech and comprise a semantically coherent group of tone units. In a monologue, a speaker may divide the discourse into a series of pitch sequences by following each low termination with a high, mid or low key choice and thereby opening a new unit. (p. 24)

Stibbard (1996) explains the Discourse Intonation model’s emphasis of the knowledge shared by the speaker and the listener. The extent of the newness or givenness in an utterance

determines its focus and pitch contours. He also claims that Brazil's model is more teaching friendly as compared to the other approaches. Later researches such as Cauldwell and Hewings (1996); Ranalli (2002) and Thompson (1995) also stress the teachability of this model in language classroom.

2.5.8. Gronnum's Model of Intonation

Ladd (1996) describes an overlay model of intonation proposed by Gronnum. This model studies intonation on the basis of slopes in Dutch language. Thorsen describes them as "shallowest slope is interrogative, the steepest slope is complete (final) declarative, and intermediate slopes are incomplete (non-final) declarative. (as cited in Ladd, 1996, p. 27)

2.6. Intonation and ELT

All the models of intonation described here have helped understand the phenomena of intonation. They have also facilitated speech synthesis. Yet the incorporation and explanation of these models has been grossly ignored in the language teaching material. Our discussion about the functions of intonation has already made it clear that intonation plays a vital role in communication. So the understanding of pitch contours and related linguistic and paralinguistic functions is very important for second language learners.

Intonation, or rather its misuse, is believed to be a strong communication barrier between native and non native speakers of English. Although the role of intonation in causing communication failure is controversial, there are many linguists and language teachers who feel that the importance of intonation in this regard cannot be overemphasised. Clemmens (as cited in Ranalli, 2002, p. 3) elaborates the contexts when intonation becomes a communication barrier:

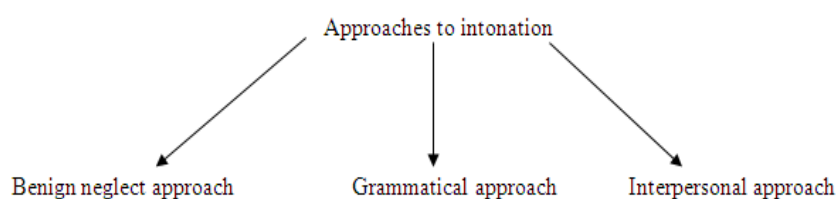
"1. The propositional content (essential information) of the message may not be fully grasped.

2. The illocutionary force (pragmatic meaning) of utterances may be misunderstood.

3. Interspeaker cooperation and conversational management may be poorly controlled”

This leads Ranalli to question the role, extent, and appropriate method of teaching intonation to the ELT learners. Thompson (1995) also highlights the lack of attention paid to intonation in the popular ELT material. She identifies three basic approaches in ELT material related to intonation:

Figure 2.11. Approaches to Intonation in ELT



Source: From “Teaching Intonation on Questions” by S. Thompson, 1995, *ELT Journal*, 49, p. 235-243.

The benign neglect approach aims to teach intonation by exposing learners to speech in real life. This approach is based on acquisition theory of language which supposes that the learners acquire language automatically when they are exposed to linguistic input for a long period of time. The grammatical approach tries to access intonation teaching from syntactic perspective. Lastly the interpersonal approach concentrates on the politeness function of intonation only. Clearly, none of these approaches prepares ELT learners to deal with the complexities of intonation forms and functions available in real life situations. Thompson bases her recommendations of intonation teaching on Brazil’s model of discourse intonation. She cites Brazil’s stance that the relationship between intonation form and function, such as between rising tone and wh- questions, is determined by “... situations and not a deterministic relationship between question “type” and tone selection” (p. 238).

Thompson (1995) admits that there is no clear cut demarcation between intonation forms and functions. She discussed the issue with reference to intonation patterns used for

wh- questions and yes-no questions. Instead of associating certain intonation patterns with these syntactic entities, she proposes that this debate should be resolved by categorising interrogative structures into conducive and non-conducive utterances. This division is based on the information content of an utterance. If an utterance is conducive and the speaker already knows the answer to the question, it will carry a falling tone. Such questions are asked for confirmation instead of information so their information content is low. Similarly the speakers will use a rising tone in case of non-conducive question whose answer they do not know beforehand. Thus the nature of information content in an utterance can determine its intonation contour. This approach also resolves the issue of intonation pattern of those declaratives which carry interrogative intentions.

Cauldwell & Hewings (1996) also discuss the limitations of modern ELT material focusing on the teaching of intonation. They agree that the discourse intonation approach, proposed by Brazil, is appropriate to teach the rules and exceptions of intonation patterns and functions. They also advocate Thompson's (1995) suggestion of determining intonation pattern with the help of information content of an utterance. This distinction denies the previous studies which claim that wh- questions use falling tones and yes-no questions end with a rising tones. It also covers all those exceptions to these rules which were previously considered to be random and arbitrary.

The results of Pennington and Ellis' (2000) study indicate the importance of teaching intonation in EFL classroom. They have designed a memory test of English and Cantonese Chinese speakers of English. Their study proves language learners show better results when their memory is aided by explicit instruction of prosodic structures. Thus they recommend that intonation should be an integral part of ELT materials. Although this research does not focus the importance of intonation in language classroom directly yet we believe the results are significant for our discussion here.

Nihalani and Lin (1998) also draw attention to this issue. Their study expounds that different discourse genres use disparate pitch contours. They have studied the news reading discourse in Singaporean English and find that the nature of discourse leads to the use of high key tones with the initial unit and low key tones with the intermediate and final units. Moreover, Singaporean newsreaders give prominence to the content words which reflects their belief that the content words carry the main information burden in an utterance. Nihalani and Lin use these results to suggest that every discourse genre favours certain intonation patterns due to its structure and the nature of the information content available in it. Thus they recommend that intonation should be an integral part of the language teaching material so that the learners can understand these genre-based differences and utilise them expertly in real life.

Levis (1999) too has criticised the indiscriminate association of intonation form with functions. He has studied the impact of using high-rising and low-rising intonation contour on the American speakers' understanding of interrogative utterances. He concludes that the claim about American speakers' preference for high-rising pitch and the British speakers' partiality to using low-rising pitch in interrogatives is rather a misleading and over blown concept. The results of his study reveal that the use of low-rising or high-rising contour does not influence the American speakers' understanding of the nature of question statements. He suggests that the issues of grammatical structures such as inversion and the use of auxiliaries are more important factors in communication failure caused by intonation patterns.

Levis (1999) also discussed the importance of this low rising and high rising distinction in the non native varieties of English. He narrates an incident when in the British airlines, the Pakistani and Indian women's use of intonation led to misunderstanding and a feeling of offense by the passengers. Thus he claims that the role of intonation in ELT is

significant to specify the use of specific pitch contours in certain contexts, especially in ELF and ESL situation.

2.7. World Englishes

This brings us to the issue of World Englishes and its various features and nuances. When English language acquired the status of a lingua franca and became a global language, this widespread use resulted in its nativization by the local communities. It also led to the death of many existing languages and the evolution of new dialects, varieties as well as languages (Bolton, 2004). Jenkins (2003) and Kachru, B., Kachru Y. & Sridhar (2008) have divided the English speaking world into two Diasporas of native and non native users. According to Jenkins, the English language in these Diasporas differs on the basis of accent, vocabulary, grammar, discourse strategies and idiomatic use of language. These Diasporas are distinguished on the basis of the context of English use and the functions English performs in these areas. Jenkins classifies English according to its users into English as a native language (ENL), English as a foreign language (EFL), English as a second language (EFL), English as a lingua franca (ELF), and English as an international language (EIL). If we accept this view of different 'Englishes' instead of English, it includes the recognition that far from being a monolithic whole (Kachru, Y. & Smith, 2009), English is a largely indigenised variety. Moreover, it also takes us away from the nativeness paradigm and forces us to look at English in the larger perspective of ESL. In the non native communities, English is used for various functions and purposes. These functions are also viewed through various paradigms which explain the usage of English in the following terms:

1. Language production with reference to, for example, language standards;
2. Language function with reference to models of functional language-types (e.g., English for Special Purpose, ESP), schemas for genres of writing, and communicative competence;

3. Channels of authentication and authority with reference to native versus non native status;
4. Criteria for legitimization of the canon and innovations in creativity within a canon;
5. Standardization of performance tests in evaluation of competence; and definitions of interactional concepts such as intelligibility, etc. (Kachru, 2005, p. 17)

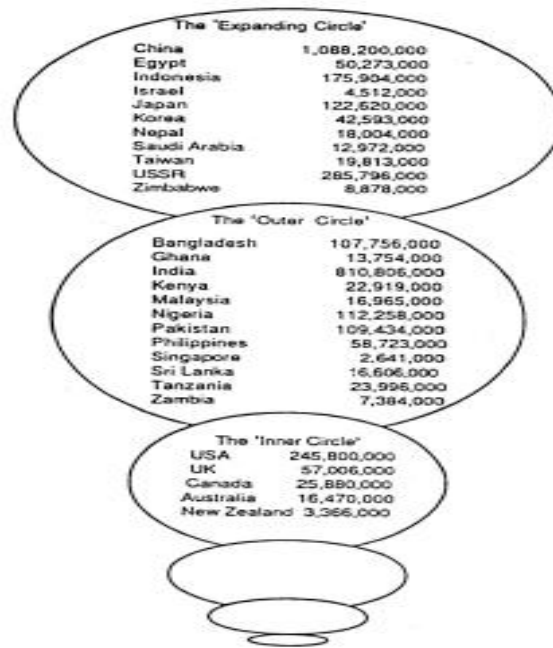
Kachru and Smith (2009) evaluate that the global spread of English has resulted in two kinds of phenomena: acculturation and nativization. So when English language comes into contact with the native languages it can either lead to the abandonment of native languages or at least they accept strong influence from English and are acculturated. But this influence is not one sided. With one third non native speakers (Crystal, 2004), English could not escape the impact of contact with the native languages. This impact has been called nativization by Kachru and Smith.

Kachru (1982) has divided the English using native and non native countries into three circles: inner circle, outer circle and expanding circle. These circles have been formulated on the basis of the status and use of English in these countries. The inner circle countries are the native users of English and in the outer circle countries, English has official status and it is used as a second language in law, media, trade and commerce. In the expanding circle countries, English functions as a foreign language and has little role to play in the social and official situations. The details of the countries included in each circle and the user population is given in figure 2.12. Pakistan is categorised in the outer circle as English here is the official language and enjoys the status of a second language (Hickey, 2004).

The English language used within any of these countries is not uniform or static either. The differences between native Englishes such as British and American English are well documented. Similarly the non native varieties are also affected by the structures of the

local languages (Erling, 2005; Erling, 2006; Hickey, 2004; Jenkins, 2003; Kachru, B., Kachru, Y., & Nelson, C., 2009; Kachru & Smith, 2009).

Figure 2.12. Kachru’s Model of Three Concentric Circles of English



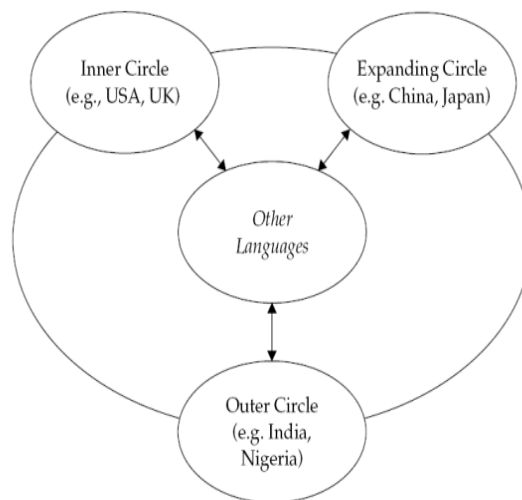
Source: From “*World Englishes: The Study of New Linguistic Varieties*”, by J. Mesthries and R. M. Bhutt, 2008, Cambridge University Press.

Graddol revised Kachru’s model of three circles (as cited in Jenkins, 2003) and divided the English speaking community on the basis of proficiency instead of the functions English performs in those communities. This revision is based on Kachru’s (1998) idea of two types of nativeness. Kachru states that nativeness can be of two types: genetic and functional. Genetic nativeness is acquired by using language as a mother tongue whereas the functional nativeness is achieved by using language in ESL and EFL situations (Kachru, 1998; Shibata, 2011). However, Jenkins explains that Graddol’s concept of nativeness is different from that of Kachru as the latter’s concept of functional nativeness is limited to the social use of language whereas the former refers to the use of language in an entire community.

Bhattia (2006) proposed an interesting model of contact Englishes which shows the two way relationship between English and the local languages in contact situation. He calls this a ‘melting pot’ situation where constantly features are adopted and abandoned by the native and non native varieties. The interaction between local languages and English takes place at all linguistic levels including lexical, phonological, syntactic, pragmatic, discourse etc. MacArthur (2003) elaborates this idea thus:

South Asians with this inheritance, whatever their religious backgrounds, have had a further influence on English teaching, learning, and usage not only in the subcontinent but also in Malaysia, Singapore, Brunei, Hong Kong, and Fiji, localities in all of which expatriate South Asians can be found in significant numbers. (p. 3)

Figure 2.13. English and Contact languages



Source: From “World Englishes in Global Advertising”, by T. K. Bhattia, 2006, In B. B. Kachru, Y. Kachru & C. Nelson (Eds.), *The handbook of world Englishes* (Vol. 48), Wiley-Blackwell.

Kachru (2005) has also discussed the role and function of English in inner circle countries. The following table effectively summarises the various functions English is called upon to play in those countries.

Table 2.3. Functions of English in Different Domains

Function	Inner Circle	Outer Circle	Expanding Circle
Access Code	+	+	+
Advertising	+	+/-	+/-
Corporate trade	+	+	+
Development	+	+/-	+/-
Government	+	+/-	-
Linguistic impact	+	+	+
Linguistic creativity	+	+	+/-
Literary renaissance	+	+	+
News broadcasting	+	+	+/-
Newspapers	+	+	+/-
Scientific higher education	+	+	+/-
Scientific research	+	+	+/-
Social interaction	+	+/-	+/-

+ Only English has function in this domain

+/- English as well as other language(s) function in this domain

- English has no function in this domain

Source: From “*Asian Englishes Beyond the Canon*”, by B. B. Kachru, 2005, Hong Kong University Press.

