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A Sociophonetic Investigation of English Long Vowel Production among Pakistani ESL Learners from Diverse Linguistic Backgrounds

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ABSTRACT

This study explores the production of long vowels in the English language among first-year university students in Business and Economics programs at the University of Education. The phonemic length of the English vowels is critically important in intelligibility and it is a constant challenge to the Pakistani ESL students due to structural dissimilarity between English and local languages. The paper focuses on five long vowels of the English language: /iː/, /ɑː/, /ɔː/, /uː/ and /ɜː/ and discusses them based on ten selected lexical units of academic discourse.

Ten target lexicon items were read out by nine speakers with a Punjabi, Sindh, Saraiki, Balochi and Pashto language background, as they read a standard academic text. Auditory phonetic transcription and comparative phonological analysis were used as the qualitative methods of analyzing their pronunciations. The results show that there is systematic variation among linguistic groups. Regional languages in Pakistan, including Punjabi, Sindhi, Saraiki, Balochi and Pashto, have their own phonological systems. Though some languages do have a difference in the length of the vowel, their phonemic distribution and articulatory nature differ from that of English. It may result in students exporting L1 sound patterns in the pronunciation of English vowels. The research aims to investigate the pronunciation patterns of the students in these language backgrounds in a controlled academic reading environment with respect to pronunciation of some English long vowels. The research does not simply address the errors, but is instead more of a sociophonetic approach as pronunciation variances are indicators of systematic phonological patterns which are influenced by linguistic heritage, identity and language contact. Relative stability in the vowel length opposition of the Sindhi and Saraiki speakers , shortening of the long vowels were prevalent in the Punjabi and Pashto speakers while Balochi speakers showed intermediate patterns. The most problematic vowel in all groups was the /ɜː/, which frequently changed to /ə/ or /ʌ/. The findings validate the impact of L1 phonological transfer and interlanguage evolution on second language speech production. The research adds to sociophonetic studies of Pakistani English and emphasizes the necessity for targeted teaching strategies in vowel length education in multilingual ESL environments.

Keywords: Pakistani ESL learners, English long vowels, Vowel length, Pronunciation variation, Sociophonetics

1. Introduction

English has a very dominant and complex sociolinguistic status in Pakistan. It has operated as a co-official language since independence with Urdu and still dominates the higher-education system, administration, law, and elite professional communication. English is commonly viewed as a path to socio-economic mobility, international engagement and institutional influence. English in Pakistan is not only a communicative language, as Tariq Rahman (1990, 1991, 2011) states, but also a symbol of class differences and a sign of symbolic capital. Equally, Braj B. Kachru (1985) places Pakistan in the outer circle of English speaking where the language has institutionalized its

roles, and has evolved local norms. In this sociolinguistic ecology, the pronunciation acquires social significance and is frequently used to mark the level of education, regionality, and admissions to elite institutions.

Even after many years of exposure to the English language, in formal education, which in many cases takes more than twelve years, pronunciation is still one of the most stubborn challenges to Pakistani learners. In Pakistan, English language teaching has focused on grammar, reading comprehension, and performance in examinations, which have been considered important whereas systematic phonetic training has been given relatively little consideration (Rahman, 1991). As a result, a lot of learners can acquire the skills of literacy without the stable phonological control. Studies of second language acquisition also indicate that phonological competence is highly determined by early exposure, quality of input and the opportunity to engage in meaningful interaction (James Emil Flege, 1995). In these instances where exposure is minimal or intermittent, there is more likelihood of the learners to use first-language (L1) phonological categories as they have to produce second-language (L2) sounds.

English phonology draws a line between short and long vowels in a manner that has a direct influence on lexical meaning. As examples, the differences between /ɪ/ and /iː/ are the distinction between ship and sheep, and the difference between /ʊ/ and /uː/ is the distinction between full and fool. Notably, the length of the vowel in English is not a solely duration issue; it also relates to the quality of vowels, muscular tension and the position of the tongue. Long vowels are more tense and peripheral whereas the short ones are lax and more central.

Vowel contrast acquisition has been a popular topic of study in second language phonology. The Speech Learning Model of James Emil Flege (1995) suggests that learners are inclined to map the unknown L2 sounds onto the nearest L1 categories in the case when the perceived phonetic distance is not salient enough. Assimilation of two L2 vowels to one L1 category might lead to learners not developing a new phonemic contrast. Equally, Catherine Best (1995) suggests that contrasts between non-native speakers are construed based on the pre-existing perceptual systems which are formed on the linguistic basis of the native tongue. According to these theoretical views, the challenge in acquiring English vowel length among Pakistani learners need not be based on random error but that of cross-linguistic influence.

