
AN ACOUSTIC ANALYSIS OF BACK VOWELS AMONG PUNJABI ENGLISH SPEAKERS IN PAKISTAN

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Abstract

The study focuses on acoustic analysis of low back vowels /ɔ:/ and /ʊ:/ among Punjabi English speakers in Pakistan. It was hypothesized that Punjabi English speakers merge low back vowels /ɔ:/ and /ʊ:/. This observation was made on auditory perception. Punjabi English speakers merge these two vowels /ɔ:/ and /ʊ:/ because of L-1 interference, as every young variety of English has certain features of local languages. Ten (10) Participants (5 male and 5 female) were randomly selected from Government College University Faisalabad, Punjab, who had Punjabi as their first language. PRAAT software was used to record formant values of speakers. Analysis was made using ANOVA summary and Tukey HSD Test and graphs. Results proved that there is partial merger of these two vowels /ɔ:/ and /ʊ:/ among participants. Male speakers' formant values showed merger at the front of vowels, i.e. F1 values of two vowels and it was experienced that female speakers showed merger in the height of vowels, i.e. F2 values of two vowels. The conclusion was drawn on the basis of results that low back vowels showed partial merger in Punjabi English speakers.

Keywords: Acoustics; Auditory; PRAAT; ANOVA; Tukey HSD Test; Formants.

1. Introduction

English language has become lingua franca that is being used across the globe for communication at various levels. Regional English varieties have also emerged with the presence of some unique and typical features different to native varieties. Most of the regional varieties of English language are due to the interference of local or native languages. Pakistani English (PakE) is mostly established as a distinct variety of English. The different variety arises because of the interference of L1, that is in PakE case Punjabi, for most of the speakers. Many studies (Mahmood, Zafar & Perveen, 2011; Bilal, Mahmood & Saleem 2001a, 2011b, 2011c; Ahmar & Mahboob, 2010; and Rehman, 1990) are made on the variations of vowels in PakE.

The basis of variations in sound patterns establishes the idea of PakE as a distinct variety on the basis on its phonology. Most studies are based on acoustic analysis of vowels using PRAAT software. The present study focuses on variations in back vowels. Two low back vowels of English /ɔ:/ and /ɒ:/ show variations when these were investigated in the context of Punjabi speakers. Punjabi speakers of English make merger of these two vowels in contextual usage. Acoustic analysis of 10 speakers (5 male, 5 female) of Punjabi as L1 show merger of these vowels in the results. Acoustic analysis is based on phonetic analysis of sounds using software PRAAT, which is meant to “analyze pitch contours and other acoustic properties of speech” (PRAAT). Acoustic analysis using PRAAT gives the information of quality, pitch and length of vowel sounds. The present study investigates the pronunciations of back vowels in Pakistani English that how Punjabi speakers of English merge two back vowels /ɒ:/ and /ɔ:/ into a single vowel sound.

Production of vowel sounds may be classified on the basis of associated pitch patterns that are overtones in vowels (Ladefoged, 1993). The classification of vowels is based on place of articulation, i.e. front and back. This is further observed on the height and duration of articulation which is discussed as Formants. PakE, it is observed, is more affected by discrepancy between spellings and sounds and becomes a reason for creating differences in pronunciation of non-native speakers with the native English speakers. The present study aims at exploring the differences in patterns of two low back vowels in PakE, i.e., /ɒ:/ and /ɔ:/.

Acoustic properties of vowels may be distinguished at hierarchal prosodic features (Liberman & Prince, 1977). The acoustic properties of vowels are height,

backness, frontness and degree of lip-rounding. The acoustic analysis provides different grouping of vowels on the basis of formant configuration of the vowels. In this regard, comparing format values can help investigate the relationship of vowels (Olive, Greenwood, and Coleman, 1993). On Spectrogram, F1 and F2 indicate the position of articulation of vowels showing High-low and Front-back respectively (Olive, Greenwood, and Coleman, 1993). The information about height and lowness of vowels is indicated through F1 whereas F2 shows the relationship for frontness of vowels. These values are recorded on the basis of height. The higher the value is, more close the position of vowel to front will be.

Current linguistic studies observe that many dialects of American English hint low back vowel merger, particularly, International Phonetic Alphabet [ɑ] and [ɔ]. There are not many studies on merger in various varieties of English. With the study of history of English language, there are significant variations between vowels /i/ and /e/, before oral consonants as well as before nasals, particularly /s/ (Montgomery and Eble, 2004). History of the merger was studied by Brown (1990) in Tennessee in some detail. This study shows the merger at low level by 1960s and it increased up to 90% towards the end of the 20th century. Brown (1990) focused on the texts written in the context of civil war and the data was combined with LAGS and LAMSAS.

A merger is said to be a single sound of two systemic sounds which aren't distinguished by the users. Mergers attribute the phonemic difference of one sound in relation to other that is considered identical. Merged sounds move together because of later shifts in vowel sounds. Lexical set of MEET and MEAT is the best example of this phonemic distinction of sounds. The long mid front vowel as a result of vowel shift was extended to /i:/ at the later stage, i.e. the sounds of these lexical sets of MEAT and MEET became identical. The change affected both the lexical sets. This particular example of these lexical sets provide an indication about the merger already present in English language shows the distinctiveness of the subject in question.

