

English Pronunciation of Punjabi Speaking Youth: A Phonemic Analysis of Consonant Sounds

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ABSTRACT

This study investigates the impact of Punjabi phonological patterns on the articulation of certain consonant sounds of English which affect the English pronunciation of the Punjabi speaking youth. Punjabi is a dominant regional language of the most populous province of Pakistan, and English is crucial for educational success and professional advancement. The research on the phonetic interface of Punjabi and English carries the pedagogical and sociolinguistic significance. To conduct the research, the data was collected through audio recordings comprising twenty male and twenty female participants to ensure gender balanced data. The acoustic analysis was conducted using Praat 6.4.15 software to analyze the consonantal variations. The recorded samples were then compared with the native English speaker productions to quantify the difference in pronunciation. The results are shown in the form of tables, column charts, sound waves, and bar charts to visually illustrate the findings. The analysis focused on identifying how Punjabi influences the production of English voiceless plosives. The findings reveal the significant pronunciation deviations among Punjabi youth, particularly with the aspirated voiceless plosive such as [p], [t], and [k] sounds where the VOT (Voice Onset Time) is almost zero. This results in the de-aspiration of the sounds i.e. lack the strong aspiration characteristic of the Standard English pronunciation. This research contributes to understanding the Punjabi-English interplay and suggests that equipping Punjabi youth with strong English pronunciation skills can enhance their educational and professional opportunities. The present research generates insights for the codification of the Pakistani

English and ESL research as well by offering empirical evidence. Future research could further explore other linguistic features of Punjabi affecting the English pronunciation.

Key Words: Phonemes, consonants, plosives, fricative, voice onset time

1. INTRODUCTION

Cross-linguistic interference affects the acquisition and production of the second language. The transference can be positive when the features of L1 facilitate the learning or negative when L1 patterns impede the acquisition of L2 features. Phonology is one of the most persistent areas of L1 influence. The Punjabi language exercises strong influence on the English pronunciation of learners from Punjab. The youth from Punjab often struggles with English sounds due to the phonological interference of Punjabi on their English sounds. Punjabi is a dominant language spoken by the majority in Pakistan. Punjabi exerts substantial influence not only on English pronunciation, but also their Urdu pronunciation patterns as well. Such a complex interplay of Punjabi influence on the other languages makes this study even more significant. Pakistani dialect of English does have certain features which are developed due to the influence of Punjabi. Authar (2018) commented that the first language always exercises some sort of influence on the second language acquisition. This research strengthens the idea that the Pakistani dialect of English has some features which are actually the result of the influence of Punjabi language.

Although a considerable amount of research has been conducted on the influence of Punjabi on the English pronunciation of learners from Punjab, several areas still require further scholarly investigation. ‘English has been studied phonemically in various researches, and Punjabi is no exception. However, the work on Punjabi phonology is far less than that of English’ (Chohan & Garcia, 2019, p. 3). The influence of specific Punjabi phonemes must be examined in greater depth to understand how they affect the English pronunciation of Punjabi youth. Certain phonemes exist within the phonemic system of English but are absent in Punjabi. Consequently, Punjabi learners of English often substitute these English phonemes with the corresponding Punjabi sounds. This phenomenon ultimately impacts their overall pronunciation. This phonological influence of Punjabi creates challenges for young English learners when they seek international opportunities, whether in teaching English online or pursuing employment in multinational organizations abroad. The present study highlights how Punjabi shapes the English pronunciation of youth from Punjab. Understanding this influence can enable educators to design more effective pedagogical approaches for teaching English

pronunciation to Punjabi learners. Conversely, students can adopt strategies to refine their pronunciation and thereby enhance their access to online and global opportunities. The objective of this research is to investigate the influence of Punjabi consonant sounds on the English pronunciation of Punjabi youth. Specifically, this study focuses on voiceless plosives in order to analyze their defining characteristics, such as Voice Onset Time (VOT) and Final Release Burst Time (FRBT), and to examine how these features are affected by Punjabi when young people in Punjab acquire English.

2. LITERATURE REVIEW

The acquisition of voiceless plosives is not an easy job for the learners of English whose first language does not have aspirated /p/, /t/ and /k/ sounds. If voiceless plosives are at the beginning of a stressed syllable, the puff of air coming out of the mouth will be stronger. These voiceless plosives are called aspirated voiceless plosives. Voiceless plosives actually do not involve the vibration of the vocal cords when they are produced. Japanese learners of English struggle with the production of voiceless plosives. Toru (2019) commented that Japanese language does have voiceless plosives but these voiceless plosives are articulated by the Japanese speakers with much less aspiration if they are compared with English voiceless plosive. Japanese language has voiceless plosives but Japanese speakers either do not produce voiceless plosives with aspiration or produce them with weaker aspiration. When these people learn English, they produce English voiceless plosives with weaker aspiration which affects their English pronunciation.

The voiceless plosives of English cause some problems for the learners of English whose first language is French. “Both French and English have the voiceless stops / p t k/, but in English these voiceless stops become aspirated at the beginning *of* a -word or stressed syllable, whereas in French, these sounds are unaspirated in the same positions” (Markey, 1998, p. 3). If a sound of the target language is not present in the native language of the learners, they have hard time producing it. But if the sound is present in the native language but it is pronounced in a slightly different way, even then the learners have some issue to pronounce this sound. Just like English, French language does have voiceless plosives but they are not aspirated the way native speakers of English pronounce them at the beginning of a word or in a stressed syllable. This feature of French language affect the English pronunciation of the French learners of English as a second language. Just like Brazilian Portuguese, Arabic language does not have aspirated voiceless plosives. In fact, Arabic language does not have [p] sound at all so the Arabic learners of English tend to replace this sound with the closest sound

found in Arabic. “The voiceless plosives that occur in Arabic are unaspirated in whatever phonetic environments they occur. Native speakers of Arabic are therefore likely to use the unaspirated variety of [p], [t] and [k] in their English speech in whatever phonetic environments they occur. This is likely to affect the intelligibility of their English only when they speak to native speakers of English” (Al-Hattami, 2010, p. 108). The native speakers of Arabic language tend to replace [p] sound with [b] sound. The voiced plosives like [b] sound involve the vibration of vocal cords. Both of these sounds, [p] and [b], are bilabial plosives so Arabic students tend to replace the voiceless plosive [p] with a voiced plosive [b]. This makes it easier for them to somehow pronounce the needed sound but it changes their pronunciation of the target language.