Pakistan boasts of a high linguistic diversity. Punjabi, Sindhi, Saraiki, Balochi, and Pashto are significant regional languages, each possessing unique phonological systems. Despite the presence of some languages with vowel length differences, their phonemic patterns, and articulatory characteristics are not similar to English. This may lead to the students transferring L1 vowel patterns to the pronunciation of English vowels.

The study will focus on investigating the pronunciation of certain English long vowels by the students with the background of these languages in a controlled academic reading situation. Different to the sole identification of errors, the study uses a sociophonetic method, as the pronunciation variation reflects systematic phonological patterns, which are determined by the linguistic background, identity, and language exposure.

1.1. Research questions

1. The question is how the Pakistani ESL students with different L1 backgrounds can produce the English long vowels?
2. What English long vowel is the most difficult to produce?
3. What is the effect of L1 phonological structure on the vowel duration and quality in English?
4. What are the sociophonetic patterns of linguistic groups?

Answering these questions, the research can be applied to theoretical debates of L1 transfer and to the practical needs in ESL pronunciation education.

2. Significance of the Study

The work of the research is significant both theoretically and pedagogically. Theoretically, it adds into the body of sociophonetics by offering empirical evidence on how the long vowels in the English language are produced by Pakistani ESL students whose linguistic backgrounds vary. It emphasizes the importance of the first language (L1) phonological systems in the development of second language (L2) pronunciation, especially on the production of the length of the vowel in its realizations. The very fact that the phonology of Pakistani English is compared with Punjabis, Sindhi, Saraiki, Balochi and Pashto speakers contributes to a small amount of comparative study of the phonology of the Pakistani language.

Pedagogically, the research has an immense application in English language teaching in Pakistan. It isolates certain vowel sounds, in particular /ɜː/, /ɔː/, and /ɑː/ that invariably prove a challenge among learners. These results can help the teachers develop specific pronunciation instruction, especially in the context of higher education when English is selected as the means of academic and professional communication. Moreover, the paper provides a

recommendation of the necessity of clear instruction on the distinction of vowel length that is frequently not taught in the traditional ESL classrooms. Also, the research has sociolinguistic significance since it demonstrates how local linguistic identities affect the English pronunciation patterns. It helps to comprehend Pakistani English as a new variety under the influence of multilinguals instead of perceiving the difference in pronunciation as the mistake.

Generally, the research fills in the gap between theoretical linguistics and classroom practice by connecting the phonological theory to practical learning issues of ESL in real-life situations.

2.1 Research Gap

Although there is already existing research on English phonology, and Pakistani English, there are still gaps in the research that this study fills.

To begin with, majority of the past research on Pakistani English has concentrated on general pronunciation aspects or segmental phonemic errors without isolating the production of English long vowels. Phonemic features such as the length of the vowel has not been adequately studied within a comparative sociophonetic context.

Second, previous studies tended to discuss speakers as one homogenous group, referred to as the Pakistani English speakers, and without regard to regional linguistic diversity. This research bridges this divide by comparing various L1 groups (Punjabi, Sindhi, Saraiki, Balochi and Pashto) under the same institutional setting enabling a more detailed analysis.

Third, a lot of the current literature is based on descriptive or impressionistic analysis. Little use of structured lexical material and controlled reading passages with special attention to vowel duration patterns. This paper overcomes this drawback by using targeted words that have all the major long vowels in English.

Fourth, very little research has been done on the undergraduate students of Business and Economics courses, who are often using English in their academic and professional life. This is a poorly-studied population in phonetics.

Finally, there is a methodological gap in combining sociophonetic analysis with interlanguage theory in the Pakistani context. This paper combines the two schools of thought in order to understand variation in vowel production better.

By filling these gaps, the current research study will add to the more detailed and systematic knowledge on the production of English vowels in multilingual ESL settings.

3. Literature Review

3.1 Theoretical Foundations: Contrastive Analysis

The relation between L1 and L2 phonology is analysed in terms of second language learning researches. According to the Contrastive Analysis Hypothesis (Lado, 1957), learners face pronunciation problems when the first language is different from second language (English. When the learners face phonemic differences that are not in their language, they replace the unknown sounds that they already know.

Considering vowel length, a learner may have a problem in maintaining length differences in English when his or her first language lacks duration as a core phonemic unit of contrast. Though the contrastive analysis does not take into consideration all the aspects of the development of pronunciation, it can be particularly helpful in the case of identifying pronunciation problems.