In terms of MEAT, other lexical sets are identical in terms of vowels but they are distinguishable and they do not show any merger as these show lack of /i:/ vowel in the modern day English. Regarding merger, it is significant to note that it does not reverse once it occurred in any language variety. This assumption further explains that: a. Merger is not only on phonemic level but it is phonetically complete

and; b. The learners are not aware of the other varieties of language where merger is not present.

With respect to Malaysian English, /i:/ and /I/ being two front vowels are merged (Zuraidah, 2000) in a way that maintaining distinction between the words such as ‘feel – fill’, ‘bead – bid’ is highly difficult. In Philippine English as well, the merger of /i:/ and /I/ is noticed (Gonzalez and Alberca, 1978). The other studies in relation to Asian varieties include the one on Singaporean English where the distinction between vowel sounds in pair of vowels is difficult on the basis of length (Deterding, 2007). Similarly, according to Hung (2000), Hong Kong English speakers are unable to distinguish between /i:/ and /I/. In closely related Asian contexts such as in Indian English, no division exists between weak and strong vowel (Kachru, 2005). In PakE as well, some researchers (such as Mahmood, Zafar and Perveen, 2011) have pointed out to the fact that front vowels like /i:/ and /I/ are not clearly distinguished by Pakistani English speakers.

1.1. Examples of Mergers

There are many examples of mergers in different English varieties and some are even present in either the British or the American English. Some are discussed here to assess the variety of mergers. In this regard, it is important to provide distinction between the mergers.

1.2. Context Independent

- 1) The merger of /e:/ to /i:/ (meat / meet) (General Southern British English)
- 2) /ai/ and /a:/ to /ei/ (tail / tale) (British English)
- 3) />/ and /o:/ to /<(:)/ (cot / caught) (American English)
- 4) Lexical sets of SQUARE and NURSE to the NURSE value (fair / fur) (forms of Ulster English, recent Dublin English)
- 5) /uq/ and /o:/ in words [poor and pour] (RP)
- 6) /v/ and /w/ to [β] (vet / wet) (18c/early 19c southern British English)

1.3 Context Sensitive

- 1) /o:r/ and /o:r/ to /o:(r)/ (morning / mourning) (Varieties of English)

- 2) /r/ to /r:/ or /Q:/ (tern / turn) (most varieties except perhaps Scottish and Irish English)
- 3) /e/ and /i/ to /i/ before nasals (pen / pin) (south-west Irish English, southern American English)
- 4) /ei/, /e/ and /@/, often to /e/, before /r/ (Mary / merry / marry) (to varying degrees in various forms of American English)
- 5) /e/ and /v/ before /r/ (merry / Murray) (Philadelphia English)

Apart from above mentioned merger at (6) of 18 and 19th century Southern British English, the mergers are always vocalic (Trudgill, Schreier, Long and Williams, 2002). It is observed that application of a phonological process may lead to mergers, but these are not concerned in the present study of merger of back vowels in PakE.

1.4. Pakistani English (PakE)

Tariq Rehman started discussion on PakE in 1990. Ahmer Mehboob made a preliminary description on PakE phonology and gave a description of vowel sounds in PakE. Acoustic studies on front vowels are made in PakE.

It has been established that the contact of Pakistani English (PakE) with local languages has resulted in a different variety of English with its distinct and established form (Baumgardner, 1993; Baumgardner, Kennedy, & Shamim, 1993; Kennedy, 1993; Tallat, 1993, 2002, 2003). It can be called an emerging variety among the already existing larger family of Asian Englishes. Though the available research on PakE variety is rare, it has commonality of features with other Asian Englishes. Previous studies (Bilal, Mahmood & Saleem, 2001a, 2011b, 2011c and Bilal et al., 2011) have highlighted certain features of vowels of Pakistani English. The prominent phonological features of PakE are mentioned by Hickey, Mahboob and Ahmar (Ahmar and Mahboob, 2010).

- PakE is rhotic except Philippines English.
- PakE is syllable-timed as other Asian varieties of English.
- Spellings are used as a guide to pronunciation.
- No distinction between /v/ and /w/.
- At words' initial positions speakers do not aspirate stops because of L1 influence.

Some differences in vowels' pronunciation that characteristically belong to PakE are apparent because of interference of mother language that is in most cases Punjabi or other regional languages.

2. Literature Review

English language as used in Pakistan or PakE is closer to the other South Asian English variant used in northern India. Right from the time of independence of Pakistan in 1947, English has held a co-official status with Urdu. However, the 1959 constitution of Pakistan (as well as the amendments in 1968, 1972, and 1985 later on) consider Urdu as having a dominant status, with a limited use of English with the aim of having its eventual replacement. The status of both languages is yet as minority languages. The importance of these two languages has greatly affected the vernacular languages. S. Hands in a personal interaction points out that 'the use of an English word is believed to add a note of refinement and elegance to conversation in the "lower" languages' (Blood, 1994).