The above mentioned models have laid the groundwork for researches in the field of world Englishes. Apart from all the theoretical works and models, many researchers have conducted practical studies about the differences between native and non native varieties as well as between inter-varietal differences. One such study is by Chen, Gussenhoven and Rietveld (2004). Their study disproves the claim about the homogeneity of paralinguistic

interpretation of intonation contours across languages. They have studied the Dutch and British English speakers' perception of paralinguistic meaning. The respondents perceived the stimuli differently and their perceptions of tones related to confidence, friendliness, emphasis and surprise differ from each other. This study proves that far from following homogenous trends, all the languages of the world differ in the association of intonation pattern and intonation functions. Not only that, there are inter-varietal as well as intra-varietal differences as all the above mentioned models of world Englishes suggest. The empirical data also supports the theoretical claims about world Englishes.

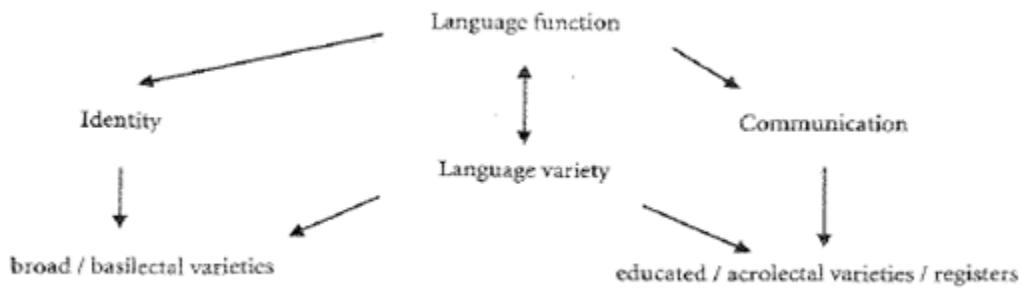
Ouafeu's (2006) study may be cited as an important example of inter-variety differences in the intonation of British, American and Cameron English. Previous researches claim that the pitch contour in a listing utterance follows a certain pattern i.e. rising on each item and falling on the last item. Or alternatively, all the items may be pronounced with a falling intonation except the last item which is spoken with a rising contour (Ladefoged, 2001). Schubiger (as cited in Ouafeu) maintains that this distinction can be explained by referring to 'apperception'. It points to the speakers' knowledge of all the items in the list. If the speakers already know the items, their apperception is comprehensive and they use rising pitch on all the items except the last whose falling contour conveys finality. But if the speakers have to think about the list items while they are speaking, their apperception is incomplete and they use falling tones in the pronunciation of non final items. However, Ouafeu's study yields different results. He finds that the Cameron speakers of English use level tones in their production of listing items. They also tend to favour 'end-stress' as the last lexical item in an utterance is always stressed notwithstanding the context.

A study by Maxwell and Fletcher (2009) strengthens this point. The researchers have acoustically studied the pronunciation of vowels in Indian English by Hindi and Punjabi speakers. The results establish that these speakers' vowel trajectory matches with the claims

generally made about Indian English. However, they point out that differences within a variety may be caused by “speakers’ degree of exposure, the frequency of use, proficiency, educational background, and membership of a particular social, ethnic or religious group.” (p. 53)

Another study about the intra-varietal differences in Indian English has been carried out by Wiltshire and Harnsberger (2006). They have studied the differences in the prosodic pattern of Tamil and Gujrati speakers of Indian English. Ravishankar (as cited in Wiltshire and Harnsberger) propose that the use of several pitch contours in one intonation unit is a specific feature of Indian English. Wiltshire and Harnsberger reach the same results but they find that Tamil and Gujrati English differ in their preference for particular intonation patterns. They find that Tamil speakers of English favour HL tone whereas the Gujrati speakers are partial to the LH tone. Thus, although these two intra varieties share many features, they have many differences which beware the language researchers from declaring Indian English as a homogenous variety. Wiltshire and Harnsberger attribute these differences to the element of transfer from local languages. Such intra-varietal differences have also led Mahboob and Ahmar (2004) to claim that Pakistani Englishes is a more appropriate term to capture the intra-varietal differences in Pakistani English. Now the question is if these differences are significant enough to warrant such important claims or are they an indication of identity issues. The same idea has been illustrated by Kirkpatrick (2007) in his model of communication and identity.

Figure 2.14. Kirkpatrick’s Model of Identity- Communication Continuum



Source: From “*World Englishes: Implications for International Communication and English Language Teaching*”, by A. Kirkpatrick, 2007, Cambridge University Press.

In this model, Kirkpatrick describes language functions i.e. communication and conveying identity. These two functions are performed by various language varieties such as basilect variety in official situation and acrolect varieties in informal situations such as family interaction. And the use of these varieties in various contexts is closely related to the issue of identity.

The discussion above highlights the need of studying the indigenous varieties of English as they shed light on nativized patterns of English. This research aims to address this issue by exploring the use of intonation patterns used in Pakistani English and how these patterns are affected by the intonation patterns of the speakers’ mother tongue. The next section elaborates some previously done work in the field of Pakistani English. It helps put our study in perspective and highlights the need for studying the suprasegmental features of Pakistani English as it is yet an unexplored area.

2.8. Pakistani English

Talaat (2003) claims Pakistani English is not a fully developed variety of English. According to her, it should be studied as a “process (of contact) rather than as a finished product” (p. 18). Like other non native varieties of English, Pakistani users have also incorporated the features of local languages in their repertoire of English language which have led to the

nativization of English in Pakistan (Mahboob & Ahmar, 2004). Mahboob (2009) and Tallat (2003) claim that Pakistani English is different from the native British and American varieties in its lexis, syntax, phonology, semantics, morphology and pragmatics. Here it is important to mention that most of the studies in Pakistani English have been comparisons between the local and native British and American linguistic norms. No significant study has yet been done about the standards of Pakistani English and other native varieties such as Australian and New Zealand English. It is assumed that due to the colonization of the sub-continent and extended exposure to American media, Pakistani population is influenced only by the British and American linguistic norms and only in specific context do they come in touch with other native varieties of English. Moreover, Pakistani English has not been studied as a separate variety in its own right and most of these studies have been conducted from the difference theory perspective (Hickey, 2004).

Hickey (2004), Jenkins (2003) and Kachru, Y. and Smith (2009) have discussed rhoticity, epenthesis, and the substitution of dark /l/ with clear /l/ etc. as typical of South Asian Englishes. These features are also evident in Pakistani English. But our study focuses on the phonological features of Pakistani English and more specifically the intonation patterns used by Pakistani speakers. Here it is important to mention that none of these studies have discussed the intonation pattern of South Asian English or Pakistani English.

The researches specifically concerning the features of Pakistani English are few and far between. Rahman (1990) has conducted a study of Pakistani English on a limited scale. His work has severely been criticized by Mahboob and Ahmar (2004) and others for its limited scope and conjecture based findings. Mahboob and Ahmar have also conducted a small scale research on various aspects of Pakistani English such as phonology, grammar, lexis and syntax. But the objections raised against Rahman are also true for the study carried out by Mahboob and Ahmar. Their observations concerning the phonology of Pakistani

English are based on limited evidence, are too generalised and lack empirical evidence to support the findings.

Another study worth mentioning here is by Raza (2008). He has enumerated the various distinct phonological features of Pakistani English such as rhoticity, epenthesis, and the substitution of dark /l/ with clear /l/ etc. He has modelled his study after “Roach’s linear segmental approach” (p. 105). But his methods of data collection and analysis are similar to those used by Mahboob and Ahmar (2004). Raza’s study supports the observations of Kachru (2005) and others concerning the features of South Asian Englishes. He agrees with the claim that the major reason of these differences is the influence of mother tongue in the speech of Pakistani English language users.

There are some latest studies about the phonological features of Pakistani English. Bilal, Mahmood, and Saleem, (2011) have conducted an acoustic analysis of the front vowels by Pakistani speakers of English. They have compared the British, American and Pakistani speakers’ use of four front vowels /i:/, /I/, /e/ and /æ/. The results of their study indicate that there is similarity between the native and non native usage in case of /i:/ and /I/ whereas the two remaining front vowels are uniquely pronounced by the Pakistani speakers of English. Pakistani users of English produced /e/ and /æ/ vowels at mid front positions instead of the front position as used by the native British and American speakers of English. The results of this study have been further corroborated by Mehmood, Zaffar, and Parveen (2011) whose study of the use of front vowels in Pakistani English proves the results put forward by Bilal, Mahmood and Saleem.

Similarly, Bilal, Mahmood, and Saleem (2011a) have investigated the merging of /i:/ and /I/ vowels in Pakistani English. The results of their study are very interesting as they prove that there is no significant difference between the native British, American and non native Pakistani speakers’ production of /i:/ and /I/ vowels. The only difference is that for

Pakistani speakers, these vowels are more front as compared to the non native speakers. These results are strikingly remarkable as they indicate a high degree of similarity between the native and non native's use of two front vowels whereas the previous researches on South Asian English have established that the native and non native's use of vowels is very different in terms of vowel quality and quantity.

Asghar, Mahmood, Aslam and Mahmood (2012) have studied the use of back vowels in Pakistani English. The results of their study indicate that Punjabi speakers of Pakistani English do not differentiate between /ɒ/ and /u:/ vowels and only /u:/ vowels is used to denote both the sounds. Similarly, they exchange /ɔ:/ sound with /ɒ/ and move the long back low vowel /ɑ:/ to a more central position. Thus the Pakistani speakers' production of back vowels is also very different from those of the American speakers of English.

Furthermore, Bilal, Warrich, Rasheed, Fatima, and Tiwana (2011) have investigated the use of central vowels by Pakistani speakers of English. They conducted an acoustic analysis of /ə/, /ɜ:/ and /ʌ/ vowels to explore if Pakistani speakers of English differentiated between these three vowels. The results of their study show that Pakistani speakers tend to merge the /ə/, /ɜ:/ vowels whereas they pronounced the /ʌ/ vowel distinctly. Thus, it is clear that Pakistani English speakers' production of all front, back and central vowels differs from the native speakers' vowel production. Here it is important to point out that the three previously mentioned studies are very limited in scale and based on the use of English by Punjabi speakers in Pakistan. As the structure and the linguistic inventory of the mother tongue affects the use of English as a second language (Talaat, 2003), we can assume that Pakistani speakers with mother tongue other than Punjabi may use different patterns than those specified in the above mentioned studies. So the claims made in these researches should be treated cautiously and should not be over generalized to the population of English language users in Pakistan.

However, the differences between the naïve and non native speakers are not limited to vowels only. There are some small scale studies about the other phonological aspect of Pakistani English too e.g. the use of /θ/ and /ð/ consonants in Pakistani English (Mahmood, Asghar & Jabeen, 2011). This is a rudimentary research which has explored the impact of mother tongue in the realization of these two consonants. The results indicate that Pakistani English speakers' production of /θ/ and /ð/ consonants is very different from those of the native British speakers of English. Here, it is important to mention that these two consonants are not included in the inventory of Urdu and English language. Hence, the Pakistani speakers' pronunciation of these consonants is nearer to their Urdu counterparts /ث/ and /ذ/.

Jabeen, Mahmood and Asghar (2012) have studied vowel epenthesis in consonant clusters in Pakistani English. This study hypothesised that under the phonotactic constraints of their mother tongue, the Punjabi speakers of English use epenthetic vowel in consonant clusters. So the consonant cluster were studied at initial, medial, final word positions as well as before sellable consonants. The results indicated that vowel epenthesis is a regular feature of Pakistani English. These results match the claim of Mahboob and Ahmar (2009) regarding the use of vowel epenthesis in Pakistani English.

So the discussion above proves that there are many small scale researches about the phonological patterns of Punjabi speakers' use of English in Pakistan. However, there is another study about suprasegmental features of phonology. Mahmood, Zahid & Sattar (2011) have studied the stress patterns in compound nouns and noun-verb category. Their research shows that Pakistani English speakers do not follow any regular stress pattern. This lack of regularity is attributed to the difference in the stress placement of Urdu and English language.

Damron (2004) has studied the use and function of intonational units of Urdu and Pakistani English. Although her study has not been conducted under the canon of world Englishes, the results are very significant. The results of her analysis show the lack of any

regular nuclear accent in both Urdu and Pakistani English. This study also marks the use of level boundary tones by Pakistani English speakers. Finally Damron claims that the Urdu and Pakistani English speakers' use of prosodic information is very different from those of the American speakers' as Urdu users and Pakistani English speakers do not use stress as an important feature of intonational phrase. Therefore, the prosodic quality of Pakistani English speakers' speech is nearer to Urdu than American English. However, this study has some serious lapses in planning. For example, this research is based on naturalistic data so the stress pattern and the phonemic context have not been controlled. Similarly, the respondents in this study use various languages as their mother tongue. There are Punjabi, Pushto, Hindko, Sindhi and Urdu mother tongue speakers. The prosodic patterns of their respective mother tongue must have influenced their use of intonational units of both Urdu and English. Hence, the results of this study may not be very reliable.

Nonetheless, there are some other studies on Pakistani English e.g. the use of discourse markers in Pakistani English (Jabeen, Rai & Arif, 2011); the use of articles (Mahmood, Javed, & Tariq, 2011), the use of circumstantial adverbs (Mahmood, & Ali, 2011). All these and the above mentioned studies establish that Pakistani English is a separate variety. Therefore it should be accepted as such and not viewed as extension of British English. All these researches have compared the features of the Pakistani English with the exonormative British and American standards. Our research, however, is different from all these studies in that we are evaluating the intonation patterns in Pakistani English with reference to the mother tongue of the speakers. So our study is an attempt to analyse the influence of mother tongue on the intonation contour of the Urdu speakers of Pakistani English.