3.2 Interlanguage and Phonological Development

The Interlanguage Theory by Selinker (1972) explains a dynamic approach to the study of the pronunciation of learners. Interlanguage is a dynamic language system which is affected by the L1 influence, exposure to the target language and cognitive processes. In this interlanguage system, the patterns of pronunciation among ESL learners are often systematic and governed by a set of rules and follow patterns. These patterns do not make mistakes, but they are properties of interlanguage phonology.

3.3 Sociophonetics and Regional Identity

Sociophonetics examines that socioeconomic factors such as social and regional, affects the pronunciation. In multilingual environments such as in Pakistan from different linguistic backround pronounce English differently in different ways, Research on the Pakistani English language has established that regional languages affect vowel centralization, length neutralization and variance. The Punjabi speech rhythm is also often said to be syllable-timed,

and this can influence the way vowel length patterns are formed in English. The vowel inventory of Sindhi and Saraiki languages is quite rich, and their speakers can pronounce the English more accurately. Pashto and Balochi are different in terms of vowel systems, and this could affect the trends of rounding and centralization.

3.4 English Long Vowels: Phonetics Characteristics

English long vowels are also known as tense vowels that have an extended and constant articulation. Stressed syllables in native speech may take a duration of 180 to 250 milliseconds, but it depends on the phonetic surroundings, and the rate of speech.

The vowel /ɜ:/ is a special problem because of the location in the center of the tongue and the lack of the sound in some world languages. Research indicates that it is among the hardest vowels among the ESL learners.

Although previous research has been done to investigate the features of Pakistani English phonology, few comparative studies have been done in a systematic investigation of the production of long vowels by different regional groups in the same institution.

4. Methodology

4.1 Participants

Table 1: Participants

Linguistic Background	No. of Speakers
Punjabi speakers	2
Sindhi speakers	2
Saraiki speakers	1
Balochi speakers	2
Pashto speakers	2

Participants given in Table 1 were nine undergraduate students from the University of Education who were from Business and Economics programs participated on a voluntary basis. The participants were from five largest linguistic backgrounds: Each participant had at least twelve years of study of English and regularly used English in academics.

4.2 Target Lexical Items

Ten words with English long vowels were chosen as given in Table 2:

Table 2: Targeted Words

Long Vowels	Lexical items
/**i**:/	field, meaning
/**ɑ**:/	heart, start
/**ɔ:**/	soar, overall
/**u**:/	truth, beauty
/**ɜ**:/	curvature, world

The words were incorporated in an academic-style reading passage to make sure that they would be produced in a natural context.

4.3 Data Collection Procedure

The recordings were made separately in a peaceful classroom setting by participants. The text was read in a natural manner. To ensure accuracy, each participant carried out two readings.

4.4 Analytical Framework

The experiment focused on pattern recognition among linguistic groups as opposed to statistical generalization and the analytical framework is shown in Fig. 1.

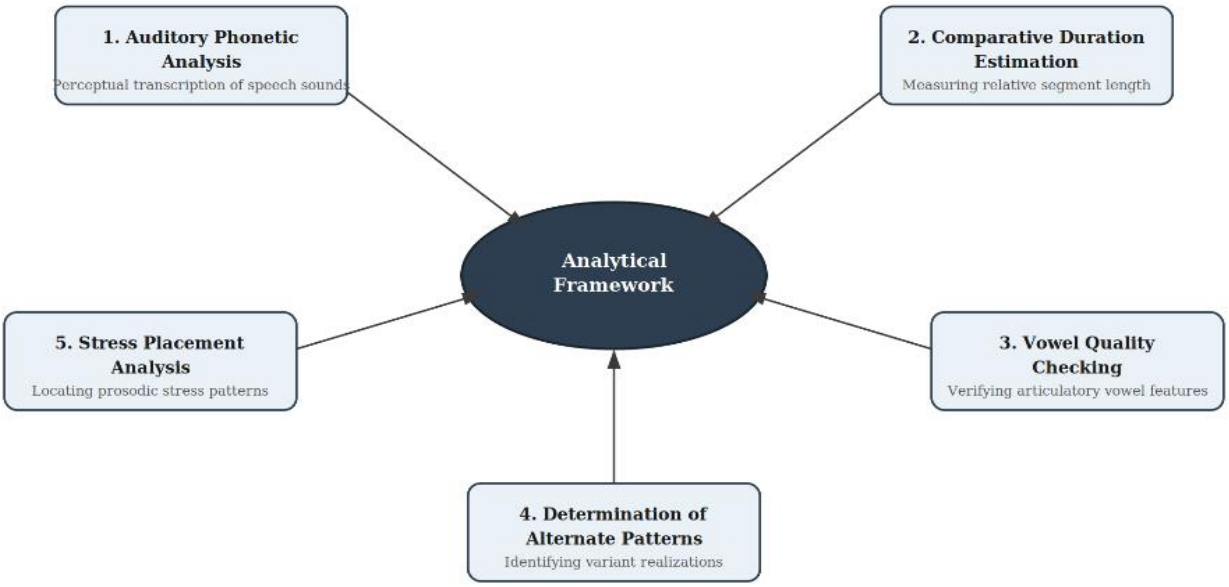

Figure 1. This is a figure. Schemes follow the same formatting.