For the classification of multiple existent varieties of English, Kachru (1985) provided a model having three circles, including the 'inner circle', the 'outer circle', and the 'expanding circle'. The model helps distinguish between various native and non-native varieties. The Inner most Circle explains the bases of English in its traditional linguistic and cultural situations. The Outer Circle represents the institutionalized non-native varieties (ESL) in the colonised countries by the British rule. The varieties of English in the context of foreign language (EFL) are represented through the Expanding Circle (as cited in Kirkpatrick, 2007, p. 28). The case of PakE belongs to the Outer Circle for despite being a multilingual country with Urdu as national and other regional languages, still uses English as its official language. PakE variety can be categorised into four sub-varieties according to Tariq Rehman (1990): 'variety A (Anglicized English), variety B (Acrolect), variety C (Mesolect) and variety D (Basilect)'. The linguistic richness of Pakistan has been noted by many researchers as resulting in phenomenon such as lexical borrowing and code-switching which impacted the PakE variety at various phrase and clause levels and thus endow unique features to this variety (Baumgardener, Kennedy, & Shamim, 1993).

Some other studies such as of Mahboob and Ahmar (2004) states that in the pronunciation of Pakistani speakers a controlling feature is to keep an eye on spellings. The central vowels' formant values depicts that they are differently pronounced by Pakistani speakers making Pakistani English a separate variety from that of British and American English (Bilal, Asim, & Saleem, 2011). Pakistani speakers, it is observed merge two central vowels /ə/ and /ɜ:/, but the realisation of vowel /ʌ/ is carried out differently (Warrich, Bilal, Rasheed, Fatima, & Tiwana, 2011).

A greater degree of nasality for regressive nasalization than the progressive nasalization in both Punjabi and Pakistani English is also observed (Zahid, 2012). Not only the vowels but consonants also have different patterns of pronunciation as compared to Received Pronunciation (RP) making Pakistani English a separate variety (Shabbir, Tariq, Bilal, Nazar, & Rafiq, 2013).

2.1. Theoretical Background

PakE follows the standards of British English but there are certain factors, such as acquisition, training of acoustics, inventory, proficiency of non-native teachers of English, cultural issues in relation to academic values and the concern of multilingualism (Farooq, 2015) along with Urdu as a national language (Rehman, 2006) and mother tongue (i.e. Punjabi) (Zia, 2011). The present study deals with the investigation of merger of back vowels /ɒ:/ and /ɔ:/ on the part of Punjabi speakers of English. These variations are significant because all the languages have different phonetic inventories even on the basis of dialects. The present research discusses the variation on the part of pronunciation that how L1 influences L2 as non-native varieties get influenced by these factors. Therefore, certain variations in relation to Received Pronunciation appear to produce different “Englishes”. Consequently, there is a need to develop the standards to explore the differences of varieties of English language. Therefore, the present study is significant in order to explore one such feature of L1 interference to L2 in non-native context.

English has achieved the status of lingua franca and it has second or third place in Asia, particularly in subcontinent. In this concern, L1 interference (e.g., Punjabi, Urdu, Hindi, etc.) on RP has produced many local varieties of English. In subcontinent, there is not a single variety of English but Englishes are entitled. Therefore, the studies (Bautista & Gonzalez, 2006; Kachru, 2005; Garesh, 2006; Deterding, 2010) claimed that there is a tendency among Asian English speakers to

merge front vowels /ɛ/ and /æ/). The present research is conducted to verify this perspective in Punjabi speakers of English in relation to explore merger of back vowels /ɒ:/ and /ɔ:/.

People perceive that L2 is influenced by L1 system of language (Best, Mcroberts & Goodell, 2001; Best & Tyler, 2007; Harnsberger, 2001). Flege (1995) states that second language speakers infer L2 patterns on the basis of L1 knowledge. This is assumed because non-natives may perceive some of the sounds in terms of vowel or consonant differently from natives (Flege, 1995). He further states that relationship of L1 and L2 plays very significant role in the perception as well as production of L2 sounds. The present study aims to investigate the back vowels /ɒ:/ and /ɔ:/ in relation to this concern of influence of L1 on L2. The major concern of the research is to explore the differences in terms of phonetic variations among the variety of Punjabi English speakers.

The present study is conducted by using PRAAT to analyze speech sound of back vowels in Pakistani English in which we took three basic specifications as gender, age, and Mother tongue. Males and females have different formant values as their pitch of voice is different therefore separate analysis was made to confirm the phenomena of merging two vowel phonemes /ɒ:/ and /ɔ:/ of British English as a variation in Pakistani English.

3. Methods and Materials

3.1. Participants

The students from Government College University, Faisalabad were selected randomly. Ten (10) participants were selected in total, out of which five were male and five were female students. Other factor taken into consideration while selection includes ensuring their first language as Punjabi. The students were selected from 18 – 25 age groups. Moreover, it was ensured that subjects are exposed to English for at least 8-12 years in their educational career.

3.2. Materials

3.2.1. Words Selection

The two back vowels i.e. /ɒ:/and /ɔ:/are the focus of the study.For this purpose, the recordings were made for the analysis of monosyllabic word lists.