Chapter Three

METHODOLOGY

3.1. Type of Research

It was an exploratory and comparative research that aimed to explore the use of pitch patterns used by Pakistani speakers of English. It intended to ascertain the nature of various intonation patterns used by Urdu speakers of Pakistani English. It also aspired to investigate how these pitch patterns differed from those of the American and British English speakers.

3.2. Participants

The participants for this research were those native speakers of Urdu whose parents' mother tongue (L1) was Punjabi. Three participants were selected for this research, two of whom were females whereas one was male. They were all graduates and fluent users of Urdu in their daily life. However, their use of English was limited to academic context: in the classroom discussion and presentations. All the participants belonged to district Bahawalnagar. The participants and their parents had spent the early years of their life in Bahawalnagar, so we could reasonably presume that they belonged to the same linguistic community.

3.3. Data Collection & Instrumentation

The data set was developed after careful selection of structures and the corresponding sentences. In order to study the intonation pattern in both Urdu and English language, two types of sentence structures i.e. declarative and interrogative (both yes/no and wh-questions) were selected. These structures were studied in transitive, intransitive and ditransitive

sentences. The stress pattern was controlled by ensuring that all words in the English data set were monosyllabic. However, it was not possible to find monosyllabic nouns and verbs in Urdu language, so multisyllabic words were used in the Urdu data set. All the sentences were further divided on the basis of stress which fell on the first and the last word of each sentence. While designing the data set, stops were avoided deliberately as the speakers have to pause fractionally for producing them. Hence, only fricative and nasal consonants were selected for the data set. However, certain words with stop consonants, for example, /k^h, g, t/ were used in Urdu data set. The detail of data set for the analysis of Urdu pitch patterns for declarative sentences is given in Table 3.1 below.

Table 3.1. Data Set for the Analysis of Urdu Declarative Sentences

Sr. No.	Sentence structures	Sentences
1	S V	ناز نے کھایا
		ناز نے مارا
		ناز نے گایا
2	S O V	ناز نے تیر مارا
		ناز نے کھانا کھایا
		ناز نے گانا گایا
3	S O V O ²	ناز نے زین کو کھانا کھلویا
		ناز نے زین کو تیر سے مروایا
		ناز نے زین کو گانا گویا

The same sentences were used for yes/no interrogatives, with the addition of a question mark at the end of each sentence. For wh-questions, however, the following data set was used.

Table 3.2. Data Set for the Analysis of Urdu Wh-Questions

Sr. No.	Sentence structures	Sentences
1	S V	کس نے کھایا؟
		کس نے مارا؟
		کس نے گایا؟
2	S O V	کس نے تیر مارا؟
		کس نے کھانا کھایا؟
		کس نے گانا گایا؟
3	S O V O ²	کس نے زین کو کھانا کھلوا یا؟
		کس نے زین کو تیر سے مروایا؟
		کس نے زین کو گانا گوا یا؟

The same dataset was translated into English for the analysis of English intonation pattern. The English dataset for declarative sentences is given in Table 3.3.

Table 3.3. Data Set for the Analysis of English Declarative Sentences

Sr. No.	Sentence structures	Sentences
1	S V	Naz ate.
		Naz hit.
		Naz sang.
2	S O V	Naz hit with an arrow.
		Naz ate food.
		Naz sang a song.
3	S O V O ²	Naz gave Zain food.
		Naz hit Zain with an arrow.
		Naz made Zain to sing a song.

For yes/no questions in English, the same data set as given in Table 3.3 was used with the simple addition of a question mark at the end of each sentence. For the wh-questions in English, the data set given in Table 3.4 was used.

Table 3.4. Data Set for the Analysis of English Wh-Questions

Sr. No.	Sentence structures	Sentences
1	S V	Who ate?
		Who hit?
		Who sang?
2	S O V	Who hit with an arrow?
		Who ate food?
		Who sang a song?
3	S O V O ²	Who gave Zain food?
		Who hit Zain with an arrow?
		Who made Zain to sing a song?

A hurdle in comparing the intonation patterns of Urdu and English language was their different sentence structure. English follows the SVO word order whereas the word order in Urdu is not specified. Urdu sentences traditionally follow the SOV order but SVO sentence are fairly common and intelligible in Urdu. Therefore, in order to analyse if the alternative word order (SVO) affects the intonation pattern of Urdu sentences, we studied the transitive sentences with SVO word order. The data set is given in Table 3.5.

Table 3.5. Data Set for the Analysis of Alternate Word Order in Urdu

Sr. No.	Sentences
1	ناز نے مارا تیر
2	ناز نے کھایا کھانا
3	ناز نے گایا گانا

The context plays an important role in the analysis of speech. Brazil's Discourse Intonation model (as cited in Pickering, 2004) and the subsequent researches by Cauldwell and Hewings (1996); Ranalli (2002) and Thompson (1995) prove the importance of context to determine the intonation contour of an utterance. The most valid data for speech analysis may be obtained in naturalistic setting. However, there are a number of issues that hinder the availability of naturalistic spoken data. Firstly, there are recording constraints and the problem of controlling noise in the outdoor situation. Next is the researcher's dilemma about obtaining informed consent of the speakers to record their speech. Usually if the participants are aware that every word they utter is being recorded, their speech becomes strained and it is no more natural whereas recording their speech without informing them raises ethical issues (Cohen, Manion, & Morrison, 2007; Mozziconacci, 2002). This situation may be remedied if the researcher spends enough time with the participants to be a regular part of their environment. However, due to time constraints in this study, it was not possible for the researcher to commence the familiarization process. Moreover, there is no fully developed and authentic corpus of Urdu speech, so that possibility was also eliminated.

To avoid the above-mentioned situation, many acoustic phonetic researches have been based on constructed dialogue, elicited speech (Levis, 1999), story narration (Queen, 2010) or enacted speech. Nevertheless, there are other options too such as using laboratory speech or reading lists. Xu (2010) defines lab speech as:

“...speech that is recorded in the laboratory, usually in the form of pre-composed scripts to be read aloud. However, the term lab speech is often used to refer to a stereotyped speech such as:

Say *hid* again.

Say *heed* again.

Say *hood* again.

where the italicized words are the ones under scrutiny.” (p. 329)

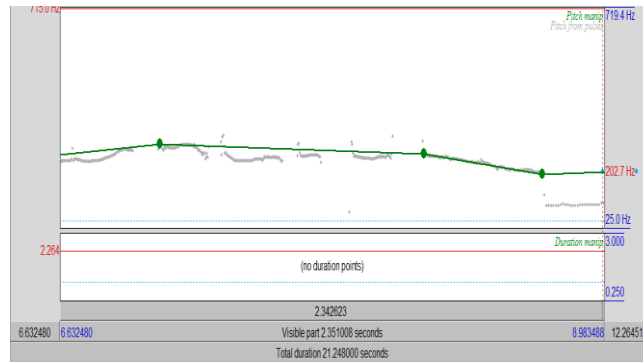
For this study, we used isolated sentences with controlled stress at the first word in one set of recordings and at the last word in the second set of recordings. The target sentences were written on flash cards. After each recording, the cards were shuffled in order to avoid monotonous tones. The participants were given short breaks and some water to relax their vocal cords after each recording.

Before commencing the recording procedure, participants were encouraged to familiarize themselves with the text on flash cards in order to eliminate the possibility of error during recordings. These sentences were spoken at the normal speech rate by the participants and recorded at 8000 Hz with the help of PRAAT software. Thus, a total of 1026 utterances were recorded and analysed for this study. In order to account for intra speaker variation, three repetitions of the each sentence were also obtained.

3.4. Data Analysis

The recordings were analysed through PRAAT. The data was processed by manipulating the intonation pattern and stylizing it. The stylized contour was analysed to eliminate redundant pitch points. The resulting final contour was saved in the form of speech pictures. An example of the intonation pattern after elimination of redundant points is given in figure 3.1.

Figure 3.1. The Intonation pattern of (ناز نے زین کو تیر سے مروایا)



These speech pictures were studied to determine their intonation patterns. The contours were labelled on the basis of ToBI model of intonation.

Mozziconacci (2002) has stressed the importance of using models to study intonation patterns as they make the study of intonation patterns more systematic and reliable. Furthermore, Silverman et al. (1992) have advocated the use of TOBI for analysing intonation patterns in a language based on its four important features i.e. reliability, coverage, learnability, and its relatedness to current approaches of intonation. According to them, the intra-transcriber agreement in the use of TOBI lends it a high degree of reliability. The background and the salient features of ToBI have been described in the next section.

3.4.1. ToBI

This model is the modified form of Pierrehumbert's model of intonation presented in 1980s (Banziger & Scherer, 2005). This model was intended to be used as a universal system to prosodically annotate speech databases just as IPA is used for phonological annotation globally. However, the official web page of TOBI warns not to equate it with universally accepted systems such as IPA. ToBI was originally developed to study intonation contours of American English (Wagner, 2008). However, it has been used to study intonation patterns in many other languages since then. ToBI model of intonation can be clearly divided into two

parts: tones and break indices (Hirst, 2005). Tones are further divided into pitch accent, phrase accent and the final boundary tone. Wagner describes pitch accent as the last stressed syllable in a tone unit whereas the phrase accent is the tone that occurs in the same tone unit after the pitch accent (Queen, 2001). The boundary tone is the final intonation pattern of an intonational phrase. Silverman et al. (1992) have divided TOBI into three tiers:

Miscellaneous tier	hesitation, breaths, pauses
Break index tier	0-4 index indicates the rhythmic structure of an utterance
Tonal tier	pitch accent, phrase accent, boundary tone

However, it is imperative to point out that these tiers do not have a hierarchal relationship but run parallel to each other.

All the tones at the tonal tier are a combination of two pitch targets: high and low. These tones may or may not align with stress in a tone unit. The stress aligned pitch accent are denoted with the help of a '*'. The unstarred high or low pitch accents denote the rise and fall in pitch pattern that do not fall on stressed syllables. Ladd (1996) elaborates the presence of the pitch accent as performing the function of “prominence cueing” instead of “prominence lending”. That is, they indicate the presence of a stressed syllable in a tone unit instead of constituting one. The phrase accent is denoted with the help of ‘-’ added to an H or L for high and low tones respectively. The contour of boundary tone is depicted with the help of ‘%’ added to H or L tone contour. Hirst (2005) discusses that ToBI:

combines representations of prosodic form (H, L) with representations of prosodic function (- * %) in so far as the latter symbols convey aspects of prosodic structure which are clearly expressions of what prosody does in language (i.e. its function) rather than what prosody sounds like (its form). (p. 338)

This model was primarily designed to assist with speech synthesis technology and to label speech databases (Mozziconacci, 2002). That is why some of its tenets, such as the break index system, are not relevant for the analysis of intonation patterns for an acoustic study. Therefore Grice et al. (1996) suggest the cautious use of break indices only in those situations when the scalar representations point toward some unusual break index patterns.

Silverman et al. (1992) have discussed the reliability of the analysis of intonation patterns using TOBI system of intonation. They trained the participants of their study for TOBI based analysis and then measured the level of intra-transcriber agreement. The results of their research show that more than 80% agreement may be achieved even between expert transcribers and those who do not have substantial previous experience in prosodic transcription.

The next sections elaborate the results of different ToBI based analyses of American and British English. These results were used to measure the degree of similarity and differences between American, British and Pakistani English.

3.5. Intonation Patterns in American English

The intonation and intonation patterns used in American English have been studied extensively by Hedberg, Sosa and Fadden (2004), Hedberg, Sosa, Gorgulu, and Mameni (2010), Hirschberg (2004), Pierrehumbert and Hirschberg (1990) and Safarova and Swerts (2004). These studies have focused on various aspects of intonation including focus, given vs. new information, the beliefs and intention of the speaker and the hearer, the influence of dialectical differences on intonation pattern, topic and the nature of speech acts etc.

Hirschberg (2004), Pierrehumbert and Hirschberg (1990) have discussed in detail how the intentions of the speakers and their assumptions about the hearers' knowledge and beliefs affect the intonation pattern of various grammatical structures. Thus when they have

discussed the intonation patterns of declaratives or interrogatives in American English, they have qualified their claims by specifying the grammatical and semantic context of each sentence. Hence our discussion of the intonation patterns used in American English should not be used as general simplistic claims about intonation patterns.

3.5.1. Declarative statements

Pierrehumbert and Hirschberg (1990) claim the intonation pattern of neutral declaratives in English is H L- L%/H%. H% is used when the speaker wants to impart new information and L% is used when the speaker believes that the hearer already knows what is being said. However, according to them, the standard intonation pattern of an English declarative sentence is H* L- L%. Hirschberg (2004) also supports this claim and clarifies that although many other contours are used for producing declarative sentences in English, they are more controversial and less predictable.

Table 3.6. Intonation Patterns Used by American Speakers of English for Producing Declarative Sentences

Sentence Structure	Intonation patterns
Declarative Sentences	H* L- L%

3.5.2. Yes/no questions

According to Hedberg, Sosa and Fadden (2004), the intonation pattern used for positive yes/no questions in American English is L* H- H% as it comprises 85% of their data. Hirschberg (2004) and Pierrehumbert and Hirschberg (1990) also corroborate this claim.

Table 3.7. Intonation Patterns Used by American Speakers of English for Producing Yes/no Questions

Sentence structure	Intonation pattern
Yes/ no questions	L* H- H%

3.5.3. Wh-questions

Hirschberg (2004) and Pierrehumbert and Hirschberg (1990) have specified that the standard intonation pattern used for English wh-questions is H* L- L%. However, Hedberg, Sosa and Fadden's (2004) study shows that a variety of contours may be used in this context e.g. H* L- L%; !H* L- L%; L* L- L%. Each of these contours occurs with varying frequencies in the data but they have been used frequently enough to be noticed as prominent contours.