Jordanian learners of English as a second language, along with monophthongs and diphthongs, struggle with [p] and [θ] sounds as well. They do not have [p] sound in Arabic language so they tend to replace it with bilabial voice plosive [b]. “They fall into a certain pattern where learners for instance replace /p/ sound with /b/ and /θ / with /s/.” (Badawi, 2017, p. 28). This shows how Jordanian Arabic language affects their pronunciation of English consonants. In this research, 36 native speakers of Arabic language from Jordan were involved. The participants were divided into two groups named as control group and experimental group. The participants were asked to pronounce 30 English words containing [p], [b], [tʃ], [ʃ], [dʒ], and [ʒ] sounds. The experimental group was given a training to pronounce these words correctly. The male members of the both groups, especially from control group, replaced [p] sound with [b] sound because they do not have [p] sound in Arabic. The female participants of the experimental group showed better performance comparatively. But some of them overgeneralized that rule of articulating [p] sound which is supposed to be pronounced with a puff of air, and changed [b] sound with [p] sound at some occasions. This was an unexpected result, but the overall research showed how a native language like Arabic, which does not have [p] sound, affects pronunciation of the target language.

Learners of English from Punjab transfer some characteristics of their mother tongue which influence certain features of their target language including their pronunciation. For example, the [p^h] sound in English is aspirated when it comes at the beginning of a words or at the beginning of a stressed syllable. But Punjabi learners of English tend to pronounce it as [p̤] sound of Punjabi which is not aspirated. Chohan, Habib and Bhatti (2019) commented that [k] sound of Punjabi and Pashto learners of English has the longest VOT, but bilabial sound of these students has the shortest VOT. All voiceless plosives sounds have positive VOT in English when they are aspirated. This research indicates that bilabial sound, uttered by the

Punjabi and Pashto learners of English, has the shortest VOT but this research had only ten participants whose voice samples were analyzed. Only ten participants, chosen from Lahore who speak Majhi dialect of Punjabi, do not represent the whole population. This research seems more like a case study of a group of students which looks at the phonological features of the second language of a few students who are learning English. Secondly, the values of the VOT of these participants are not given in the form of a table or a column chart. The VOT of the participants can also be presented systematically if the sound waves of the recordings of the participants are shown in the data presentation. These missing pieces of information make this research less reliable to a greater extent.

Among English voiceless plosives, the voiceless alveolar stop sound [t] is also included. The airstream is blocked at the alveolar ridge and released suddenly to produce this sound. Yule (2020) commented that stops like [t] sounds are produced by blocking the air very briefly then releasing it abruptly. The airstream is blocked to produce aspirated as well as non-aspirated [t] sound. Sometimes influence of a mother tongue of a learner affects the aspiration of a sound leading to a different pronunciation. Chohan (2019) explained that all the consonant sounds of English and Punjabi, including [t] sound, are exactly the same sounds because they have same place and manner of articulation when these consonant sounds of English are compared with their counterparts of Punjabi. A sound may have the same manner and place of articulation but this similarity does not make it hundred percent similar sound. For example, the [t] sound of English can be aspirated or non-aspirated though aspiration does not totally change its place or manner of articulation. The aspirated [t] sound has a little stronger puff of air when it is compared with the non-aspirated [t] sound.

Many studies explored the influence of L1 on SLA where the pronunciation of the learners' target language is affected by their native language. For example, the previous research explores how different native languages of learners from different countries affect their English pronunciation of [p], [t] and [k] sounds. The research on Brazilian Portuguese indicates that the learners of English, whose first language is Portuguese, do not articulate aspirated voiceless plosives producing a little puff of air. They tend to make them non-aspirated sounds. Similarly, the research on Arabic learners of English highlights that they do not only change aspirated [p_h] sound into non-aspirated [p] sound rather they sometimes replace [p] sound with [b] sound, and [t] sound with [ت] sound. It happens because they do not have [p] and [t] sounds in Arabic language. It makes it obvious that previous research on many languages show how these languages affect voiceless plosives of English. But there is a gap in the research done on Punjabi's influence on English pronunciation because there is a little

explanation of the phenomenon when English voiceless plosives [p], [t] and [k] are not aspirated by the young Punjabi learners of English even when these plosives come in the beginning of words or in stressed syllables.

3. RESEARCH DESIGN AND METHODOLOGY

This is a quantitative research which ensures systematic and objective analysis of the collected data about the influence of Punjabi language on the English pronunciation of certain consonant letters pronounced differently by the Punjabi learners of English. In this research, the carefully collected audio samples were thoroughly analyzed with the help of Praat 6.4.15 software to make sure that all the acoustic characteristics of the voice samples are cautiously examined. The VOTs and FRBT of voiceless plosives articulated by the participants were measured to know where the participants deviate from the standard pronunciation of certain sounds.

3.1 Data Collection

The data for this research is collected mainly in the form of audio recordings of the young learners of English from Punjab. The participants of this research consist of male and female learners of English, aged 14 to 17, who are studying in grade 9 to 12 in different government and private educational institutions across Faisalabad division of the Punjab province. All the participants of this research have Punjabi as their mother tongue so they predominantly speak it at home and at school as well. A total number of 40 participants, 20 males and 20 females, were randomly selected from rural and urban areas for the study to ensure diversity. The audio samples of the Native American and British speakers were obtained from Cambridge Dictionary.

The audio recordings of the participants were conducted in the controlled and formal environment of the principal's office of their respective educational institutions. The identities of the participants are kept confidential throughout the research to make sure that their privacy is secured and respected. The voice samples of female participants were labelled as F1, F2, F3, and so on, while those of male participants were labelled as M1, M2, M3, etc. So the ethical research practices were ensured, and the sole focus was on the influence of Punjabi language on the English pronunciation of certain consonant sounds of English.

3.2 Evaluation Metrics and Technology

The acoustic features of the participants' voice samples were analyzed in detail with the help of Praat 6.4.15 software. Different evaluation metrics were used by the researchers to evaluate different phonemes. For instance, the evaluation metric for voiceless plosives is

‘Voice Onset Time’ and ‘Final Release Burst Time’. It examines whether participants produce the characteristic puff of air when they articulate [p], [t], and [k] sounds especially when these voiceless plosives come in the beginning or a word or in stressed syllable. Praat’s waveform and spectrogram tools were very helpful in analyzing voice onset time. These evaluation metrics help researchers to do a detailed analysis of different sounds to see how these English sounds are influenced by the native language of the participants. The research used a laptop and high quality Plantronics headphones for the recordings. These headphones have noise-cancellation features to ensure a clear and noise free recording. Then Praat 6.4.15 was used to do a proper acoustic analysis of the audio samples which helped to do a detailed evaluation of pitch, voice onset time, and intensity etc.

4. DATA PRESENTATION AND ANALYSIS

The key findings and the results of the research are discussed in detail in this section. At the outset, the voice onset time (VOT) of the [p] sound is measured and analyzed when it appears at the beginning of the words like ‘pen’. Then the values of the participants’ voice samples are written in tables to compare them with the voice samples of the Native American and the British English speakers.