The word list used in the study is mentioned below:

/ɔ:/ = port, north, lord, talk

/ɒ:/ = pot, not, lot, tod

3.2.2 Audio Recordings

Samsung Galaxy S3 was used for recording the words in a noise free atmosphere.

3.3. Procedure

A total of ten participants with the ratio of five male and five females was maintained. For the purpose of analysis, four words per vowel were required to be pronounced by each participant, which resulted in around 20 vowel words and thus 40 words altogether (10x4) for /ɔ:/ and /ɒ:/. The acoustic analysis was carried by making use of PRAAT Software.

4. Analysis and Results

4.1. Analysis of Male Sounds

The formants of male speakers were low in comparison to female speakers due to the difference in mouth cavities of male speakers for having big cavities than females.

4.1.1. Upper Low Back Vowel /ɔ:/

The vowel is realised as low back vowel. F1 varied from 642Hz (min.) to 667Hz (max.) and F2 from 1115Hz (min.) to 1179Hz (max.) respectively. The average formant values of F1 and F2 were 656Hz and 1142Hz respectively. The Formant values of this vowel are given above in Table 1.

Table 1: /ɔ:/ = port, north, lord, talk

F1	657	642	652	660	667
F2	1127	1179	1155	1132	1115

Total average F1 = 656

Total average F2 = 1142

The statistical analysis of two formants F1 and F2 is given in Table 2. There isn't significant distinction among speakers in terms of pronunciation of vowels.

Table 2: ANOVA summary

Source	Sum of squares	DF	Mean square	Fisher's F	P
Subjects	590490	1	590490	1606.56	<.0001
Error	2940.4	8	367.55		
Total	593430.4	9			

4.1.2. Low Back Vowel /ɒ:/

The vowel is realised as low back vowel. F1 varied from 657Hz (min.) to 692Hz (max.) and F2 from 1180Hz (min.) to 1238Hz (max.) respectively. The average formant values of F1 and F2 were 676Hz and 1205Hz respectively. The Formant values of this vowel are given below in Table 3.

Table 3: /ɒ:/ = pot, not, lot, tod

F1	657	659	691	692	684
F2	1180	1238	1182	1202	1227

Total average F1 = 676

Total average F2 = 1205

The statistical analysis of two formants F1 and F2 is given in Table 4. Similar patterns of pronunciation are visible.

Table 4: ANOVA summary

Source	Sum of squares	DF	Mean square	Fisher's F	P
Treatment (between groups)	700131.6	1	700131.6	1426.66	<.0001
Error	3926	8	490.75		
Total	704057.6	9			

/ɔ:/ vs /ɒ:/

The speakers realized the two vowels as partial merger at the front of vowels i.e. F1 values of two vowels. It was noticed that the speakers merger the vowels in the frontness of vowels. The F1 values for /ɔ:/and /ɒ:/sounds by the speakers were non-significant and with different F2 values for the same vowels. The realization of the two phonemes is expressed in the figure below.

Table 5: ANOVA summary

Source	Sum of squares	DF	Mean square	Fisher's F	P
Treatment (between groups)	1299695.4	3	433231.8	1009.51	<.0001
Error	6866.4	16	429.51		
Total	1306561.8	19			

Tukey HSD Test

HSD[.05]=37.49;

HSD[.01]=48.21

F1 vs. F2 P<.01

F1 vs. F3 nonsignificant

F1 vs. F4 P<.01

F2 vs. F3 P<.01

F2 vs. F4 P<.01

F3 vs. F4 P<.01

F1 = mean of Sample 1
F2 = mean of Sample 2
and so forth.

HSD = the absolute [unsigned] difference between any two sample means required for significance at the designated level. HSD[.05] for the .05 level; HSD[.01] for the .01 level.

Graphical Representation

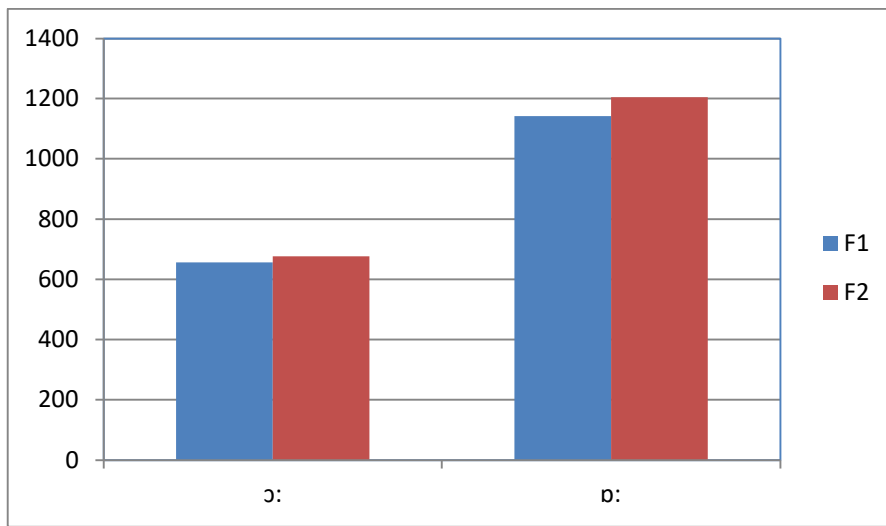


Fig. 1: Graphical Representation for Male Participants

4.2. Analysis of Female Sounds

4.2.1. Upper Low Back Vowel /ɔ:/

The vowel is realised as low back vowel. F1 varied from 642Hz (min.) to 667Hz (max.) and F2 from 1115Hz (min.) to 1179Hz (max.) respectively. 656Hz and 1142Hz were the average formant values of F1 and F2. The Formant values of this vowel are given above in Table 5.