Table 3.8. Intonation Patterns Used by American Speakers of English for Producing Wh- Questions

Sentence structure	Intonation pattern	Percentage
Wh-questions	L* L- L%	27%
	H* L- L%	23%
	!H*L L%	23%

3.6. Intonation Patterns in British English

Fletcher, Grabe, and Warren (2004), Grabe and Post (2002), Mayo, Aylett and Ladd (1997), Ortega (2002) and Zheng, Dyke, Berryman and Morgan (2011) have discussed the intonation pattern of British English in detail. We have selected the results of IViE project (Grabe & Post). This project studies the intonational variation in nine British localities. The areas included are London, Cambridge, Belfast, Dublin, Bradford, Leeds and Newcastle. However, for the sake of comparison in this research, we have used the intonation patterns of English spoken around London as this is the area associated with Received Pronunciation. The next sections present the analysis of declarative, yes/no questions and wh-questions used in British English spoken around London. It is important to point out that the IViE pitch tagging conventions are based on ToBI yet there are slight differences. For example, the phrase accent tone is not accompanied with ‘-’ diacritic mark and the absence of a boundary tone is denoted with ‘%’ symbol unaccompanied by an L or an H. Therefore, the intonation patterns presented in the next section should be studied keeping these conventions in mind.

3.6.1. Declarative Sentences

According to Grabe and Post (2002), the English speakers of London use various intonation patterns for English declarative sentences. But the most prominent among those contours is the H* L % as it covers 95.8% of the data.

Table 3.9. Intonation Patterns Used by British Speakers of English for Producing Declarative Sentences

Sentence structure	Intonation pattern
Declarative sentences	H* L %

3.6.2. Yes/no Questions

The analysis of British English by Grabe and Post (2002) indicates that London speakers of English use a wide variety of contours for yes/no questions. The most frequently used contour is L* H % as it makes up 38.9% of the data. However, the frequency of H* L % is also significant with 27.8% data coverage. A noteworthy point here is the absence of any boundary tone in both contours.

Table 3.10. Intonation Patterns Used by British Speakers of English for Producing Yes/no Questions

Sentence structure	Intonation pattern	Percentage
Yes/ no questions	L* H %	38.9%
	H* L %	27.8%

3.6.3. Wh-Questions

Grabe and Post's (2002) analysis of English wh-questions demonstrates the London speakers' preference for H* L % intonation pattern which encompasses 55.6% of the data.

Table 3.11. Intonation Patterns Used by British Speakers of English for Producing Wh-Questions

Sentence structure	Intonation pattern
Wh-questions	H* L %

3.7. Data Interpretation and Presentation

The obtained results were analysed and presented in tabular form. The tables were studied to extract the frequency of various intonation patterns used by the speakers.

The influence of Urdu intonation contour on Pakistani English was also studied. The results helped us analyse the degree of difference/similarity in the intonation contour of Urdu and Pakistani English. Similarly, the intonation patterns of English spoken in Pakistan were compared with those of the American and British English speakers.

The results of our analysis are presented in the next chapter.

Chapter Four

RESULTS

The results of our analysis are presented in this chapter. The first part of the chapter deals with the intonation patterns in Urdu. And the second part puts forward the results of the analysis of patterns used by Urdu speakers of English in Pakistan.

4.1. Intonation Patterns in Urdu Language

4.1.1. 1st Word Stress

4.1.1.1. Declaratives

4.1.1.1.1. Intransitive sentences

The results of our analysis indicated that the most frequently used contour was L H L- L% with 67% data coverage. However, a significant pattern to be noticed is the use of low boundary tone in all the three contours used in this context.

Table 4.1. Summary of Intonation Patterns Used for Producing Urdu Intransitive Declarative Sentences with First Word Stress

Intonation Patterns				Frequency
L	H	L-	L%	18
L		L-	L%	7
L	H	H-	L%	2

4.1.1.1.2. Transitive sentences

Table 4.2 specified the range of intonation patterns used for Urdu transitive declarative sentences. It showed that L H L- L% contour was the most frequently used pattern as it covered 52% of the data. The remaining contours might be divided into those ending with

low phrase accent and boundary tones (41% of the data) and those ending with either high phrase accent or boundary pitch (L H H- L%, L H H- H%). These contours comprised only 3.5% of the data each.

Table 4.2. Summary of Intonation Patterns Used for Producing Urdu Transitive Declarative Sentences with First Word Stress

Intonation Patterns	Frequency
L H H- L%	1
L H L- L%	14
L L- L%	3
L L L- L%	1
H L- L%	2
L H H- H%	1
H L L- L%	4
L H L H L- L%	1

4.1.1.1.3. Ditransitive sentences

The results of the analysis of Urdu ditransitive declarative sentences were quite similar to the results mentioned in the previous section. The most prominent pattern was L H L- L% which consisted of 67% of the data. The other minor contours were diverse but the shared pattern among them was the use of low boundary tone. Table 4.3 summarises all the contours used by the participant.

Table 4.3. Summary of Intonation Patterns Used for Producing Urdu Ditransitive Declarative Sentences with First Word Stress

Intonation Patterns	Frequency
H L H- L%	1
L H L L- L%	2
L H L- L%	20
L H L H- L%	4

4.1.1.2. Yes/no questions

4.1.1.2.1. Intransitive sentences

The results of the data analysis of the speech patterns used for producing Urdu intransitive yes/no questions showed the use of multiple contours by the participants. The contour L H H- H% was most frequently used as it comprised 41% of the data. The other 26% was covered by the L H L- L% contour. The remaining contours may be divided into those ending with low boundary tones (H L H- L%, L H- L%, L H H- L%) which comprised 11% of the data whereas the contours ending with high boundary tone made up 22% of the data. Table 4.4 summarises these results.

Table 4.4. Summary of Intonation Patterns Used for Producing Urdu Intransitive Yes/no Questions with First Word Stress

Intonation Patterns	Frequency
L H H- H%	11
L H L H- H%	1
L H L- L%	7
H L H- L%	1
L H- L%	1
L H L- H%	3
L H H- L%	1
H L H- H%	1
L H H L- H%	1

4.1.1.2.2. Transitive sentences

Table 4.5 indicated that the intonation patterns used for producing Urdu transitive yes/no question were similar to the results mentioned in the previous section. L H H- H% was the most prominent pattern as it comprised 37% of the data. 31% data was covered by the L H L- L% contour. All the remaining contours carried low boundary tones except L H L- H% which consisted of 15% of the data.

Table 4.5. Summary of Intonation Patterns Used for Producing Urdu Transitive Yes/no Questions with First Word Stress

Intonation patterns	Frequency
L H H- H%	10
L H L- L%	9
L H H- L%	1
L H- L%	1
L H L- H%	4
L L- L%	1
L H H L- L%	1

4.1.1.2.3. Ditransitive sentences

Table 4.6 summarised the frequency of intonation patterns used for Urdu ditransitive yes/no questions with stress on the first word. It indicated that the most prominently used pattern was L H H- H% which covered 48% of the data. Furthermore, L H H- H% contour was also significant as it covered 33% of the data. All of the remaining contours carried high boundary tones except L H L H L H- L% which consisted of 7% of the data.

Table 4.6. Summary of Intonation Patterns Used for Producing Urdu Ditransitive Yes/no Questions with First Word Stress

Intonation Patterns	Frequency
L H H- H%	9
L H L- L%	13
L H L H L H- L%	2
L H L- H%	1
L H L H L H- H%	1
L H L H- H%	1

4.1.1.3. Wh-questions

4.1.1.3.1. Intransitive sentences

The analysis of the data showed that the prominent pattern for Urdu intransitive wh-questions was H L- L% which comprised 55% of the data. The L H L- L% contour

comprised 22% of the data. All the remaining contours ended with a high boundary tone except L H L- L% which covered 22% of the data.

Table 4.7. Summary of Intonation Patterns Used for Producing Urdu Intransitive Wh-Questions with First Word Stress

Intonation Patterns	Frequency
H L- L%	15
H H L- L%	3
L H L- L%	6
L H- H%	1
L H L- H%	1
H H L- H%	1

4.1.1.3.2. Transitive sentences

The analysis showed the participants' preference for both the H L- L% and L H L- L% contour to produce Urdu transitive wh- questions. These contours made up 41% of the data each. Among the remaining contours, those ending with a high boundary tone (H L- H%, L H L- H%) covered 11% of the data and those ending with low boundary tones (H L L- L%, L H L H- L%) made up 7% of the data.

Table 4.8. Summary of Intonation Patterns Used for Producing Urdu Transitive Wh-Questions with First Word Stress

Intonation Patterns	Frequency
L H L- L%	11
H L- L%	11
H L L- L%	1
L H L H- L%	1
H L- H%	2
L H L- H%	1

4.1.1.3.3. Ditransitive sentences

The most frequently used contour for Urdu ditransitive wh-questions was L H L- L%. This contour contained 29% of the data. However, the H L- L% contour is also significant as it covered 22% of the data. Among the remaining contours, two might be categorised as those containing high boundary tones (H L- H%, H H L H- H%) which made up 4% of the data each. The rest of the contours carried low boundary tones and comprised 55% of the data.

Table 4.9. Summary of Intonation Patterns Used for Producing Urdu Ditransitive Wh-Questions with First Word Stress

Intonation Patterns	Frequency
H L- L%	6
H L L- L%	3
H L- H%	1
L H L- L%	8
L H L L- L%	1
H L H- L%	2
H L H L H- L%	1
L H L H- L%	1
H H L H- H%	1
L H L H L- L%	1
H L H L- L%	1
H H L- L%	1

4.1.2. Last Word Stress

4.1.2.1. Declaratives

4.1.2.1.1. Intransitive sentences

Table 4.10 specified the frequency of the usage of different intonation patterns for producing Urdu intransitive declarative sentences when the stress fell on the last word of the sentence. The analysis indicated that 60% of the data was covered by the L H L- L% contour whereas

11% of the data comprised of the L H L- H% pattern. All the remaining contours covered 4% of the data each.

Table 4.10. Summary of Intonation Patterns Used for Producing Urdu Intransitive Declarative Sentences with Last Word Stress

Intonation Patterns				Frequency
L	H	L-	L%	16
H	L	H	H- L%	1
L	H	L-	H%	3
L		L-	H%	1
L	H-		L%	1
H	L-		L%	1
H	L	H	L- L%	1
L	H	H-	L%	1
L		L-	L%	1
H	L	L-	L%	1

4.1.2.1.2. Transitive sentences

The analysis of the data demonstrated that the most frequently used contour for producing Urdu transitive declarative sentences with stress on the last word was L H L- L%. This contour made up 44% of the data whereas L L- L% covered 15%. Here the use of low boundary tone in all the intonation patterns is significant.

Table 4.11. Summary of Intonation Patterns Used for Producing Urdu Transitive Declarative Sentences with Last Word Stress

Intonation Patterns				Frequency
L	H	L-	L%	12
L	H	L	H- L%	2
L	H	L	L- L%	3
L		L-	L%	4
H		L-	L%	3
H	L	H	L- L%	1
L		H-	L%	2

4.1.2.1.3. Ditransitive sentences

The analysis of the data indicated the prominent use of L H L- L% contour which covered 48% of the data. The H L- L% and L L- L% contours comprised 11% of the data each. Whereas the L H L L- L% and H L H- L% contours made up 7% of the data each.

Table 4.12. Summary of Intonation Patterns Used for Producing Urdu Ditransitive Declarative Sentences with Last Word Stress

Intonation Patterns	Frequency
L H L L- L%	2
L H L- L%	13
H L- L%	3
L L- L%	3
H L H- H%	1
H L L- H%	1
H L H L- L%	1
H L H- L%	2
L L- H- L%	1

4.1.2.2. Yes/no questions

4.1.2.2.1. Intransitive sentences

The summary of the production of Urdu intransitive yes/no questions with stress falling on the last word showed that the most prominent contour was L H L- H% (63%). However, the L L- H% (30%) contour also occupied a significant position in the range of contours as depicted in table 4.13.

Table 4.13. Summary of Intonation Patterns Used for Producing Urdu Intransitive Yes/No Questions with Last Word Stress

Intonation Patterns	Frequency
L H L- H%	17
L H L H- H%	1
L H H L- H%	1
L L- H%	7
L H H- H%	1

4.1.2.2.2. Transitive sentences

Table 4.14 summed up the overall results of the generation of Urdu transitive yes/no questions with stress falling on the last word. The chart indicated that the most prominent pattern was L H L- H% (70%). And the L L- H% (22%) contour was also significantly used by the participants.

Table 4.14. Summary of Intonation Patterns Used for Producing Urdu Transitive Yes/No Questions with Last Word Stress

Intonation Patterns	Frequency
L H L- H%	19
L L- H%	6
L H- H%	1
L H L H L- H%	1

4.1.2.2.3. Ditransitive sentences

The summary of the three participants' generation of Urdu ditransitive yes/no questions indicated their preference for the L H L- H% contour (63%). The L L- H% contour was also important (19%). The L H L H L- H% contour was used significantly (15%).

Table 4.15. Summary of Intonation Patterns Used for Producing Urdu Ditransitive Yes/No Questions with Last Word Stress

Intonation Patterns	Frequency
L H L- H%	17
L L- H%	5
L H L H L- L%	1
L H L H L- H%	4

4.1.2.3. Wh-questions

4.1.2.3.1. Intransitive sentences

The summary of the overall usage of intonation pattern to produce Urdu intransitive wh-questions showed the participants' preference for L H L- L% (44%) contour. The second prominent contour was H L- L% (22%).

Table 4.16. Summary of Intonation Patterns Used for Producing Urdu Intransitive Wh-Questions with Last Word Stress

Intonation Patterns	Frequency
H L- L%	6
H L H- L%	2
L H L- H%	1
H L L- L%	1
H L L- H%	2
L H L- L%	12
L H H- H%	2
H L- H%	1

4.1.2.3.2. Transitive sentences

The summary showed that many different contours were used by the three participants for generating Urdu transitive wh-questions when the stress aligned with the last word of the sentence. The most frequently used contour here was L H L- L% (33%) but H L-L% (26%)

was slightly behind in terms of frequency. While the H L L- L% (15%) contour was also noticeably used by the three participants.