4.1 Voiceless Plosives

The details of the VOT (Voice Onset Time) about the [p] sound of each and every male and female participant are mentioned in the given table 4.1.

Table 4.1 *Voice Onset Time of [p] in the word “pen”*

Serial #	Male Participants	Male VOT	Female Participants	Female VOT
01	M-01	0.012	F-01	0.015
02	M-02	0.020	F-02	0.016
03	M-03	0.008	F-03	0.021
04	M-04	0.022	F-04	0.021
05	M-05	0.014	F-05	0.012
06	M-06	0.015	F-06	0.011
07	M-07	0.017	F-07	0.014
08	M-08	0.023	F-08	0.013
09	M-09	0.011	F-09	0.015
10	M-10	0.019	F-10	0.015
11	M-11	0.014	F-11	0.018
12	M-12	0.015	F-12	0.016
13	M-13	0.017	F-13	0.020
14	M-14	0.014	F-14	0.020
15	M-15	0.011	F-15	0.022
16	M-16	0.012	F-16	0.021
17	M-17	0.008	F-17	0.019
18	M-18	0.009	F-18	0.016
19	M-19	0.007	F-19	0.013
20	M-20	0.012	F-20	0.018
	Male Participants’ Average VOT	0.014	Female Participants’ Average VOT	0.015
21	American VOT	0.062		
22	British VOT	0.058		

VOT Differences of the [p] Sound in the Word 'Pen' Among Native American, British, and Pakistani Young Learners

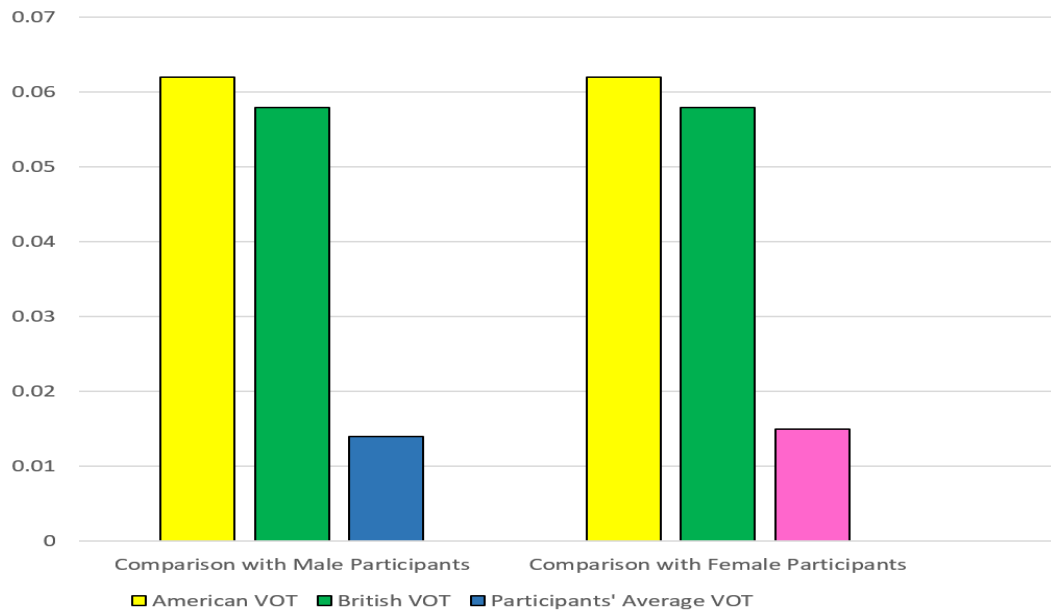


Figure 4.1 Column Chart

According to the Praat 6.4.15 software, the standard VOT value of [p] sound in the word ‘pen’ for the Native Americans is 0.062 seconds, and that of British English speakers is 0.058 seconds. But the average VOT of the male participants is only 0.014 seconds and that of female participants is 0.015 seconds as shown in the table and the column chart 4.1.

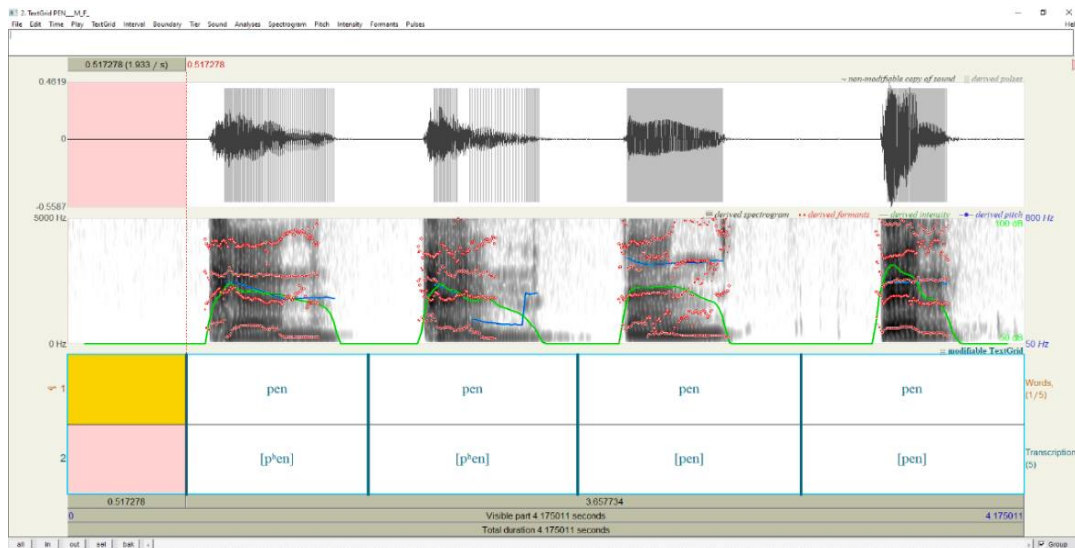


Figure 4.2 Sound Wave and Transcription Chart

The transcription of the words, as shown in the above-mentioned Figure 4.2 Sound Wave and Transcription chart, also indicates that the [p] sound is not aspirated by the male and female participants. The blue line in the spectrogram represent ‘pitch’ of the voice sample. The vocal cords of the native speakers of English do not vibrate during the VOT of the [p] sound that’s why the blue line does not appear in the spectrogram during the VOT. The blue line

appears almost right from the beginning when the participants from Punjab pronounce the word ‘pen’. It shows that the VOT of the participants is very low as shown in the table.

Here are the details of the pronunciation of [p] sound when it appears in the middle of words as in the word ‘support’.