Table 6: /ɔ:/ = port, north, lord, talk

F1	662	701	672	695	705
F2	1214	1196	1225	1228	1211

Total average F1 = 687

Total average F2 = 1215

The statistical analysis of two formants F1 and F2 is given in Table 4. In terms of pronunciation, the speakers showed identical patterns and variations were insignificant.

Table 7: ANOVA summary

Source	Sum of squares	DF	Mean square	Fisher's F	P
Treatment (between groups)	696432.1	1	696432.1	2677.56	<.0001
Error	2080.8	8	260.1		
Total	698512.9	9			

4.2.2. Low Back Vowel /ɒ:/

The vowel is realised as low back vowel. F1 varied from 642Hz (min.) to 667Hz (max.) and F2 from 1115Hz (min.) to 1179Hz (max.) respectively. 656Hz and 1142Hz were the average formant values of F1 and F2.

Table 8: /ɒ:/ = pot, not, lot, tod

F1	756	739	748	760	736
F2	1167	1206	1178	1202	1215

Total average F1 = 748

Total average F2 = 1195

The statistical analysis of two formants F1 and F2 is given in Table 4. The results show similarity in the vowels' manner of pronunciation by all speakers with an insignificant variation.

Table 9: ANOVA summary

Source	Sum of squares	DF	Mean square	Fisher's F	P
Treatment (between groups)	496844.1	1	496844.1	1923.89	<.0001
Error	2060	8	258.25		
Total	498910.1	9			

/ɔ:/ v/s /ɒ:/

The speakers realized the two vowels as partial merger at the height of vowels i.e. F2 values of two vowels. It was observed that the speakers merge the vowels in the heightness of vowels. The non-significant F2 values were observed for /ɔ:/ and /ɒ:/while F1 differed for the same vowels. The realization of the two phonemes is expressed in the figure below.

Table 10: ANOVA summary

Source	Sum of squares	DF	Mean square	Fisher's F	P
Treatment (between groups)	1195236.4	3	398412.1333	1537.23	<.0001
Error	4146.8	16	259.175		
Total	1199383.2	19			

Tukey HSD Test

HSD[.05]=29.14;

HSD[.01]=37.46

F1 vs F2 P<.01

F1 vs F3 P<.01

F1 vs F4 P<.01

F2 vs F3 P<.01

F2 vs F4 nonsignificant

F3 vs F4 P<.01

F1 = mean of Sample 1
F2 = mean of Sample 2
and so forth.

HSD = the absolute [unsigned] difference between any two sample means required for significance at the designated level. HSD[.05] for the .05 level; HSD[.01] for the .01 level.

Graphical representation

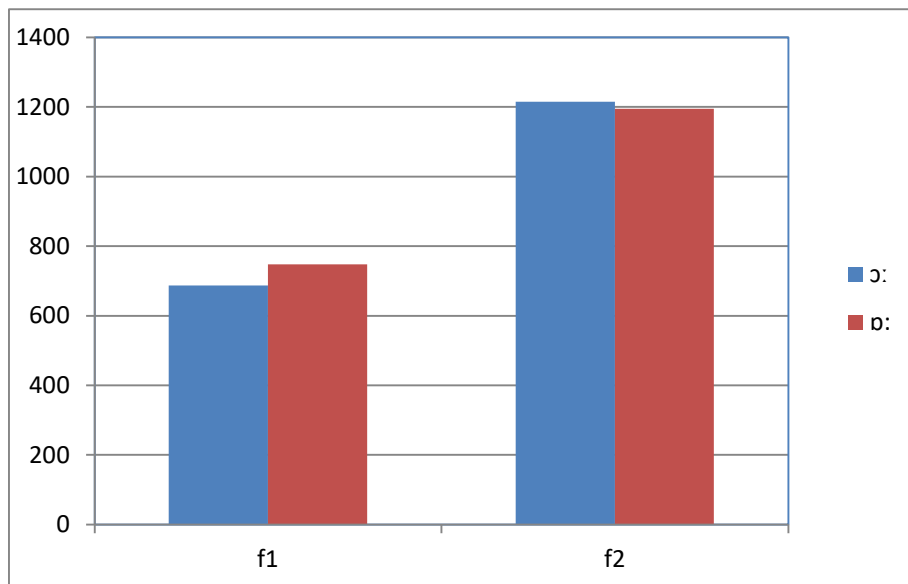


Fig 2: Graphical Representation for Female Participants

4.3. Measurement of Vowel Duration

At the level of phonemes, an important factor of consideration in many language and English as well is vowel length. Quality of vowels may be same but there is difference of length, i.e. a vowel can be judged in terms of quantity as well as quality. As the possibility of merger is higher in Asian contexts so the property of length appears to be significant. In the present study, the researcher measured the duration of vowels alongside Formant values to decide about the difference in quantity and quality as well as in terms of both.