Table 4.17. Summary of Intonation Patterns Used for Producing Urdu Transitive Wh-Questions with Last Word Stress

Intonation Patterns	Frequency
H L- L%	7
L H L- L%	9
H L L- L%	4
L H L L- L%	3
H L H- L%	3
L H L- H%	1

4.1.2.3.3. Ditransitive sentences

Table 4.18 indicated the lack of any predominant contour for producing Urdu ditransitive wh-questions when stress aligned with the last word. The H L- L% contour had the highest frequency of occurrence (22%) yet the H L- H% contour was close behind in terms of frequency (19%). Furthermore, the L H L- L% was also prominent (15%).

Table 4.18. Summary of Intonation Patterns Used for Producing Urdu Ditransitive Wh-Questions with Last Word Stress

Intonation Patterns	Frequency
H L- L%	6
H L L- L%	3
H L H L- L%	2
H L L- H%	2
L H L- L%	4
L H L L- H%	1
L L- L%	1
L H L L- L%	1
H L- H%	5
L H L- H%	2

4.2. Individual Differences in the Use of Intonation Patterns in Urdu Language

4.2.1. Declaratives

Table 4.19 summarises the use of intonation patterns by individual speakers. The L H L- L% contour is the most frequently used contour in this context. The second speaker has also used L L- L% contour frequently but this contour is absent in the first speaker's data and the third speaker uses it very infrequently.

Table 4.19. Individual Use of Intonation Patterns for Producing Urdu Declarative Sentences

Intonation Pattern	Speaker 1	Speaker 2	Speaker 3
L H L- L%	74%	50%	48.1%
L H H- L%	1.8%		5.5%
L H H- H%	1.8%		
H L H- L%	1.8%		3.7%
L H L L- L%	9.2%	3.7%	
L H L H- L%	3.7%		7.4%
H L H H- L%	1.8%		
H L- L%	5.5%	9.2%	11.1%
L L L%		25.9%	7.4%
L L L- L%		1.8%	
L H L- H%		5.5%	
L L- H%		1.8%	
H L H- H%		1.8%	
L H L H L- L%			1.8%
L H- L%			7.4%
H L H L- L%			3.7%
H L L- H%			1.8%

4.2.2. Yes/no questions

There is a lot of variety in the three speakers' use of intonation patterns for Urdu yes/no questions. The first two speakers prefer the L H L- L% contour in this context whereas the third speaker has used L H L- H% contour for this category. Moreover, the third speaker has

used the widest range of contours as compared to the other two speakers. Table 4.20 shows this clearly.

Table 4.20. Individual Use of Intonation Patterns for Producing Urdu Yes/no Questions

Intonation Pattern	Speaker 1	Speaker 2	Speaker 3
L H H- H%	46.2%	5.5%	5.5%
L H L H- H%	3.7%		1.8%
L H L- L%	48.1%	40.7	11.1%
L H H L- H%	1.8%		1.8%
H L H- L%		1.8%	
L H H- L%		1.8%	1.8%
L H L- H%		14.8%	51.8%
L L- H%		33.3%	
L H- H%		1.8%	
L H- L%			3.7%
H L H- H%			1.8%
L L- L%			1.8%
L H H L- L%			1.8%
L H L H L H- L%			1.8%
L H L H L H- H%			1.8%
L H L H L- H%			9.2%
L H L H L- L%			1.8%

4.2.3. Wh-questions

Table 4.21 demonstrates the use of intonation patterns for Urdu wh-questions. It is evident that the first and the third speakers prefer the use of H L- L% contour. But the second speaker has used the L H L- L% contour most frequently. The degree of inter-speaker variation is very high in this context. We observe that all the three speakers have used a wide variety of intonation patterns. But the frequency of the occurrence of those contours is too low to be significant.

Table 4.21. Individual Use of Intonation Patterns for Producing Urdu Wh-Questions

Intonation Pattern	Speaker 1	Speaker 2	Speaker 3
H L- L%	53.7%	16.6%	24.0%
H H L- L%	1.8%		5.5%
L H L- L%	9.2%	64.8	18.1%
H L L- L%	16.6%	3.7%	1.8%
H L- H%	1.8%		14.8%
H L H- L%	5.5%		7.4%
L H L- H%	1.8%		9.2%
H L L- H%	5.5%	1.8%	
L H L L- L%	1.8%	9.2%	
H L H L- L%	1.8%		3.7%
L H- H%		1.8%	
L L- L%		1.8%	
H H L- H%			1.8%
L H L H- L%			3.7%
H L H L H- L%			1.8%
H H L H- H%			1.8%
L H L H L- L%			1.8%
L H H- H%			3.7%

4.3. Alternative Word Order

4.3.1. 1st word stress

In this category, the word order of Urdu sentences was alternated from SOV to SVO to determine if change in word order affects the intonation patterns of those sentences. The results of the analysis of intonation patterns used for producing Urdu transitive sentences with SVO word order indicated the participants' preference for L H L- L% contour (67%).

Table 4.22. Summary of Intonation Patterns Used for Producing Urdu Transitive Sentences with SVO Word Order and First Word Stress

Intonation Patterns	Frequency
L H L- L%	18
L H L H- H%	1
L H L L- L%	2
L H L L- H%	1
H L- L%	3
L L- L%	1
L H H- L%	1

4.3.2. Last word stress

The summary of the overall usage of intonation patterns for producing Urdu transitive declarative sentence with SVO word order demonstrated participants' preference for the L H L- L% contour (41%). The L H L H- H%, L H- L% and the H L H- L% contours were also significant as they occupied 11% of the data each.

Table 4.23. Summary of Intonation Patterns Used for Producing Urdu Transitive Sentences with SVO Word Order and Last Word Stress

Intonation Patterns	Frequency
L H L- L%	11
H L H- L%	3
L H L H- L%	1
L H- L%	3
L H- H%	1
L H L H- H%	3
L H L- H%	1
H L L- L%	1
H L- L%	1
L L- L%	1
H L H- H%	1

4.4. Summary of Intonation Patterns of Urdu Declarative Sentences

4.4.1. 1st word stress

The summary of the overall usage of Urdu declarative transitive, intransitive and ditransitive sentences when stress aligned with the first word of the sentence indicated that the most frequently used contour was L H L-L%. Thus we could claim that it was the standard contour for producing Urdu declarative sentences.

Table 4.24. Summary of Overall Intonation Patterns Used for Producing Urdu Declarative Sentences with First Word Stress

Intonation Patterns				Percentage		
L	H	L-	L%	65		
L	H	H-	L%	6		
L	H	H-	H%	1		
L	H	L	L-	L%	3	
L	H	L	H-	L%	3	
L	L-	L%		2		
H	L	L-	L%	1		
L	L	L-	L%	1		
H	L-	L%		3		
L	H	L	H	L-	L%	2

4.4.2. Last word stress

The summary of the intonation patterns for generating Urdu declarative sentences when stress fell on the last word of the sentence showed the participants' preference for L H L- L% contour.

Table 4.25. Summary of Overall Intonation Patterns Used for Producing Urdu Declarative Sentences with Last Word Stress

Intonation Patterns	Percentage
L H L- L%	49
H L H H- L%	5
L H L H- L%	5
L H L L- L%	5
H L- L%	5
L H L- H%	5
L L- H%	1
L L- L%	12
L H L L- L%	1
H L H- H%	1
L H- L%	2
H L L- L%	2
L H H- L%	1
H L H L- L%	4

4.5. Summary of Intonation Patterns of Urdu Yes/No Questions

4.5.1. 1st word stress

The summary of the intonation patterns for producing Urdu yes/no questions when stress aligned with the first word of the sentence demonstrated the lack of any definite contour which might be attributed to these sentences. As we can see in table 4.26, the L H H- H% contour was dominant (30/81) but the L H L- L% (25/81) also followed closely.

Table 4.26. Summary of Intonation Patterns Used for Producing Urdu Yes/no Questions with First Word Stress

Intonation Patterns	Percentage
L H H- H%	37
L H L H- H%	2
L H L- L%	31
H L H- L%	1
L H H- L%	6
L H- L%	2
H L H- H%	1
L H L- H%	11
L H H L- H%	1
L L- L%	1
L H H L- L%	1
L H L H L H- L%	2
L H L H L H- H%	1

4.5.2. Last word stress

Nevertheless, the results of the analysis of Urdu yes/no questions with stress falling on the last word of the sentence indicated a clearly marked preference for the L H L- H% contour (53/81). The other prominent contour was L L- H% (18/81). The remaining contours occurred too infrequently to be significant.

Table 4.27. Summary of Intonation Patterns Used for Producing Urdu Yes/no Questions with Last Word Stress

Intonation Patterns	Percentage
L H L- H%	65
L H L H- H%	1
L H H L- H%	1
L L- H%	22
L H- H%	1
L H H- H%	1
L H L H L- H%	6
L H L H L- L%	1

4.6. Summary of Intonation Patterns for Urdu Wh-Questions

4.6.1. 1st word stress

The analysis of the intonation patterns used for generating wh- intransitive, intransitive and ditransitive questions when stress aligned with the first word of the sentence marked participants' preference for the H L- L% contour (32/81). But the L H L- L% contour was also significant (25/81).

Table 4.28. Summary of Intonation Patterns Used for Producing Urdu Wh-Questions with First Word Stress

Intonation Patterns	Percentage
H L- L%	40
H H L- L%	5
L H L- L%	31
H L L- L%	5
H L- H%	4
L H- H%	1
L H L L- L%	1
L H L- H%	2
H H L- H%	1
L H L H- L%	2
H L H L H- L%	1
H H L H- H%	1
L H L H L- L%	1
H L H L- L%	1
H L H- L%	2

4.6.2. Last word stress

The analysis of Urdu wh-questions with stress falling on the last word showed that the most frequently used contour was L H L- L% (25/81). But the H L- L% contour was also used too frequently to be ignored (19/27). The remaining contours, although numerous and varied, were used very infrequently.

Table 4.29. Summary of Intonation Patterns Used for Producing Urdu Wh-Questions with Last Word Stress

Intonation Patterns	Percentage
H L- L%	23
H L H- L%	6
L H L- H%	5
H L L- L%	10
H L L- H%	5
L H L- L%	31
L H L L- L%	5
H L H L- L%	2
L H L L- H%	1
L L- L%	1
L H H- H%	2
H L- H%	7

4.7. Intonation Patterns of English Language Spoken by Urdu Participants in Pakistan

4.7.1. 1st Word Stress

4.7.1.1. Declaratives

4.7.1.1.1. Intransitive sentences

The summary in table 4.30 showed all the three participants' preference for L H L- L% contour (92%) for generating English transitive declarative sentences when the stress fell on the first word of the sentence.

Table 4.30. Summary of Intonation Patterns Used for Producing English Intransitive Declarative Sentences with First Word Stress

Intonation Patterns	Frequency
L H L- L%	25
L L- L%	1
H L L- H%	1

4.7.1.1.2. Transitive sentences

The summary of the usage of English transitive declarative sentences indicated the participants' preference for L H L- L% contour (81%).

Table 4.31. Summary of Intonation Patterns Used for Producing English Transitive Declarative Sentences with First Word Stress

Intonation Patterns	Frequency
L H L- L%	22
L H L L- L%	1
L H L- H%	1
H L L- L%	2
L L- H%	1

4.7.1.1.3. Ditransitive sentences

The summary of the analysis of English ditransitive declarative sentences affirmed that the most frequently used contour in this context was L H L- L% (81%).

Table 4.32. Summary of Intonation Patterns Used for Producing English Ditransitive Declarative Sentences with First Word Stress

Intonation Patterns	Frequency
L H L- L%	22
L H L L- L%	2
L H L H- L%	1
H L H- L%	2

4.7.1.2. Yes/no questions

4.7.1.2.1. Intransitive sentences

Table 4.33 summed up the use of intonation patterns for generating English intransitive yes/no questions. The most frequently used contour here was L H L- L% (59%). The second prominent contour was L H H- H% (33%).

Table 4.33. Summary of Intonation Patterns Used for Producing English Intransitive Yes/no Questions with First Word Stress

Intonation Patterns	Frequency
L H L- L%	16
H L H- H%	1
L H L H- H%	1
L H H- H%	9

4.7.1.2.2. Transitive sentences

The summary in table 4.34 also established the predominance of L H L- L% contour in terms of frequency (81%) for producing English transitive yes/no questions when stress aligned with the first word of the sentence.

Table 4.34. Summary of Intonation Patterns Used for Producing English Transitive Yes/no Questions with First Word Stress

Intonation Patterns	Frequency
L H L- L%	22
L H H- H%	5

4.7.1.2.3. Ditransitive sentences

The summary of the analysis of English ditransitive yes/no questions with stress falling on the first word of the sentence verified that the most frequently used intonation pattern was L

H L- L% (59%). Nevertheless, the frequency of L H L L- L% contour (26%) was also significant.

Table 4.35. Summary of Intonation Patterns Used for Producing English Ditransitive Yes/no Questions with First Word Stress

Intonation Patterns	Frequency
L H L- L%	16
L H L L- L%	7
L L- L%	1
L H H- H%	3

4.7.1.3. Wh- questions

4.7.1.3.1. Intransitive sentences

The summary of the usage of intonation patterns for generating English intransitive wh-questions established that the most prominently used contour by all the three participants was L H L- L% (89%).

Table 4.36. Summary of Intonation Patterns Used for Producing English Intransitive Wh-Questions with First Word Stress

Intonation Patterns	Frequency
L H L- L%	24
H L- L%	3

4.7.1.3.2. Transitive sentences

Table 4.37 summarised the use of intonation patterns for producing English transitive wh-questions. It showed that the most frequently used intonation pattern in this context was L H L- L% (85%).

Table 4.37. Summary of Intonation Patterns Used for Producing English Transitive Wh-Questions with First Word Stress

Intonation Patterns	Frequency
L H L- L%	23
H L H L- L%	3
H L L- L%	1

4.7.1.3.3. Ditransitive sentences

The summary of English ditransitive wh-questions demonstrated that the L H L- L% contour (78%) was used predominantly by all the participants. However, the H L H L- L% (18%) also received significant data coverage.