Table 4.2 Voice Onset Time of [p] in the word “support”

Serial #	Male Participants	Male VOT	Female Participants	Female VOT
01	M-01	0.023	F-01	0.017
02	M-02	0.022	F-02	0.018
03	M-03	0.014	F-03	0.012
04	M-04	0.018	F-04	0.025
05	M-05	0.012	F-05	0.020
06	M-06	0.015	F-06	0.021
07	M-07	0.018	F-07	0.015
08	M-08	0.020	F-08	0.010
09	M-09	0.018	F-09	0.010
10	M-10	0.012	F-10	0.012
11	M-11	0.018	F-11	0.025
12	M-12	0.021	F-12	0.020
13	M-13	0.026	F-13	0.025
14	M-14	0.017	F-14	0.026
15	M-15	0.025	F-15	0.022
16	M-16	0.018	F-16	0.017
17	M-17	0.017	F-17	0.021
18	M-18	0.013	F-18	0.016
19	M-19	0.012	F-19	0.021
20	M-20	0.011	F-20	0.015
	Male Participants' Average VOT	0.017	Female Participants' Average VOT	0.018
21	American VOT	0.066		
22	British VOT	0.065		

VOT Differences of the [p] Sound in the Word ‘support’ Among Native American, British, and Pakistani Young Learners

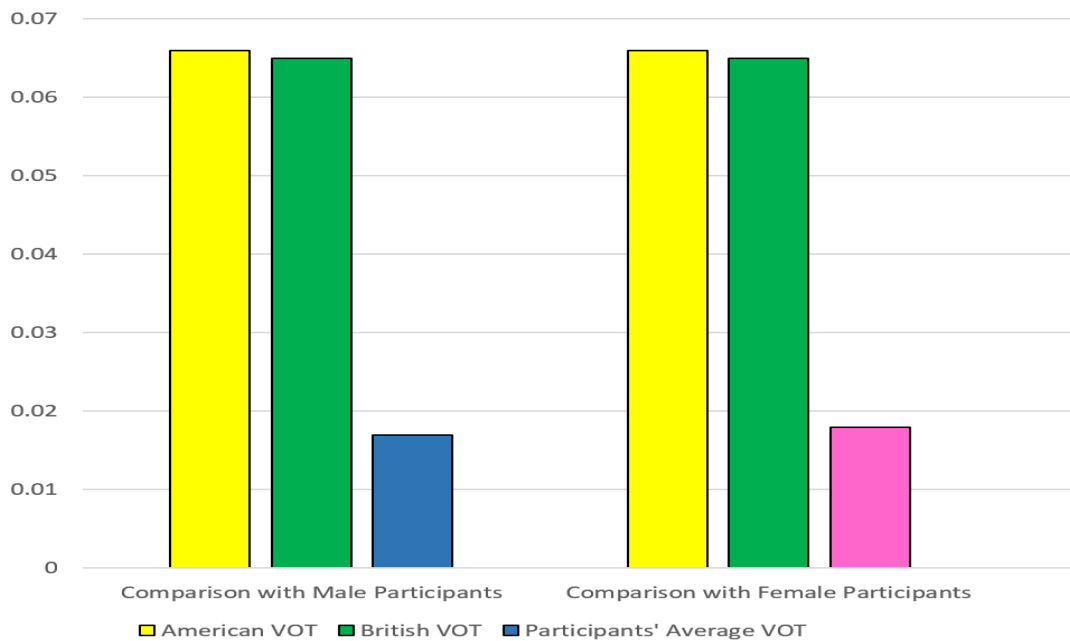


Figure 4.3 Column Chart

The table 4.2 and the Figure 4.3 column chart provide all the details about the VOTs of the participants and their comparison with the voice samples of the native speakers of English. The Native American VOT and British VOT, as shown in the table, are 0.066 second and 0.065 seconds respectively. The average VOT of male participants is only 0.017 seconds, and that of female participants is 0.018 seconds. The values of male and female participants' VOTs are way lower, as shown in the column chart 4.3, than the standard VOT of native speaker of English.

Table 4.3 *Final Release Burst Time of [p] in the word “top”*

Serial #	Male Participants	Male FRBT	Female Participants	Female FRBT
01	M-01	0.018	F-01	000
02	M-02	0.028	F-02	000
03	M-03	0000	F-03	000
04	M-04	0000	F-04	000
05	M-05	0000	F-05	000
06	M-06	0000	F-06	000
07	M-07	0000	F-07	000
08	M-08	0.015	F-08	000
09	M-09	0.023	F-09	000
10	M-10	0000	F-10	000
11	M-11	0000	F-11	000
12	M-12	0.031	F-12	000
13	M-13	0000	F-13	000
14	M-14	0000	F-14	000
15	M-15	0000	F-15	000
16	M-16	0000	F-16	000
17	M-17	0000	F-17	000
18	M-18	0000	F-18	000
19	M-19	0000	F-19	000
20	M-20	0000	F-20	000
	Male	0.005	Female	0000
	Participants' Average FRBT		Participants' Average FRBT	
21	American FRBT	0.055		
22	British FRBT	0.040		

FRBT Differences of the [p] Sound in the Word ‘top’ Among Native American, British, and Pakistani Young Learners

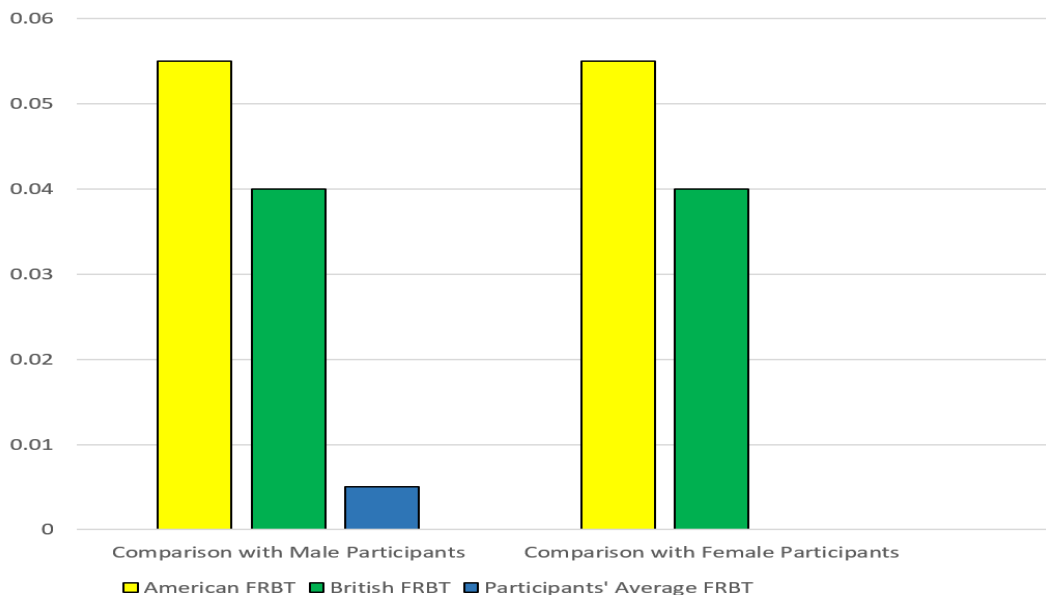


Figure 4.4 *Column Chart*

The table 4.3 gives details of ‘Final Release Burst Time’ (FRBT) of each and every male and female participant who took part in the research pronouncing the words like ‘top’ which has [p] sound at the end. The American FRBT for the [p] sound is 0.055 seconds and that of the British speaker is 0.040 seconds. The average FRBT of the male participants is only 0.005 seconds and that of the female participants is zero.