5. Data Analysis

5.1 Production of /iː/

Cross-group variation was observed in the field and meaning in the vowel /i/. The Sindhi speakers preserved the length of vowels and a tense front vowel similar to native pronunciation. Even slightly elongated production was shown by the Saraiki participant, which indicates that he or she is highly aware of vowel length.

In contrast, Punjabi and Pashto speakers often reduced the vowel, and the sound is more similar to that of /ɪ/. The shortening of time decreased the perceptual distinction between short and long vowels. Balochi speakers created immediate patterns and kept the length intact, but in some cases, centralized the vowel a bit.

The trend indicates that the contrast in vowel length is more consistent when the L1 phonological system of speakers has similar contrasts.

5.2 Production of /ɑː/

Saraiki and Sindhi speakers realized relatively long and open productions in heart and start. The speakers of Punjabi and Pashto tended to shorten them and create a more similar vowel which is more similar to /a/. The shortening effect diluted phonemic contrast and, in some instances, perception of stress.

The difference is the variability in the quality and quantity of vowels among the L1 systems. Different languages that treat duration differently may fail to support the maintenance of long vowels in the English language.

5.3 Production of /ɔː/

There was rounding variation in the vowel /ɔː/ of soar and overall. Reduced rounding /o/-like vowel was common among Punjabi speakers. The lip rounding and length were more precise among speakers of the Sindhi language. Pashto speakers exhibited shortening and slight centralization.

The variability shows that differences in rounding and vowel height interact with differences in duration in cross-linguistic transfer.

5.4 Production of /uː/

The /u/ in truth and beauty was relatively unchanged. However, the Punjabi, and Pashto respondents also exhibited slight shortening. Saraiki participant sometimes over-prolonging the vowel which prolonged the duration beyond the normal native standards.

This relative stability of /u:/ can be explained by the fact that there are some other back rounded vowels in the regional languages.

5.5 Production of /ɜː/

The most challenging were the /ɜː/ in curvature and world. The majority of the participants substituted it with /er, / a, or /a/. Even the speakers who had done well with the other vowels were not consistent in its production.

This universal difficulty was probably caused by the fact that the equivalent central mid-long vowel was not present in many L1 systems.

6. Discussion

6.1 L1 Phonological Transfer

Results of the current study are a powerful support of the key role of first language (L1) phonological transfer in influencing the production of vowels in English by Pakistani ESL students. Underlying phonological organization of native languages of the participants were reflected by the observed patterns that were not random and individual habits but they were systematic and linguistic groups based.In a structured interlanguage system (Selinker, 1972), L1 influence and L2 exposure interact in systematic ways, and the regular patterns that have been observed in this study indicate that learners are operating in such a system.

6.2 Cross-Linguistic Variation

The speakers of Punjabi and Pashto showed tendency of shortening the vowels in the majority of targeted long vowels, especially /iː/ and /aː/ and /ɔː/. However, vowel length is maintained to some extent with occasional centralization by Balochi speakers, who showed intermediate patterns. This tendency implies that there is a neutralization process of vowel length in which the phonemic difference between long and short vowels in English is not entirely preserved. L1 phonological patterns influence the English vowel length, and due to their difference learners experienced greater difficulty while pronouncing them. This finding of the study supports the Contrastive Analysis Hypothesis (Lado, 1957). Punjabi and Pashto speakers showed more vowel shortening because their languages do not strongly rely on vowel length. Balochi speakers' vowel production showed a slight difference in changing vowel quality, and with that, maintenance of vowel length to some extent, so they did not show complete neutralization. This type of neutralization can happen due to the fact that vowel length is not a strongly contrastive element in their L1 phonological systems. Consequently, the learners unconsciously carry the timing patterns they are familiar with into English and make length contrasts less perceptually salient. Vowel duration differences are less prominent in Punjabi as compared to stress-timed English. That's why the syllable-timed rhythm of Punjabi influences it. Vowel centralization and length neutralization (Rahman, 1991) is reported by previous studies on Pakistani English phonology and these findings are consistent with these studies. By offering a comparative analysis across multiple linguistic groups, this study add to this work.