Table 4.38. Summary of Intonation Patterns Used for Producing English Ditransitive Wh-Questions with First Word Stress

Intonation Patterns	Frequency
L H L- L%	21
H L H L- L%	5
H L- L%	1

4.7.2. Last Word Stress

4.7.2.1. Declaratives

4.7.2.1.1. Intransitive sentences

The summary of the use of intonation patterns to produce English intransitive declarative sentences with stress falling on the last word of the sentence failed to yield any definite results. The most frequent contour was L H L- L% (26%) but H L- L% contour was close behind (22%) followed by L H H- L% (19%).

Table 4.39. Summary of Intonation Patterns Used for Producing English Intransitive Declarative statements with Last Word Stress

Intonation Patterns	Frequency
L H H- L%	5
L H L- L%	7
L H- L%	1
L L- H%	2
L L- L%	2
L H- H%	3
H L H- H%	1
H L- L%	6

4.7.2.1.2. Transitive sentences

Table 4.40 summarised the results of the analysis of intonation patterns used for generating English transitive declarative sentences. But the results were far from definite as a variety of contours were used by the participants in this context. The most frequently used contour was L H L- L% (30%) followed by L H H- L% (22%). All the remaining contours were used too infrequently to be significant.

Table 4.40. Summary of Intonation Patterns Used for Producing English Transitive Declarative statements with Last Word Stress

Intonation Patterns	Frequency
L H L- L%	8
L H H- L%	6
L H L H- L%	2
L L- H%	1
L H- L%	1
L H L- H%	1
H L H- H%	1
H L H- L%	1
L L- L%	2
H L- L%	1
L H H L- L%	2
H L H L- L%	1

4.7.2.1.3. Ditransitive sentences

The summary in table 4.41 indicated the lack of evidence to determine any definite contour used for producing English ditransitive declarative sentences when stress aligned with the last word of the sentence. Although the H L- L% contour was used most frequently (33%), it was closely followed by H H- L% (19%). The L H L- L% was close by (15%) while L L- L% contour (11%) was also significant.

Table 4.41. Summary of Intonation Patterns Used for Producing English Ditransitive Declarative statements with Last Word Stress

Intonation Patterns	Frequency
H L- L%	9
L L- L%	3
L H L- L%	4
H H- L%	5
L H L H- L%	1
L H H- L%	1
H L H- L%	1
L H H L- L%	2
H L H L- L%	1

4.7.2.2. Yes/no questions

4.7.2.2.1. Intransitive sentences

Table 4.42 summarised the results of the analysis of English intransitive yes/no questions with stress falling on the last word of the sentence. The L H H- H% contour was used most frequently (59%). Next was the L H- H% contour with 30% data coverage.

Table 4.42. Summary of Intonation Patterns Used for Producing English Intransitive Yes/no Questions with Last Word Stress

Intonation Patterns	Frequency
L H H- H%	16
L H- H%	8
L H L- L%	1
L H L H- H%	2

4.7.2.2.2. Transitive sentences

The summary of the analysis of intonation pattern for producing English transitive yes/no questions indicated that L L H- H% (33%) was used most frequently by the participants. L H H- H% contour was close (30%) followed by L H L H- H% (26%).

Table 4.43. Summary of Intonation Patterns Used for Producing English Transitive Yes/no Questions with Last Word Stress

Intonation Patterns	Frequency
L H H L- L%	1
L H H- H%	8
L L H- H%	9
L H L- L%	2
L H L H- H%	7

4.7.2.2.3. Ditransitive sentences

Table 4.44 summed up the use of intonation pattern for generating English ditransitive yes/no questions. The most prominently used contour was L H H- H% (45%). However, the frequency of L L H- H% (33%) and L H L H- H% (22%) was also significant.

Table 4.44. Summary of Intonation Patterns Used for Producing English Ditransitive Yes/no Questions with Last Word Stress

Intonation Patterns	Frequency
L H H- H%	12
L H L H- H%	6
L L H- H%	9

4.7.2.3. Wh- Questions

4.7.2.3.1. Intransitive sentences

The summary of the use of intonation patterns for producing English intransitive wh-questions failed to mark the regular use of a particular contour in this context. The L H L- L% (33%) contour was used most frequently by the participants. But the frequency of L H L H- H% (26%) was also significant. However, it was followed by the L H- H% (19%) and L L- L% (15%) contours which were also used significantly.

Table 4.45. Summary of Intonation Patterns Used for Producing English Intransitive Wh-Questions with Last Word Stress

Intonation Patterns	Frequency
L H L- L%	9
L L- L%	4
H L H L- L%	1
L H- H%	5
L H L H- H%	7
H L H- H%	1

4.7.2.3.2. Transitive sentences

The summary in table 4.46 indicated the prominent use of two contours. L H L- L% and L H- H% were used with the same frequency (30%). The L H L H- H% contour was also used quite frequently (22%).

Table 4.46. Summary of Intonation Patterns Used for Producing English Transitive Wh- Questions with Last Word Stress

Intonation Patterns	Frequency
L H- H%	8
L H L- L%	8
H L H- H%	3
L H L H- H%	6
L L H L- L%	1
H L L H- H%	1

4.7.2.3.3. Ditransitive sentences

The summary of intonation patterns used for producing English ditransitive wh-questions did not yield any specific results about participants' preference for a particular contour in this context. The L H- H% and the L H L- L% (30%) contours shared the same frequency of occurrence while the L H L H- H% (22%) contour was close behind.

Table 4.47. Summary of Intonation Patterns Used for Producing English Ditransitive Wh-Questions with Last Word Stress

Intonation Patterns	Frequency
L H- H%	8
L H L- L%	8
H L H- H%	3
L H L H- H%	6
L L H L- L%	1
H L L H- H%	1

4.8. Individual Differences in the Use of Intonation Patterns in English Language

4.8.1. Declaratives

Table 4.48 indicated that all the three speakers preferred to use the L H L- L% contour for producing English declarative sentences. The first speaker used the widest range of intonation patterns in this context.

Table 4.48. Individual Use of Intonation Patterns for Producing English Declarative Sentences

Intonation Pattern	Speaker 1	Speaker 2	Speaker 3
L H L- L%	59.2%	51.8%	51.8%
L H L L- L%	5.5%		
L H H- L%	16.6%		3.7%
L H L H- L%	3.7%	1.8%	
H L- L%	11.1%	3.7%	14.8%
L L- L%	1.8%	3.7%	9.2%
H L L- H%	1.8%		
L H L- H%	3.7%		
H L L- L%	3.7%		
L L- H%	7.4%		
L H- L%	3.7%		
L H- H%	5.5%		
H L H- H%	3.7%		
H H- L%	9.2%		
L H L H- L%			1.8%
H L H- L%			7.4%
L H H L- L%			7.4%
H L H L- L%			3.7%

4.8.2. Yes/no Questions

The analysis of the use of intonation patterns for producing yes/no questions in Pakistani English indicated that the speakers used various contours in this context. The first and the

third speakers used L H H- H% contour most frequently whereas the three speakers' use of L H L- L% contour was also significant.

Table 4.49. Individual Use of Intonation Patterns for Producing English Yes/no Questions

Intonation Pattern	Speaker 1	Speaker 2	Speaker 3
L H L- L%	38.8%	38.8%	27.7%
H L H- H%	1.8%		
L H L H- H%	5.5%		24.0%
L H L L- L%	7.4%	5.5%	
L H H- H%	44.4%	14.8%	38.8%
L H H L- L%		1.8%	
L L- L%			
L H- H%		5.5%	9.2%
L L H- H%		33.3%	

4.8.3. Wh-questions

Table 4.50 demonstrated that the first two speakers preferred L H L- L% contour while the third speaker used L H L H- H% contour most frequently. The degree of inter-speaker variation was very high in this context and the third speaker showed the most variety in the use of intonation patterns for producing English wh-questions.

Table 4.50. Individual Use of Intonation Patterns for Producing English Wh- Questions

Intonation Pattern	Speaker 1	Speaker 2	Speaker 3
L H L- L%	92.5%	51.8%	31.4%
L L- L%	1.8%	5.5%	11.1%
H L H L- L%	1.8%		
L H- H%	1.8%	31.4%	
L H- H%	1.8%		3.7%
H L H- H%		11.1%	1.8%
H L- L%			5.5%
H L L- L%			3.7%
L H L H- H%			35.1%
L L H L- L%			3.7%
H L L H- H%			3.7%

4.9. Summary of Overall Intonation Patterns Used for Producing English

Declarative Sentences

4.9.1. 1st word stress

Table 4.51 demonstrated the ratio of the overall usage of various intonation patterns for English declarative sentence when stress aligned with the first word of the sentence. As the table clearly suggested, the most frequently used intonation pattern in this context was L H L- L% (72/81). So we could confidently claim that this was the contour used for producing declarative sentences by Urdu participants of English in Pakistan.

Table 4.51. Summary of Overall Intonation Patterns Used for Producing English Declarative Sentences with First Word Stress

Intonation Patterns	Percentage
L H L- L%	89
L H L L- L%	1
L L- L%	1
H L L- H%	1
L L- H%	1
H L L- L%	2
L H L H- L%	1
H L H- L%	1
L H H- L%	1

4.9.2. Last word stress

However, the result of the analysis of overall usage of English declarative sentence, with stress falling on the last word of the sentence, was far from definite. As table 4.49 indicated, a variety of intonation patterns were used in this context and it prevented the assertion of the default contour for declarative sentences spoken by Urdu speakers of English in Pakistan.

Table 4.52. Summary of Overall Intonation Patterns Used for Producing English Declarative Sentences with Last Word Stress

Intonation Patterns	Percentage
L H H- L%	21
L H L- L%	20
L H L H- L%	9
L H- L%	2
L L- H%	4
L H- H%	9
H L H- H%	4
L H L- H%	5
L H H- H%	1
L L- L%	5
H L- L%	10
H H- L%	6
L H H L- L%	2
H L H L- L%	1
H L H- L%	1

4.10. Summary of Overall Intonation Patterns Used for Producing English

Yes/No Questions

4.10.1. 1st word stress

Table 4.53 demonstrated that the most frequently used intonation pattern for English yes/no questions produced by Urdu participants of English in Pakistan was L H L- L% (57/81).

Table 4.53. Summary of Overall Intonation Patterns Used for Producing English Yes/no Questions with First Word Stress

Intonation Patterns	Percentage
L H L- L%	70
H L H- H%	1
L H L H- H%	1
L H L L- L%	6
L H H- H%	20
L L- L%	1

4.10.2. Last word stress

However, the summary of English yes/no questions when stress aligned with the last word of the sentence did not allow us to make any straight forward claims about a preferred contour. As the chart demonstrated, a variety of contours were used by the participants in this context, the most frequent of them being L H H- H%.

Table 4.54. Summary of Overall Intonation Patterns Used for Producing English Yes/no Questions with Last Word Stress

Intonation Patterns	Percentage
L H H- H%	40
L H H L- L%	1
L H L H- H%	19
L H- H%	11
L L H- H%	26
L H L- L%	4

4.11. Summary of Overall Intonation Patterns Used for Producing English Wh-Questions

4.11.1. 1st word stress

The analysis of the use of intonation patterns for generating English wh-questions with stress falling on the first word of the sentence showed a clear dominance of the L H L- L% contour

(68/81). Thus it could be claimed as the standard contour for wh-questions used by Urdu speakers of English in Pakistan.

Table 4.55. Summary of Overall Intonation Patterns Used for Producing English Wh-Questions with First Word Stress

Intonation Patterns	Percentage
L H L- L%	84
H L- L%	5
H L H L- L%	10
H L L- L%	1

4.11.2. Last word stress

Yet again, the summary of the use of intonation patterns for English wh-questions when stress aligned with the last word of the sentence did not yield any definite results. The L H L- L%, L H- H% and L H L H- H% closely followed each other in terms of frequency of usage. And there were other contours too which were not used very frequently yet they were a part of the participants' repertoire of intonation patterns to be used in this context.

Table 4.56. Summary of Overall Intonation Patterns Used for Producing English Wh-Questions with Last Word Stress

Intonation Patterns	Percentage
L L- L%	7
L H L- L%	28
L H H- H%	1
H L H L- L%	1
L H- H%	26
H L H- H%	6
L H L H- H%	27
L L H- H%	1
H L L H- H%	1

The implication of these findings will be discussed in the next section.

Chapter Five

DISCUSSION

5.1. Intonation Patterns in Urdu Language

5.1.1. Declarative statement

The intonation patterns of declarative statements in Urdu language have been studied with two stress patterns: first word and the last word stress. The results of the data with first word stress present clear results. L H L- L% is the most prominently used intonation pattern for producing Urdu declarative statements in this context. 98% declarative statements have used L boundary tone and 81% of them have used L tone in phrase accent. Therefore, L- and L% are the frequently used boundary tones for producing Urdu declarative sentences. Furthermore, 2% utterances used only H pitch accent, 14% utterances used only L pitch accent whereas 84% utterances used both L and H pitch accents. Thus it becomes clear that (L) (H) L- L% is the most frequently used intonation pattern for Urdu declarative statements with first word stress. Here the parentheses indicate that the arrangement of L and H pitch accents may change in different sentences.

The results of the data carrying stress on the last word of the utterance are also similar to those of the first word stress. Here, it is important to point out that it is unusual to stress the last word in a sentence. Last word stress indicates surprise, disbelief or demands agreement from the hearer. However, for the sake of analysis this stress pattern has also been included in our study. The results indicate that L H L- L% is the predominantly used contour for generating Urdu declarative statements when stress aligns with the last word of an utterance. Only 8% utterances used H boundary tone and 14% utterances used H phrase accent. Thus, L is the most frequently used contour for both phrase accent and the final boundary tone. Moreover, 16% utterances used only low pitch accent while merely 5% utterances used only H pitch accent in a sentence. Therefore, it is clear that (L) (H) L- L% is the frequently used

contour for generating Urdu declarative sentences when stress falls on the last word of the utterance. These results are comparable with those of Nayyer and Madni's (2003) study which claims that 95% of the participants used L H L contour for Urdu declaratives. The L H L and L H L- L% contour are not widely different and the former may be considered a shorter realization of the latter contour.

Table 5.1 presents the most frequently used contour for Urdu declarative sentences.