Along with other voiceless plosives, the research included [t] sound’s analysis as well. The words containing [t] sound at the start, in the middle, and at the end were included. Here are the details of how [t] sound is pronounced by the young learners from Punjab when it come at the start of the words like ‘top’. The given below table 4.4 shows that the average VOT of male participants is 0.012 seconds, and that of female participants is 0.011 seconds. The difference between the average VOT of the participants and the VOT of the native speakers of English enormous. The VOT of aspirated [t^h] of the Native American is 0.085 seconds, and that of British is 0.090 seconds. The column chart 4.5 shows that the columns of male and female learners of English are almost seven times smaller than the columns which represent American and British VOTs when the [t] sound appears at the beginning of a word like ‘top’.

Table 4.4 *Voice Onset Time of [t] in the word “top”*

Serial #	Male Participants	Male VOT	Female Participants	Female VOT
01	M-01	0.008	F-01	0.009
02	M-02	0.013	F-02	0.010
03	M-03	0.015	F-03	0.010
04	M-04	0.011	F-04	0.012
05	M-05	0.010	F-05	0.009
06	M-06	0.006	F-06	0.012
07	M-07	0.012	F-07	0.014
08	M-08	0.013	F-08	0.010
09	M-09	0.011	F-09	0.011
10	M-10	0.011	F-10	0.013
11	M-11	0.012	F-11	0.014
12	M-12	0.012	F-12	0.016
13	M-13	0.015	F-13	0.010
14	M-14	0.016	F-14	0.015
15	M-15	0.012	F-15	0.013
16	M-16	0.009	F-16	0.011
17	M-17	0.015	F-17	0.011
18	M-18	0.012	F-18	0.013
19	M-19	0.014	F-19	0.008
20	M-20	0.013	F-20	0.010
	Male Participants’ Average VOT	0.012	Female Participants’ Average VOT	0.011
	American VOT	0.085		
	British VOT	0.090		

VOT Differences of the [t] Sound in the Word ‘top’ Among Native American, British, and Pakistani Young Learners

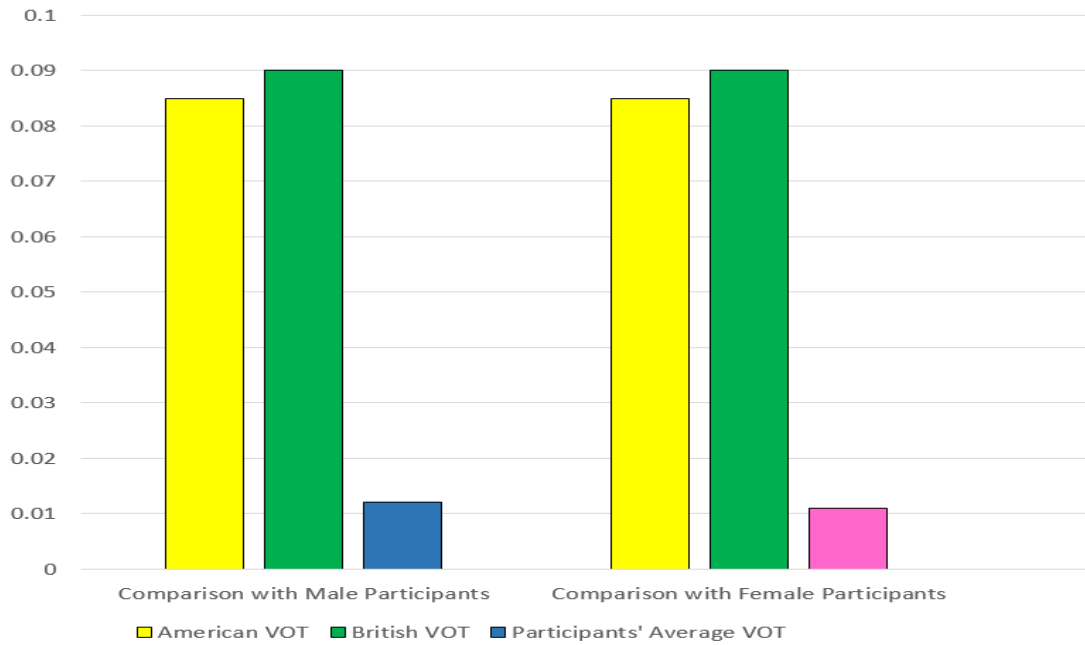


Figure 4.5 Column Chart

The participants comparatively performed well when they pronounced the words which contain [t] sound in the middle as shown in the table 4.5 and the column chart 4.6 below. The VOT of Native American is 0.027 second, and that of British is 0.025 seconds. The average VOT of the male participants is 0.019 seconds, and female participants had average VOT of 0.020 seconds.

Table 4.5 Voice Onset Time of [t] in the word “Station”

Serial #	Male Participants	Male VOT	Female Participants	Female VOT
01	M-01	0.019	F-01	0.018
02	M-02	0.021	F-02	0.016
03	M-03	0.015	F-03	0.014
04	M-04	0.020	F-04	0.020
05	M-05	0.018	F-05	0.014
06	M-06	0.025	F-06	0.025
07	M-07	0.025	F-07	0.020
08	M-08	0.015	F-08	0.023
09	M-09	0.026	F-09	0.017
10	M-10	0.011	F-10	0.027
11	M-11	0.018	F-11	0.020
12	M-12	0.017	F-12	0.019
13	M-13	0.015	F-13	0.035
14	M-14	0.030	F-14	0.020
15	M-15	0.022	F-15	0.020
16	M-16	0.015	F-16	0.024
17	M-17	0.021	F-17	0.018
18	M-18	0.015	F-18	0.028
19	M-19	0.023	F-19	0.020
20	M-20	0.018	F-20	0.021
	Male Participants' Average VOT	0.019	Female Participants' Average VOT	0.020
21	American VOT	0.027		
22	British VOT	0.025		