Conversely, Sindhi and Saraiki speakers were found to have a relatively more stability in terms of vowel duration. Their /iː/ and /ɑː/ were generally longer and closer to the target norms. In Sindhi and Saraiki phonological systems there is richer vowel inventories and quantity differences that explained this relative accuracy. While Balochi speakers fall between the accurate group of Sindhi/Saraiki and less regular group Punjabi/Pashto by showing moderate accuracy. More accurate L2 production can take place in case the learner's L1 has similar phonetic and phonological characteristics and positive transfer takes place. Nevertheless, even in these groups the full native-like realization was not always reached, which means that the cross-linguistic similarity is not the only factor that guarantees complete acquisition of L2 vowel contrasts.

6.3 Difficulty of the English vowel /ɜː/

It is to note that the vowel /ɜː/ has been the most challenging for all the speakers. According to phonetic descriptions of English long vowels, both vowel quality and duration are required. /ɜː/ vowel has been challenging for all the speakers because of failure to maintain these features. Most participants substituted /ɜː/ with /ə/ or /ʌ/ or even /o/ and this shows the struggle to represent the unknown sound with the nearest possible L1 category.Substitution of /ɜː/ with more familiar vowels is explained by Flege's Speech Learning Model (1995). According to this model, learners assimilate unfamiliar L2 sounds into the familiar L1 categories. The result is consistent with earlier phonological studies that designate /ɜː/ as a marked vowel and one that is hard to acquire. While pronouncing it, the middle position of tongue, in addition to the neutrality of lips and a relatively long duration, form both perceptual and articulatory problems. In addition, since this vowel is not present or peripheral in most of the regional languages in Pakistan, learners do not have a known phonological template to project on the English target sound. The outcome does not align with accurate production, rather it is a systematic approximation.

6.4 Sociophonetic Perspective on Pronunciation

Broader issues of regional speech rhythm and linguistic identity were also reflected by the phonological variations that has been observed in this study. Speaker's different linguistic and social backgrounds are also involved in pronunciation mechanism, rather it is not just about the mechanical production of different sounds. In multilingual or bilingual environment, phonological patterns of regional languages exist even in academic environment where medium of instruction is English language. Not only the cognitive processes influence the second language pronunciation but there are also sociocultural factors as it is evident from the patterns observed in the study that express different linguistic identity and certain group affiliation. Pakistan is a multilingual country and Pakistani English is not deviated from native standards rather it has adaptation from phonological patterns of regional languages as is expressed by consistent variations.

6.5 Pedagogical Implications

To help English language teaching in higher education, findings of this study carry useful implications. Pronunciation - particularly vowel quantity is overlooked in Pakistani traditional ESL classes rather written competence of students, their vocabulary and grammar is prioritize only. Need of explicit teaching of the duration contrast has been pointed out by consistent shortening of long vowels by some groups. Minimal pair exercises (e.g., ship vs. sheep, full vs. fool) and auditory discrimination and guided production practice should be included by teachers to increase the awareness of the differences in phonemic length among learners. Additionally, to internalize the temporal dimension of English vowels, integration of acoustic visualization tools or timed repetition exercises may be helpful.

7. Conclusion

This study examined the English long vowel production differences among Pakistani ESL learners who belong to different linguistic backgrounds. The findings reveal that vowel production does not occur randomly, but rather it follows a systematic pattern that has influence of first language (L1) phonology. Speakers from Sindhi and Saraiki linguistic backgrounds exhibited maintenance of vowel length, moderate accuracy has been shown by Balochi speakers while consistent vowel shortening pattern is demonstrated by Punjabi and Pashto speakers. The vowel /ɜː/ appears to be most challenging across all groups and it was frequently replaced with other familiar vowel sounds.

According to Flege's Speech Learning Model and Interlanguage Theory, in second language production learners develop intermediate forms and rely on existing L1 categories which explains the patterns observed in the

study. From a Sociophonetic perspective, learners' linguistic backgrounds cause variations in their pronunciation and this leads to variety of Pakistani English which has phonological adaptations from regional languages.

Small sample size and reliance on auditory analysis from single institution speakers are some limitations of this study, yet it has contributions. To provide a deeper understanding on vowel production variations, future studies can use acoustic tools such as Praat and can include larger participant groups.

To sum up, this study contributes to research that is going on about phonological variation in Pakistani English and also highlight the importance of focused instructions on pronunciation especially vowel length.

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