4.3.1. Vowels Duration (in secs.)

4.3.1.1. Males

Table 11: /ɔ:/ = port, north, lord, talk

Port	North	Lord	Talk
0.161895	0.160866	0.161944	0.151730

Total average = 0.1591088

Table 12: /ɒ:/ = pot, not, lot, tod

Pot	Not	Lot	Tod
0.166545	0.157588	0.161607	0.1481942

Total average = 0.1584835

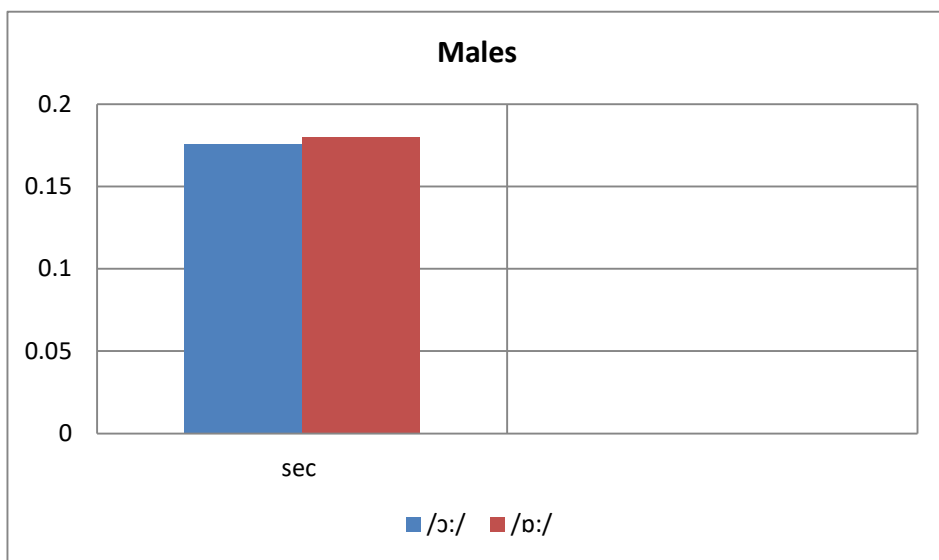


Fig 3: Graphical Representation for Male Participants

4.3.1.2. Females

Table 13: /ɒ:/ = port, north, lord, talk

Port	North	Lord	Talk
0.16939	0.186369	0.192664	0.153227

Total average = 0.175425

Table 14: /ɒ:/ = pot, not, lot, tod

Pot	Not	Lot	Tod
0.164802	0.17236	0.19352	0.189932

Total average = 0.18015

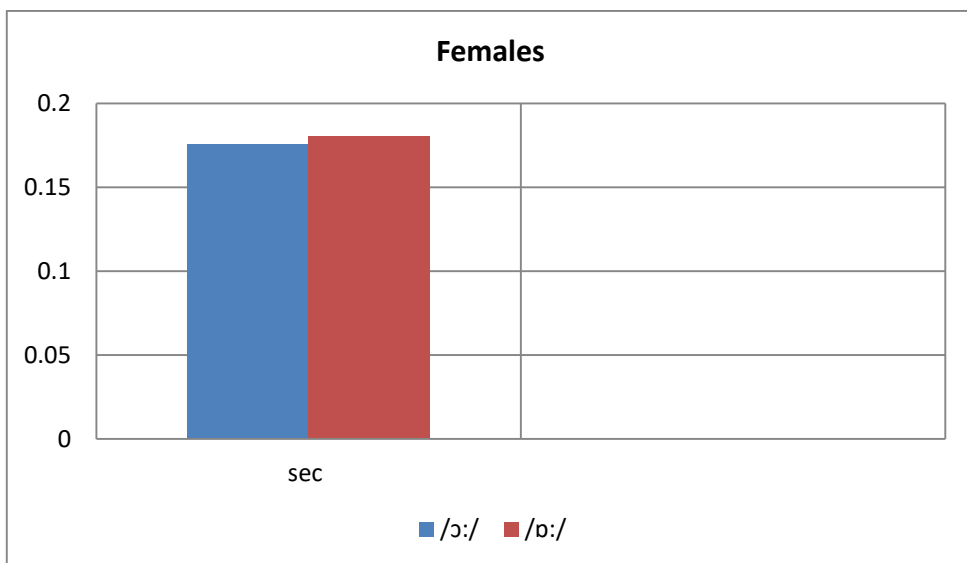


Fig 4: Graphical Representation for Female Participants

5. Results and Discussion

The analysis revealed that male Punjabi speakers of English pronounce two different back vowels that are represented with different formants in the same way. This appears as the Punjabi male speakers of English were not able to differentiate between these two vowels and they merge these sounds into single sound while using these vowels in their speech.