VOT Differences of the [t] Sound in the Word 'station' Among Native American, British, and Pakistani Young Learners

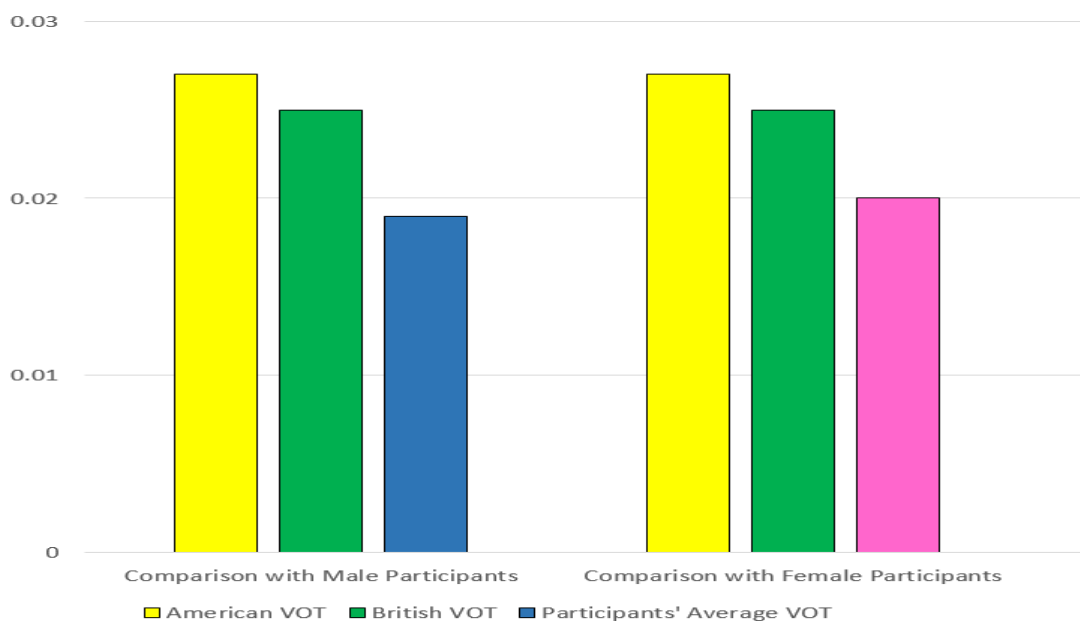


Figure 4.6 Column Chart

Here are the details of how the [t] sound is articulated when it appears at the end of a word like 'cat'. The table 4.6 shows that the Native American's FRBT is 0.080 seconds, and that of British participant is 0.074 second. Whereas the average FRBT of the male and female participants from the division of Faisalabad is only 0.014 and 0.013 seconds respectively. The difference between the FRBT of the native speakers of English, and that of the participants is enormous.

Table 4.6 Final Release Burt Time of [t] in the word "Cat"

Serial #	Male Participants	Male FRBT	Female Participants	Female FBRT
01	M-01	0.015	F-01	0.021
02	M-02	0.017	F-02	0.039
03	M-03	0.000	F-03	0.022
04	M-04	0.022	F-04	0.020
05	M-05	0.017	F-05	0.038
06	M-06	0.014	F-06	0.000
07	M-07	0.026	F-07	0.000
08	M-08	0.023	F-08	0.000
09	M-09	0.000	F-09	0.016
10	M-10	0.008	F-10	0.015
11	M-11	0.009	F-11	0.000
12	M-12	0.017	F-12	0.016
13	M-13	0.000	F-13	0.019
14	M-14	0.000	F-14	0.018
15	M-15	0.026	F-15	0.000
16	M-16	0.013	F-16	0.035
17	M-17	0.010	F-17	0.000
18	M-18	0.015	F-18	0.000
19	M-19	0.026	F-19	0.000
20	M-20	0.020	F-20	0.015
	Male Participants' Average FBRT	0.014	Female Participants' Average FBRT	0.013
21	American FBRT	0.080		
22	British FBRT	0.074		

FRBT Differences of the [t] Sound in the Word 'cat' Among Native American, British, and Pakistani Young Learners

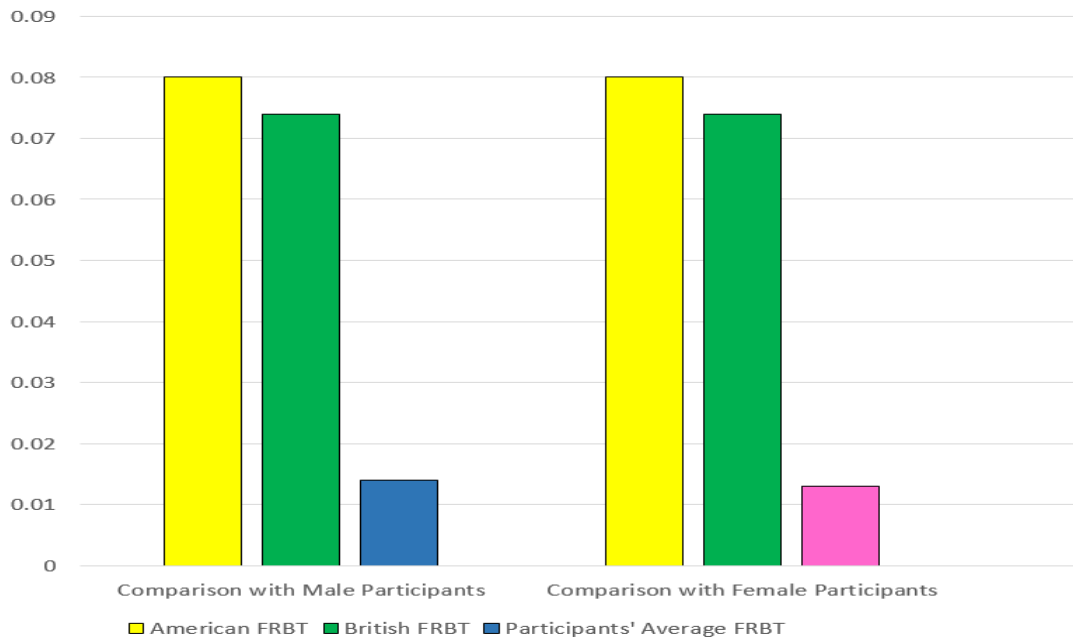


Figure 4.7 Column Chart

The column chart 4.7 includes the blue and pink columns, which represent FRBT of the male and the female participants respectively from Punjab. These blue and pink columns are almost seven times smaller than the FRBT columns of the native speakers of English. Along with the column chart, the sound wave 4.8 clearly shows the [t] sound which is distinctively pronounced at the end of the word 'cat' by the native speakers, but the participants do not pronounce this sound as distinctively as done by the native speakers of English.