Table 5.1. Intonation Pattern Used by Urdu Speakers for Producing Declarative Sentences

Category	Intonation Pattern
Urdu Declarative sentences	L H L- L%

5.1.2. Yes/no questions

The analysis indicates that the intonation pattern used for producing Urdu yes/no questions is not distinct. With stress falling on the first word of the sentence, 54% of the utterances have used H boundary tone and phrase accent. This ratio is not very strong as the remaining 46% of the utterances have used L phrase accent and boundary tones.

Yet, 4% utterances used only L pitch accent. So it shows that (L) (H) [L-] [H-] [L%] [H%] is the pattern used for generating Urdu yes/no questions. Here the brackets indicate that either H or L tone may occur as a phrase accent or boundary tone in a yes/no question whereas the parentheses depict that the arrangement of L and H intonation patterns may vary in different sentences.

The result of the analysis of the data when stress aligns with the last word of the utterance is very lucid. Only 1% utterances used L boundary tone whereas only 4% utterances used H phrase accent. Hence the dominantly used boundary tones in this context are L- H%. As for the pitch accent, 23% utterances used only L pitch accent. Thus the intonation pattern for Urdu yes/no questions with last word stress is (L) (H) L- H%.

All the same, the summary of the overall usage of intonation patterns for yes/no questions in Urdu spoken around Bahawalnagar indicates that L H L- H% is the most dominantly used contour. This finding is also echoed in the results of Nayyer and Madni's (2003) study of intonation patterns of Urdu yes/no interrogatives. Their study shows that L H L- H% contour comprises 71% of their data. So the standard contour for Urdu yes/no questions is L H L- H%. This is shown in table 5.2.

Table 5.2. Intonation Patterns Used by Urdu Speakers for Producing Yes/no Questions

Category	Intonation Pattern	Percentage
Urdu Yes/no Questions	L H L- H%	38.2%
	L H L- L%	15.4

5.1.3. Wh-questions

The results of the analysis of Urdu wh-questions with stress falling on the first word of the sentences indicate that only 10% utterances used H boundary tone and 9% utterances used H phrase accent. As a result, we can claim that L- and L% are the most frequently used boundary tones for Urdu wh-questions. Furthermore, 41% utterances used only H pitch accent and the remaining utterances used both L and H pitch accents. So, the dominantly used intonation pattern in this context is (L) (H) L- L%.

The analysis of intonation patterns used for Urdu wh-questions when stress aligns with the last word of the utterance shows that 21% utterances used H boundary tone and only 9% utterances used H phrase accent. Whereas 31% utterances used only H pitch accent and 1% used only L pitch accent. Thus, the intonation pattern for Urdu wh-questions with last word stress is (L) (H) L- L%.

Table 5.3. Intonation Patterns Used by Urdu Speakers for Producing Wh-Questions

Category	Intonation Pattern
Urdu Wh-Questions	(L) H L- L%

5.2. Alternate Word Order

The results of alternate SVO word order with stress falling on the first word of the sentence indicate that boundary tone and phrase accent each used H tone to cover 7% of the data. And 11% utterances used only H pitch accent and 4% utterances used only L pitch accent. Thus the prominent pattern used in this context is (L) (H) L- L%.

Similarly the analysis of this marked word order in Urdu when stress aligns with the last word of the sentence shows that 22% utterances used H boundary tone and 44% utterances used H phrase accent. Moreover, 19% utterances used only L pitch accent whereas 4% utterances used only H pitch accent. Hence, the most frequently used intonation pattern in this context is (L) (H) L- L%.

Patil, et al.'s (2008) analysis of Hindi language indicates that difference in word order affects the prosodic phrasing of the utterances. As Patil et al. claim that there are syntactical similarities between Urdu and Hindi language we may assume that the results of their study could have been applicable to Urdu as well. The results of their study, however, clash with those of our research which prove that sentence order does not affect the use of intonation pattern in Urdu language. The intonation pattern for both SVO and SOV declarative sentences in Urdu remains the same i.e. L H L- L%.

The above mentioned result is important as it also establishes the strong probability of Urdu intonation patterns affecting those of English. As the word order of Urdu (SOV) is different from that of English (SVO), it could have been claimed that the difference in word order of both the languages will affect the validity of our analysis. In order to eliminate that possibility, we analysed the intonation patterns of the alternative word order and the results of the analysis prove that the word order does not affect the intonation patterns used in Urdu language.

Table 5.4 states the dominant intonation pattern used for Urdu SVO sentences.

Table 5.4. Intonation Pattern Used by Urdu Speakers for Producing SVO Sentences

Category	Intonation Pattern
Urdu SVO Sentences	L H L- L%

5.3. Individual Differences in the Use of Intonation Patterns in Urdu Language

5.3.1. Declaratives

The analysis of the data used for producing Urdu declarative sentences indicates the participants' preference for the L H L- L% contour. We find that the second and the third speakers offer more variety in the use of intonation patterns as compared to the first speaker. So here we find a high degree of inter-speaker variation. The third speaker offers the widest range of patterns used for Urdu declarative sentences. Nonetheless, all the three speakers' preference for the L H L- L% contour is evident.

5.3.2. Yes/no Questions

The analysis of the use of intonation patterns for generating Urdu yes/no questions offers a variety of contours. As observed in the previous section, the first speaker offers lesser variety of intonation patterns as compared to the second speaker. Both of them have been surpassed by the third speaker who has used a total of 14 different intonation patterns in this context. Moreover, there is a degree of similarity in the first two speakers' use of contours as both have preferred the L H L- L% contour whereas the third speaker's preferred contour differs in the use of boundary tone.

5.3.3. Wh-Questions

The analysis of wh-questions indicates clear difference in all the three speakers' use of intonation patterns in this context. However, the first two speakers' choice of intonation

patterns is very clear whereas the third speakers' analysis yields vague results. Here no single contour has been used significantly enough to mark the speaker's preference for an intonation pattern for producing Urdu wh-questions. As noted in the previous section, the third speaker offers most variety in the use of intonation patterns. Overall, we find more consistency in the first two speakers' use of intonation patterns as compared to the third speaker. The degree of inter-speaker variation is very high in this context.

5.4. Intonation Patterns in Pakistani English

5.4.1. Declarative statements

The analysis of the intonation patterns used for Pakistani English demonstrates that only 2% utterances have used H boundary tone and 4% utterances have used H phrase accent. Moreover, only 2% utterances have used L pitch accent alone. Hence the intonation pattern for declaratives in Pakistani English when stress aligns with the first word of the sentence is (L) (H) L- L%.

The analysis of the data when stress falls on the last word of the utterance indicates that 22% utterances have used H boundary tone and 47% utterances have used L phrase accent. Furthermore, 21% utterances have used only L pitch accent and 16% utterances have used only H contour. Thus the intonation pattern used for Pakistani English declarative sentences with last word stress is (L) (H) [L-] [H-] [L%] [H%].

Nevertheless, when we summarise the overall usage of intonation patterns for declarative sentences in Pakistani English spoken around Bahawalnagar, L H L- L% is the most frequently used contour as depicted in table 5.5.

Table 5.5. Intonation Pattern Used by Urdu Speakers of Pakistani English for Producing Declarative sentences

Category	Intonation Pattern
English Declarative Sentences	L H L- L%

5.4.2. Yes/no questions

The analysis of yes/no questions demonstrates that H boundary tone and phrase accent each have appeared in 22% of the data. Whereas only 1% utterances used L pitch accent alone. Thus the intonation pattern for yes/no questions with stress falling on the first word is (L) (H) L- L%.

The analysis of data with last word stress indicates that 21% utterances have been produced with H boundary tone and 9% utterances have been produced with H phrase accent. Moreover, 31% utterances have used H pitch accent alone and only 1% of them have used L pitch accent. Hence, the intonation patterns for yes/no questions in Pakistani English spoken around Bahawalnagar are L H L- L% and L H H- H%.

Table 5.6. Intonation Patterns Used by Urdu Speakers of Pakistani English for Producing Yes/no Questions

Category	Intonation Pattern	Percentage
English Yes/no Questions	L H L- L%	37%
	L H H- H%	29.6%

5.4.3. Wh-questions

The analysis of the data for wh-questions demonstrates that all the utterances have used L boundary tone and phrase accent. And only 5% utterances have used a single H pitch accent. So the standard contour for wh-questions when stress aligns with the first word of the sentence is (L) (H) L- L%.

However, the analysis of wh-questions with the last word stress indicates that boundary tone and phrase accent each used L contour in 37% of the data. And 33% utterances used a single L pitch accent. Consequently, the intonation pattern for wh-questions in Pakistani English spoken around Bahawalnagar is (L) (H) [H-] [L-] [H%] [L%].

Nevertheless, the summary of the overall usage of intonation patterns for wh-questions indicates that L H L- L% is the most dominantly used contour as table 5.10 illustrates.

Table 5.7. Intonation Pattern Used by Urdu Speakers of Pakistani English for Producing Wh-Questions

Category	Intonation Pattern
English Wh-Questions	L H L- L%

5.5. Individual Differences in the Use of Intonation Patterns in English Language

5.5.1. Declaratives

There is a high degree of similarity in all the three speakers' use of intonation patterns for generating English declarative sentences. All of them have used the L H L- L% contour most frequently in this context. This denotes a high degree of similarity between speakers. Although we find that the first speaker demonstrates more variation in the use of intonation patterns than the other two speakers.

5.5.2. Yes/no questions

The analysis of the individual use of intonation patterns used for producing English yes/no questions depicts across speaker consistency in the use of intonation patterns. Two contours i.e. L H L- L% and L H H- H% have been used significantly by the speakers. So the degree of individual differences is quite low in this context.

5.5.3. Wh-questions

The analysis of the use of intonation patterns here shows that L H L- L% contour is preferred by all the three speakers. Although, the third speaker has used L H L H- H% more frequently

than the previously mentioned intonation pattern, the difference of frequency is not very high and L H L- L% contour still occupies a significant ratio of occurrences. The degree of across speaker difference is not very high and only the third speaker has used a wide range of contours in this context.

5.4. Comparison

In order to find out if the intonation patterns of Urdu language affect the use of intonation patterns in Pakistani English, we need to compare the intonation patterns of both these languages and compare the contours used in Pakistani English with those of American and British English in order to determine the difference or similarity between the native and non native contours. Table 5.8 summarises the intonation patterns used in Urdu, American, British and Pakistani English in different grammatical contexts.

Table 5.8. Comparison of Intonation Patterns Used in Urdu, American, British and Pakistani English

Structures	Urdu Language	American English	British English	Pakistani English
Declarative	L H L- L%	H* L- L%	H* L %	L H L- L%
Yes/no Questions	L H L- H% (38.2%)	L* H- H%	L* H % (38.9%)	L H L- L% (37%)
	L H H- H% (19.1%)		H* L % (27.8%)	L H H- H% (29.6%)
	L H L- L%			

	(15.4%)			
Wh- questions	(L) H L- L%	L* L- L% (27%)	H* L %	L H L- L%
		H* L- H% (23%)		
		!H* L- L% (23%)		

The table indicates that the same intonation pattern has been used for declarative sentences in Urdu and Pakistani English. The difference between the native and non native speakers' use of intonation patterns is very clear. Hence the influence of Urdu intonation patterns on those of English is manifest in table 5.8. Here it is important to mention that the contours used in British and American English have been used by the Pakistani English speakers, though their frequency is not very high. Nonetheless, they are a part of Pakistani English speakers' repertoire of intonation patterns. Yet it is interesting to note that instead of following the intonation patterns used by the British or the American speakers, Pakistani English speakers use the contours frequent in Urdu speakers.

As far as the contour used for the generation of yes/no questions is concerned, the influence of Urdu language is very clear. The L H L- L% contour has been used in both Urdu and Pakistani English with significant frequency. There is no similarity between intonation patterns used in British and Pakistani English. The two contours used in British English have no boundary tones whereas in Pakistani English both low and high boundary tones have been used. Moreover, the contour used in American English is also a part of the Pakistani English

speakers' inventory of contours, yet the Pakistani English speakers have preferred the contour used in Urdu language for producing yes/no questions. Thus the influence of Urdu on the intonation patterns of Pakistani English becomes evident.

The results of comparison between the use of intonation pattern in Urdu language and American, British and Pakistani English used for producing wh-questions offers very interesting insight. The influence of Urdu language on the intonation patterns used in Pakistani English is apparent. The L H L- L% contour is used most frequently in both the languages. The difference between the native and non native speakers' use of intonation patterns is also evident. What is remarkable here is that Urdu language also uses H L- L% contour for wh-questions. Hence this contour is a part of Pakistani English speakers' collection of intonation patterns. The similar contour is used in British English too. Yet the Pakistani English speakers select the contrasting contour for generating wh-questions. It shows that among the two available contours in Urdu, the L H L- L% contour is more primed as compared to the other contour. Although the speakers know that other intonation patterns may be used for denoting the same structure of sentences, they select the one contour that is least similar to the intonation patterns used in both American and British English.

This similarity between the prosodic patterns of Urdu and Pakistani English has also been reflected in a study by Damron (2004). She claims that Pakistani Urdu and English language speakers' use of prosodic resources is different from those of the American speakers. This difference echoes in the results of this study as well which proves that there is no similarity between the American and Pakistani English speakers' use of intonation patterns for different types of sentences. The same stands true for British English. Hence all the claims about Pakistani English following the British or American prosodic standards have been negated in this context.

An interesting factor here is the monotony of intonation patterns used for generating declaratives and interrogatives in Pakistani English. The same L H L- L% contour has been used for all declarative, yes/no and wh-questions. This phenomenon is reflected in Hewing's (1995) analysis of Indonesian speakers' use of English intonation contours. His study proves that non native speakers use more level tones than the native speakers. Moreover, they tend to use falling tones where the native speakers prefer rising ones. This explains Pakistani English speakers' use of monotonous intonation patterns and their use of falling tones in interrogatives where native speakers prefer to use rising tones. The results of Swerts and Zerbian's (2010) study of prosodic transfer in the use of English by Black South Africans corroborate that the features of mother tongue influence the use of L2 English varieties.