The female Punjabi speakers of English show the same trend in relation to back vowels /ɒ:/ and /ɔ:/ that they were merged into one phoneme or what it can be said as one sound irrespective of the formant values that were a bit higher than males. The results also revealed that Punjabi speakers of English didn't differ between these vowels in terms of length (i.e. Long or short vowel) but it appeared that these vowels were produced with almost same length and duration. In British English, these vowels have same place of articulation but different manner of articulation. In comparison to British English Pakistani English speakers merge the two vowel /ɒ:/ and /ɔ:/ sounds into one sound.

Punjabi speakers of English show variations in pronunciation of low back vowels /ɒ:/ and /ɔ:/. Formant values of both male and female speakers appear as

partial merger of these vowels at a certain point. Male speakers show merger at the front of the place of vowels and female speakers in the height of vowels i.e. male show merger in the F1 and female in F2.

6. Conclusion and Implications

It is concluded that Pakistani variety of English maintains a difference among speakers on the basis of L1 interference. The conclusion is drawn on the observation of PRAAT & ANOVA software analysis that PakE partially merges two low back vowels /ɒ:/ and /ɔ:/. This acoustic study of low back vowels favours the claim of PakE as a new variety of English.

It can be concluded that /i:/ and /I/ in PakE are distinguishable with respect to the quantity as well as quality of vowels. This observation points to the fact that PakE variety resembles with respect to these two vowels RP and AmE patterns, which also being the native varieties distinguish between the two vowels in terms of quantity as well as quality. There visible difference however exists between native varieties and the non-native PakE is that /i:/and /I/ are pronounced with more raised and front tongue by natives in comparison.

There is a growing recognition no doubt in South Asia regarding the distinctness of South Asian variety of English. This is more so due to the dominant role of English as a second language (ESL) in these contexts. This recognition has led to the emergence of many localised English varieties in the region such as Pakistani English and Indian English, which are definitely affected by L1 as well as other L2 of English language users. The results of the study have substantiated the previous researches and have authenticated the existence of a distinct variety of PakE. It substantiates the view point that English as an international language has transcended the confinements of native contexts and has become a property of its users in their local cultural contexts thus informing the ‘appropriateness’ in language pedagogy in a new way (McKay, 2003, p. 13 as cited in Caine, 2008). The results of the present study have pointed to the differences in vocalic pronunciations by Pakistani speakers with other regional/international varieties. The effect of L1 interference is a matter for English language teachers and a hindrance towards native-like pronunciation. The results of the study have proved the need for a greater acceptance of these differences as part of the localised variety of English.

While this research is significant for future researchers exploring PakE variety in the sense that it has helped establishing a distinct presence of PakE as a separate variety, the study is not without some limitations. The study is restricted to a limited number of participants with respect to their number, geographical location and L1 being Punjabi. The future researchers could fill the gap by providing vocalic features of Pakistani speakers from other unexplored contexts which could provide further insights into the PakE pedagogy.

References

- Baumgardner, J. (1993). The indigenization of English in Pakistan. In Baumgardner, J. (Ed.), *The English Language in Pakistan* (pp. 41-54). Karachi: Oxford University Press.
- Baumgardner, J., Kennedy, A., & Shamim, F. (1993). The Urduization of English in Pakistan. In Baumgardner, J. (Ed.), *The English Language in Pakistan* (pp. 83-203). Karachi: Oxford University Press.
- Bautista & Gonzalez (2006). Southeast Asian Englishes, In Kachru, B. Kachru, Y. & Nelson, C. (Eds.), *The Hand Book of World Englishes* (pp. 130-144). Blackwell Publishing: Malden.
- Best, C. T., & Tyler, M.D.(2007). *Nonnative and second-language speech perception: Commonalities and complementarities*. In O.-S. Bohn & M. J. Munro (Eds.), *Language experience in second language speech learning: in honor of James Emil Flege* (pp. 13- 34): John Benjamins publishing company.
- Best, C. T., Mcroberts, G. W. & Goodell, E. (2001). Discrimination of non-native consonant contrasts varying in perceptual assimilation to the listener's native phonological system. *Acoustical society of America*, 109(2), 775-794.
- Bilal, H. A., Mahmood, M. A. & Saleem, R. M. (2011a). Acoustic analysis of front vowels of Pakistani English. *International Journal of Academic Research*, 3 (6-1), 20- 27.
- Bilal, H. A., Mahmood, M. A. & Saleem, R. M. (2011b). Merger of /i:/ and /I/ in Pakistani English. *International Journal of Linguistics*, 3(1), E34.
doi:10.5296/ijl.v3i1.1041.