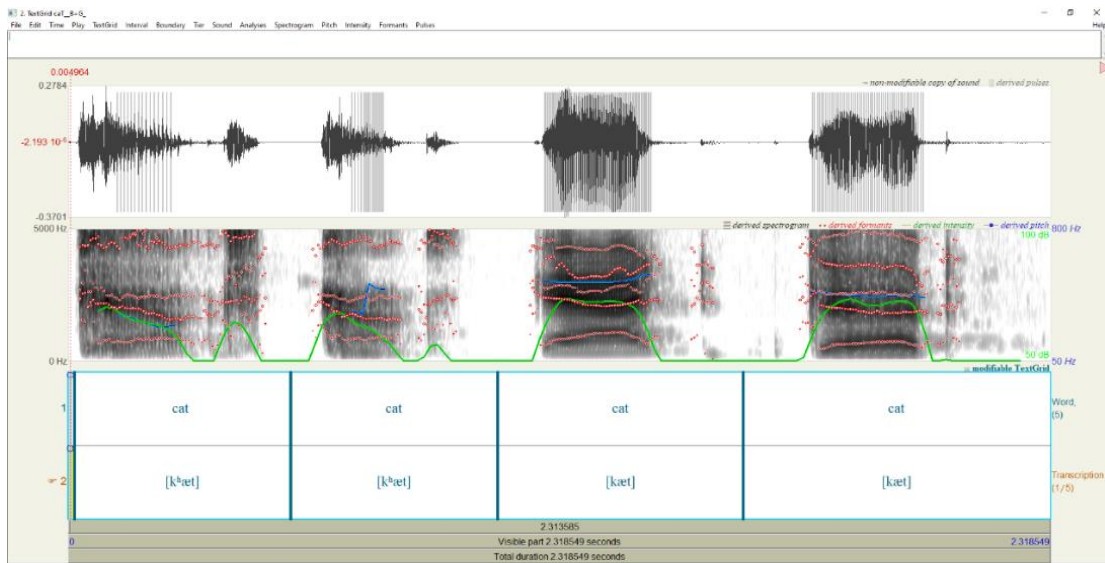


Figure 4.8 Sound Wave & Transcription Chart

The third voiceless plosive [k] is also pronounced differently especially when it appears either at the beginning or at the end of a word. The given below table 4.7 and figure 4.9 column

chart give comprehensive details about the articulation of [k^h] sound at the beginning of a word. The table 4.7 shows that the average VOT of the aspirated [k] sound articulated by the male and the female participants is 0.019 seconds 0.025 seconds respectively. The VOT of the Native American is 0.076 seconds and that of British is 0.071 seconds.

Table 4.7 Voice Onset Time of [k] in the word “cat”

Serial #	Male Participants	Male VOT	Female Participants	Female VOT
01	M-01	0.025	F-01	0.016
02	M-02	0.018	F-02	0.028
03	M-03	0.015	F-03	0.027
04	M-04	0.064	F-04	0.026
05	M-05	0.010	F-05	0.020
06	M-06	0.018	F-06	0.019
07	M-07	0.018	F-07	0.031
08	M-08	0.019	F-08	0.027
09	M-09	0.014	F-09	0.021
10	M-10	0.018	F-10	0.020
11	M-11	0.017	F-11	0.025
12	M-12	0.014	F-12	0.032
13	M-13	0.015	F-13	0.036
14	M-14	0.009	F-14	0.033
15	M-15	0.014	F-15	0.024
16	M-16	0.008	F-16	0.032
17	M-17	0.027	F-17	0.019
18	M-18	0.036	F-18	0.030
19	M-19	0.016	F-19	0.024
20	M-20	0.012	F-20	0.016
	Male Participants' Average VOT	0.019	Female Participants' Average VOT	0.025
21	American VOT	0.076		
22	British VOT	0.071		

VOT Differences of the [k] Sound in the Word ‘cat’ Among Native American, British, and Pakistani Young Learners

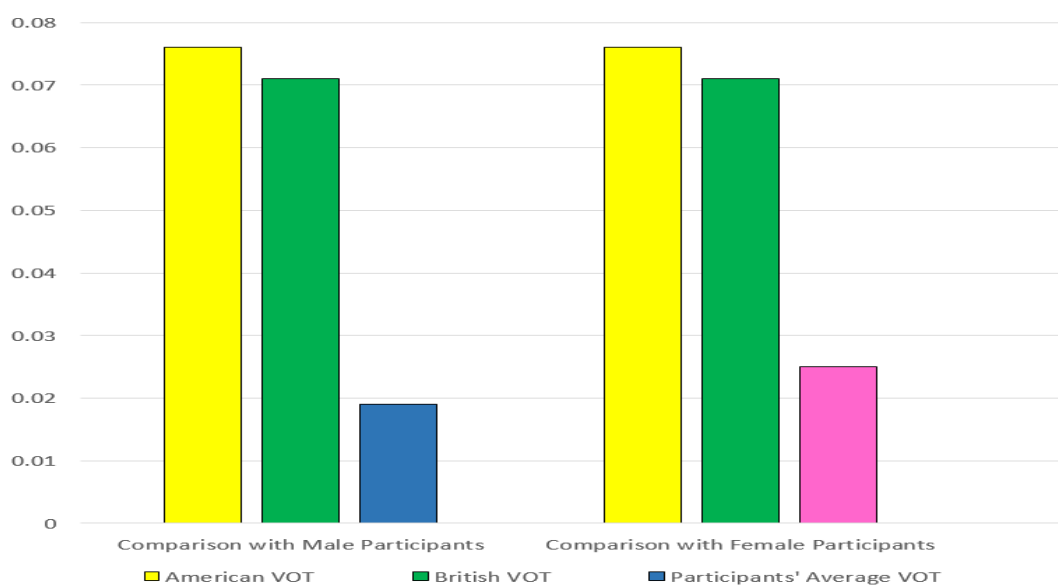


Figure 4.9 Column Chart

The above given column chart 4.9 shows that there is a huge difference between the participants' VOT and the VOT of the native speakers of English which shows how the pronunciation of the participants is different. The performance of the participants is comparatively better in their articulation of [k] sound when it appears in the middle of a word like 'sky'. Here are the details of the [k] sound pronounced in the middle of a word.