It is also important to highlight that the results of this study cannot be over generalized. The participants in this research belong to District Bahawalnagar, Pakistan and they have learned Urdu by their Punjabi speaking parents. So we are assuming that their use of Urdu intonation patterns has been affected by the intonation patterns of Punjabi as the Urdu language taught by their Punjabi speaking parents must have traces of Punjabi intonation patterns. Thus our participants' use of Urdu intonation patterns must be influenced by the intonation patterns of Punjabi. So we claim that this study has explored the Urdu speakers' production of intonation patterns in English language around district Bahawalnagar. However, we can also assume that these intonation patterns may have been used by those L1 speakers of Urdu language whose parents' mother tongue is Punjabi and who speak the same dialect of Urdu as our participants did.

5.5. Implications of the Research

In the present day world, English has acquired the status of lingua franca and it is important for the students of English language to be capable of facing demanding communicative situations. Stibbard (1996) argues that pronunciation teaching may help the English language

students to achieve “communicative empowerment” (p.1). He also stresses that intonation is an essential feature of pronunciation and must be an integral part of English language curriculum. Intonation has long been ignored in the English language teaching classes in second language context. According to Celik (2001) the reason for lack of attention paid to intonation in the ELT curriculum is the curriculum planners’ inability to realize the importance of intonation in communication. This research is an attempt in that direction as it will help the Pakistani English language teachers understand the intonation patterns used by the Urdu speakers of Pakistani English. Not only that, it will help them analyse the degree of the transfer of Urdu intonation patterns to the intonation patterns in English language. Demirezen (2009) proves that non native teachers’ familiarity with the intonation of the target language can decrease the possibility of errors in the language class. Thus, this research may help language teachers in Pakistan to improve their teaching skills and increase their familiarity with the non native pitch patterns and how these patterns are different from those of the native speakers.

This research is useful for speech synthesis systems as well. The results of this study may help improve the efficacy of all TTS (Text to Speech Synthesis) and ASR (Automatic Speech Recognition) systems based on Urdu as well as English language in Pakistan.

This study has implications for future researchers who want to work in the field of intonation patterns in Pakistani English. This research is limited to the study of only intonation patterns of Urdu and Pakistani English. The other features of intonation i.e. stress and duration have not been studied here. Similarly, the intonation of complex sentences, the impact of focus, the dialectical variation, differences in native and non native speakers’ pitch range, declination in Pakistani English are some of the areas that are yet to be explored.

This study may lead to many other researches. For example, it may be used as a basis for a longitudinal study of the acquisition of intonation patterns by Pakistani speakers. It may

be used to trace the process of maturity in the English language learners' acquisition of intonation patterns and to trace the difference in the use of contours among the beginners and the advanced English language learners. Moreover, it may also be helpful to lay the foundation of a research to study the individual differences in the use of intonation patterns by Pakistani, British and American native speakers of English. It may help us study the pattern of inter and intra-speaker consistency in the use of intonation patterns. Furthermore, it has been noticed that the Pakistani speakers of English use a larger number of pitch accents as compared to the British and American speakers. The exploration of the reason(s) behind this phenomenon may formulate a very interesting study. Similarly, the influence of syntactic structures and the number of arguments in a sentence on the use of intonation patterns is yet another area that can be explored. Thus, this research may be used as a preliminary research which may lead to many other interesting findings.

Summary

This research explored the use of intonation patterns by Urdu speakers of Pakistani English and how those contours were influenced by the speakers' mother tongue. It also aimed to investigate the differences/similarities between the intonation patterns used by American, British and Pakistani speakers of English.

For this purpose, two types of sentence structures i.e. declarative and interrogative (both yes/no and wh-questions) were selected. The data set comprised of three verb types: intransitive, transitive and ditransitive. The stress was controlled and it aligned alternatively with the first and the last words of the sentences included in the data set. Moreover, monosyllabic words were selected for the English data set so that stress alignment could be controlled completely. However, it was not possible to find monosyllabic verbs for Urdu data set as they turn sentences in Urdu into imperatives, e.g. (جا، کھا) go, eat, etc. Therefore, multisyllabic verbs were selected for the Urdu data set. The Urdu data set was translated into English for the analysis of intonation patterns used in English. Nevertheless, all the words in the English data set were monosyllabic with the word 'arrow' being the only exception. It might be argued that the word structure of Urdu language was different from that of English, so any comparison between the intonation patterns used for these languages must take this fact into account. In order to counter that argument, we prepared another data set for SVO word order in Urdu. This data set was limited to transitive verbs only as obviously intransitive sentences did not support this word order and it was too complex for ditransitive sentences to provide any insight into real life speech.

For data collection, two females and one male was selected from Bahawalnagar district, Pakistan. All the three participants were native speakers of Urdu and their parents' mother tongue (L1) was Punjabi. The similarity of linguistic background of all the participants was ensured in order to eliminate dialectical and L1 based differences. All of

them were graduate students and fluent speakers of Urdu in normal life. English, however, was a foreign language for them and used for academic purposes only.

The data set was prepared in the form of flash cards. The cards were shown to the participants before recording and they were made to read the sentences aloud in order to avoid mistakes during recording. The participants were instructed to avoid shuffling the cards loudly so that the noise may be avoided during recordings. They were also offered a few minutes' break after each recording and some water in order to relieve their vocal cords and ensure that the quality of recordings be not affected by raspy and dry throats. The participants read the sentences at normal speech rate and loudness.

The data was recorded through PRAAT software of speech processing at 8000 Hz. The sound files were saved in wav. files. Those files were processed through PRAAT. They were manipulated and their intonation patterns were stylized in order to get them in an easily manageable form. The manipulation of sound files enabled the researcher to remove redundant pitch points and thus eliminate any noise that might have crept into sound files. The final manipulated contour was saved in the form of pictures. Those pictures were transferred to an excel file where they were labelled according to ToBI system of labelling intonation patterns. The results of the labelling were arranged into tables which were used to trace the most frequently used intonation patterns for both Urdu and Pakistani English data set.

The data for intonation patterns used by American speakers of English was obtained through previous researches in the field by Hedberg, Sosa and Fadden (2004), Hirschberg (2004) and Pierrehumbert and Hirschberg (1990). The British model was obtained from a study by Grabe and Post (2002).

The results of the study indicated that the intonation patterns used for declarative sentences in Urdu and Pakistani English were the same. The difference between the native

and the non native speakers' use of intonation patterns is very clear. Same is the case with the yes/no and wh-questions. The intonation patterns used in Urdu and Pakistani English are the same whereas there are marked differences between the American, British and Pakistani speakers' use of intonation patterns.

Thus it becomes evident that Urdu does influence Pakistani English speakers' use of intonation patterns. This feature lends Pakistani English an air of non nativity and is one of those features that distinguish Pakistani English from British and American varieties of English. The results of this study may help us determine if this difference in intonation patterns operates as a communication barrier between the native and non native speakers. It may also lead to further researches to explore the role of intonation in determining the nativized accent of Pakistani English. This study provides a strong argument for incorporating intonation in English language curriculum. The results of this research also highlight the need for English language teachers to be aware of the differences between the native and non native speakers' use of English so that they may help their students surmount this barrier in communication.

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Appendices

APPENDIX A

The detail of intonation patterns used by speaker 1 for producing Urdu sentences is presented here.

1st Word Stress

Declaratives

Intonation pattern					Frequency
L	H	L-	L%	22	
L	H	H-	L%	1	
L	H	H-	H%	1	
H	L	H-	L%	1	
L	H	L	L-	L%	1
L	H	L	H-	L%	1

Yes/no questions

Intonation pattern					Frequency
L	H	H-	H%	25	
L	H	L	H-	H%	1
L	H	L-	L%	1	

Wh-question

Intonation pattern					Frequency
H	L-	L%	20		
H	H	L-	L%	1	
L	H	L-	L%	4	
H	L	L-	L%	1	
H	L-	H%	1		

**Last Word Stress
Declaratives**

Intonation pattern					Frequency
L	H		L-	L%	18
H	L	H	H-	L%	1
L	H	L	H-	L%	1
L	H	L	L-	L%	4
H			L-	L%	3

Yes/no questions

Intonation pattern					Frequency
L	H	L-	H%		25
L	H	L	H-	H%	1
L	H	H	L-	H%	1

Wh-questions

Intonation pattern					Frequency
H	L-		L%		9
H	L	H-	L%		3
L	H	L-	H%		1
H	L	L-	L%		8
H	L	L-	H%		3
L	H	L-	L%		1
L	H	L	L-	L%	1
H	L	H	L-	L%	1

APPENDIX B

The detail of intonation patterns used by speaker 2 for producing Urdu sentences is presented here.

1st Word Stress Declaratives

Intonation pattern	Frequency
L L- L%	8
L H L- L%	13
H L L- L%	4
L L L- L%	1
L H L L- L%	1

Yes/no questions

Intonation pattern	Frequency
L H H- H%	3
L H L- L%	22
H L H- L%	1
L H H- L%	1

Wh-questions

Intonation pattern	Frequency
H L- L%	3
L H L- L%	20
L H- H%	1
H L L- L%	1
H L L- L%	1
L H L L- L%	1

**Last Word Stress
Declaratives**

Intonation pattern	Frequency
L H L- L%	14
L H L- H%	3
L L- H%	1
L L- L%	6
L H L L- L%	1
H L- L%	1
H L H- H%	1

Yes/no questions

Intonation pattern	Frequency
L H L- H%	2
L L- H%	18
L H L- H%	2
L H- H%	1
L H L- H%	4

Wh-questions

Intonation pattern	Frequency
L H L- L%	15
H L- L%	6
L H L L- L%	3
L H L L- H%	1
H L L- H%	1
L L- L%	1

APPENDIX C

The detail of intonation patterns used by speaker 3 for producing Urdu sentences is presented here.

1st Word Stress Declaratives

Intonation pattern	Frequency
L H H- L%	2
L H L- L%	17
L L- L%	2
H L- L%	2
L H L H L- L%	1
L H L H- L%	3

Yes/no questions

Intonation pattern	Frequency
L H- L%	2
H L H- H%	1
L H L- H%	8
L H L- L%	6
L H H- H%	2
L H H- L%	1
L H H L- H%	1
L L- L%	1
L H H L- L%	1
L H L H- H%	1
L H L H L H- L%	2
L H L H L H- H%	1

Wh-questions

Intonation pattern	Frequency
L H L- H%	2
H L- L%	9
H H L- L%	3
H H L- H%	1
L H L- L%	1
L H L H- L%	2
H L- H%	2
H L H- L%	2
H L L- L%	1
H L H L H- L%	1
H H L H- H%	1
L H L H L- L%	1
H L H L- L%	1

Last Word Stress Declaratives

Intonation pattern	Frequency
L H- L%	4
H L- L%	3
L H L- L%	9
H L H L- L%	3
L H H- L%	1
L L- L%	2
H L L- L%	1
L H L H- L%	1
H L L- H%	1
H L H- L%	2

Yes/no questions

Intonation pattern	Frequency
L H L- H%	20
L H H- H%	1
L H L H L- H%	5
L H L H L- L%	1

Wh-questions

Intonation pattern	Frequency
H L- L%	4
L H L- L%	9
L H H- H%	2
H L- H%	6
L H L- H%	3
H L H- L%	2
H L H L- L%	1

APPENDIX D

The detail of intonation patterns used by speaker 1 for producing English sentences is presented here.

1st Word Stress Declaratives

Intonation pattern	Frequency
L H L- L%	24
L H L L- L%	3

Yes/no questions

Intonation pattern	Frequency
L H L- L%	21
H L H- H%	1
L H L H- H%	1
L H L L- L%	4

Wh-questions

Intonation pattern	Frequency
L H L- L%	27

**Last Word Stress
Declaratives**

Intonation pattern	Frequency
L H H- L%	10
L H L- L%	8
L H L H- L%	2
H L- L%	6
L L- L%	1

Yes/no questions

Intonation pattern	Frequency
L H H- H%	24
L H H L- L%	1
L H L H- H%	2

Wh-questions

Intonation pattern	Frequency
L H L- L%	23
L L- L%	1
H L H L- L%	1
L H- H%	1
L H- H%	1

APPENDIX E

The detail of intonation patterns used by speaker 2 for producing English sentences is presented here.

1st Word Stress Declaratives

Intonation pattern	Frequency
L H L- L%	21
L L- L%	1
H L L- H%	1
L H L- H%	1
H L L- L%	2
L L- H%	1

Yes/no questions

Intonation pattern	Frequency
L H L- L%	21
L H H- H%	2
L H L L- L%	3
L L- L%	1

Wh-questions

Intonation pattern	Frequency
L H L- L%	27

**Last Word Stress
Declaratives**

Intonation pattern	Frequency
L H- L%	2
L L- H%	3
L H L- L%	7
L L- L%	1
L H- H%	3
H L H- H%	2
L H L- H%	1
H L- L%	2
H H- L%	5
L H L H- L%	1

Yes/no questions

Intonation pattern	Frequency
L H H- H%	6
L H- H%	3
L L H- H%	18

Wh-questions

Intonation pattern	Frequency
L H L- L%	1
L L- L%	3
L H- H%	17
H L H- H%	6

APPENDIX F

The detail of intonation patterns used by speaker 3 for producing English sentences is presented here.

1st Word Stress Declaratives

Intonation pattern	Frequency
L H L- L%	24
L H L H- L%	1
H L H- L%	2

Yes/no questions

Intonation pattern	Frequency
L H H- H%	15
L H L- L%	12

Wh-questions

Intonation pattern	Frequency
H L- L%	3
L H L- L%	16
H L H L- L%	6
H L L- L%	2

**Last Word Stress
Declaratives**

Intonation pattern	Frequency
H L- L%	8
L L- L%	5
L H L- L%	4
L H H- L%	2
H L H- L%	2
L H H L- L%	4
H L H L- L%	2

Yes/no questions

Intonation pattern	Frequency
L H L- L%	3
L H H- H%	6
L H- H%	5
L H L H- H%	13

Wh-questions

Intonation pattern	Frequency
L H L H- H%	19
L H L- L%	1
H L H- H%	1
L H- H%	2
L L H L- L%	2
H L L H- H%	2