- Bilal, H. A., Mahmood, M. A. & Saleem, R. M. (2011c). Merger of /e/ and /æ/ in Punjabi English. *International Journal of Academic Research*, 3 (6-II), 407-412.
- Deterding, D. (2010). *Variation across Englishes: Phonology*. In A. Kirkpatrick (Ed.), *The Routledge Handbook of World Englishes* (pp. 385-396). Taylor and Francis Group: London and New York.
- Farooq, M. (2015). *An Acoustic Phonetic Study of Six Accents of Urdu in Pakistan. (Unpublished Thesis)*. Lahore, Pakistan: University of Management and Technology, Johar Town, Lahore.
- Flege, J. E. (1995). *Second language speech learning: theory, findings, and problems. Speech perception and linguistic experience: Issues in cross-language research* (pp. 233- 277): York Press.
- Garesh, R. (2006). South Asian English. In B. Kachru, Y. Kachru, & C. Nelson, (Eds.), *A handbook of world Englishes* (pp. 90-113). Oxford: Blackwell Publishing Company. <http://dx.doi.org/10.1002/9780470757598.ch6>
- Harnsberger, J. D. (2001). On the relationship between identification and discrimination of nonnative nasal consonants. *Acoustical society of America*, 110(1), 489-503.
- Hickey, R. (2005). South Asian Englishes. In Hickey, R. (Ed.), *Legacies of colonial Englishes* (pp. 536-558). Cambridge: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511486920.022>
- Kachru, B. B. (1985). *Standards, codification and sociolinguistic realism: The English*
- Kachru, Y. (2005). *Hindi-Urdu*. In B. Comrie (Ed.), *The Major Languages of South Asia, The Middle East and Africa* (pp. 37-53). London: Routledge Taylor and Francis Group.
- Kennedy, A. (1993). A bribe by any other name...: Terms of gratification in Pakistani English. In Baumgardner, R. (Ed.), *The English language in Pakistan* (pp. 204-211). Karachi: Oxford University Press.

- Kirkpatrick, A. (2007). *World Englishes: Implications for International Communication and English Language Teaching*. Cambridge: Cambridge University Press.
- Ladefoged, M. (1993). *A Course in Phonetics*. Orlando: FL: Harcourt Brace & 13 Company. *language in the outer circle*. na.
- Liberman, M., & Prince, A. (1977). On stress and linguistic rhythm. *Linguistic inquiry*, 8(2), 249-336.
- Mahboob, A. (2010). *A handbook of varieties of English*, Berlin: Mouton de Gruyter.
- Mahboob, A., & Ahmar, N. H. (2004). Pakistani English: Phonology. In E. W. Schneider (Ed.), *A Handbook of Varieties of English: a Multimedia Reference Tool* (pp. 1002-1017). Berlin, New York: Mouton de Gruyter.
- Mahmood, A. Zafar, S. & Perveen, S. (2011). Front vowels of Pakistani English. *International Journal of Academic Research*, 3(5-II), 303-306. [Online] Available: <http://www.ijar.lit.az/pdf/13/2011%2813-55%29.pdf> (November 7, 2010).
- Mesthrie, R. (2008). *World Englishes: The study of new linguistics varieties*. Cambridge: Cambridge University Press.
- Olive, J., Greenwood, A., & Coleman, J. (1993). *Acoustic of American English Speech*. New York: Springer-Verlag.
- Rehman, D. T. (2006). *Urdu as an Islamic Language-the Annual of Urdu Studies*. In M. U. Memon (Ed.) *Urdu Studies*, 22, 101-119.
- Rehman, T. (1990). *Pakistani English: The Linguistic Description of a Non-native Variety of English*. Islamabad: National Institute of Pakistan Studies, Quaid-e-Azam University.
- Shabbir, S. I., Tariq, A. R., Bila, H. A., Nazar, H., & Rafiq, R. M. (2013, November). Consonants of Pakistani English: a study of /θ/ & /ð/. *Academic Research International*, 4.
- Tallat, M. (1993). Lexical variation in Pakistani English. In Baumgardner, R. (Ed.), *The English language in Pakistan* (pp 55-62). Karachi: Oxford University Press.

- Tallat, M. (2002). *The Form and Function of English in Pakistan* (Doctoral dissertation). Retrieved August 10, 2010, from <http://eprints.hec.gov.pk>
- Tallat, M. (2003). Pakistani English: A sociolinguistic variety. *Journal of Research*, 4, 17-30. [Online] Available: <http://bzu.edu.pk/jrlanguages/Vol-4%202003/Dr%20Mubina%20Tallat-2.pdf> (August 10, 2010)
- Warrich, A. A., Bilal, H. A., Rasheed, T., Fatima, N., & Tiwana, D. S. (2011). Acoustic Analysis of Central Vowels in PakitaniEnglish. *International Journal of Linguistics*, 3.
- Wells, J. C. (1962). *A study of the formants of the pure vowels of British English* (Master's thesis). [Online] Available: <http://www.phon.ucl.ac.uk/home/wells/formants/index.htm> (July 25, 2010).
- Williams, J. P., Schneider, E. W., Trudgill, P., & Schreier, D. (Eds.). (2015). *Further studies in the lesser-known varieties of English*. Cambridge University Press.
- Zahid, S. (2012). *An Acoustic Analyses of Vowel Nasalization in Punjabi Speaker's Production of English in Pakistan*. GCUF.
- Zia, W. (Ed.). (2011). *Pakistan 6th Population and Housing Census-Pakistan*. Retrieved from: <http://www.paknetmag.blogspot.com/2011/.../2011-pakistan-6th-population>