Table 4.8 *Voice Onset Time of [k] in the word "sky"*

Serial #	Male Participants	Male VOT	Female Participants	Female VOT
01	M-01	0.013	F-01	0.016
02	M-02	0.015	F-02	0.017
03	M-03	0.020	F-03	0.010
04	M-04	0.021	F-04	0.028
05	M-05	0.020	F-05	0.021
06	M-06	0.018	F-06	0.016
07	M-07	0.017	F-07	0.023
08	M-08	0.021	F-08	0.024
09	M-09	0.017	F-09	0.016
10	M-10	0.018	F-10	0.016
11	M-11	0.013	F-11	0.021
12	M-12	0.015	F-12	0.025
13	M-13	0.022	F-13	0.025
14	M-14	0.018	F-14	0.022
15	M-15	0.023	F-15	0.018
16	M-16	0.021	F-16	0.024
17	M-17	0.019	F-17	0.024
18	M-18	0.016	F-18	0.019
19	M-19	0.014	F-19	0.016
20	M-20	0.023	F-20	0.021
	Male Participants' Average VOT	0.018	Female Participants' Average VOT	0.020
21	American VOT	0.033		
22	British VOT	0.030		

VOT Differences of the [k] Sound in the Word 'sky' Among Native American, British, and Pakistani Young Learners

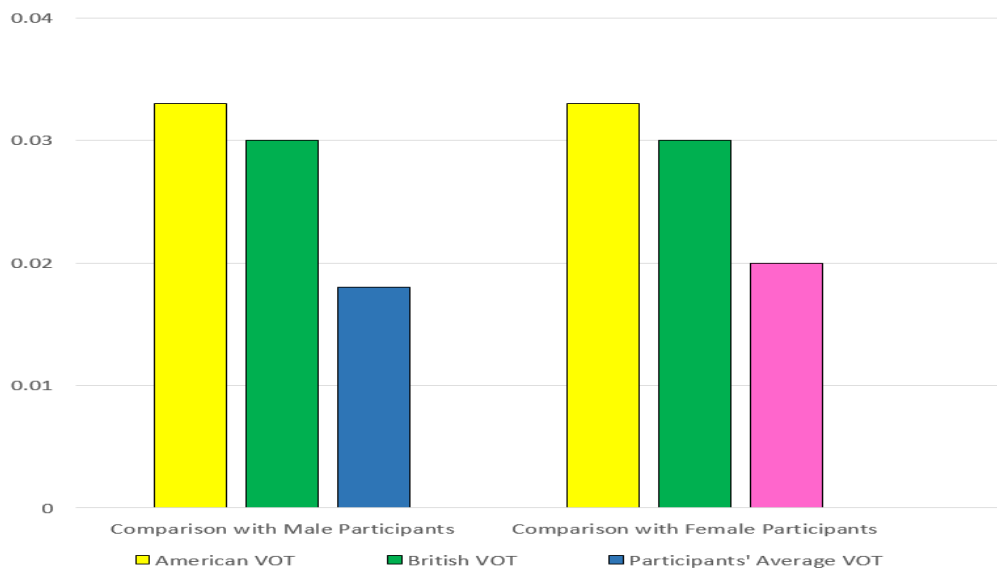


Figure 4.10 *Column Chart*

The above-given table 4.8 and the column chart 4.10 show that the VOT of the Native American and British English speaker is 0.033 seconds and 0.030 seconds respectively.

Whereas the average VOT of the male participants is 0.018 seconds and that of the female participants is 0.020 seconds where the participants comparatively performed better.

The difference between FBRTs of the participants and that of native speakers is even bigger when [k] sound appears at the end of a word like ‘cake’.

Table 4.9 Final Release Burst Time of [k] in the word “Cake”

Serial #	Male Participants	Male FRBT	Female Participants	Female FRBT
01	M-01	0.015	F-01	0.035
02	M-02	0.021	F-02	0.057
03	M-03	0.012	F-03	0.060
04	M-04	0.028	F-04	0.072
05	M-05	0.026	F-05	0.023
06	M-06	0.019	F-06	0.000
07	M-07	0.008	F-07	0.000
08	M-08	0.018	F-08	0.000
09	M-09	0.018	F-09	0.037
10	M-10	0.017	F-10	0.028
11	M-11	0.020	F-11	0.047
12	M-12	0.013	F-12	0.071
13	M-13	0.012	F-13	0.000
14	M-14	0.020	F-14	0.000
15	M-15	0.012	F-15	0.000
16	M-16	0.000	F-16	0.000
17	M-17	0.016	F-17	0.000
18	M-18	0.014	F-18	0.000
19	M-19	0.013	F-19	0.039
20	M-20	0.000	F-20	0.029
	Participants' Average FRBT	0.015		0.024
21	American FRBT	0.102		
22	British FRBT	0.103		

FRBT Differences of the [k] Sound in the Word ‘cake’ Among Native American, British, and Pakistani Young Learners

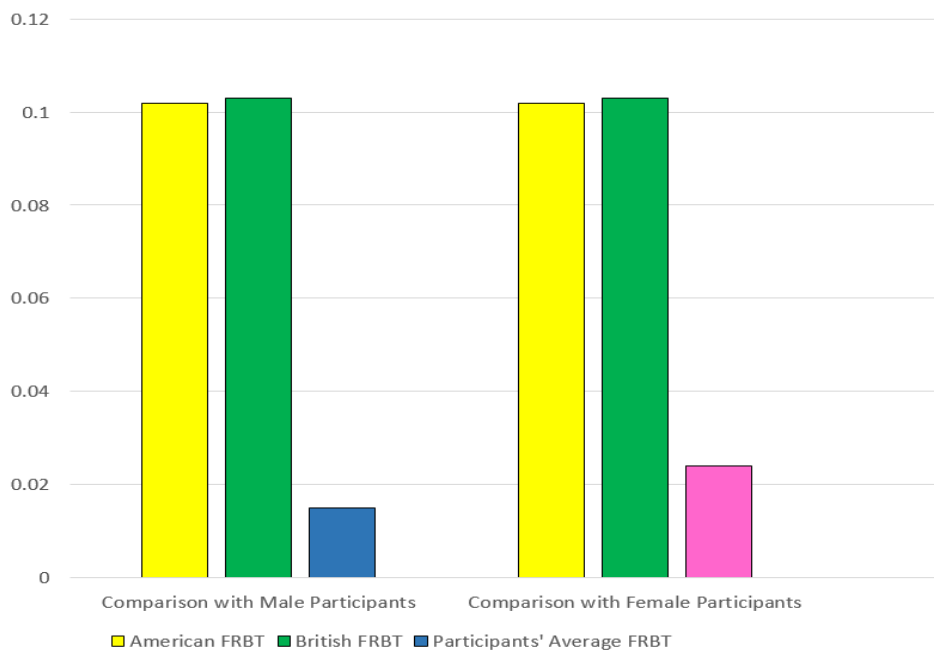


Figure 4.11 Column Chart

The table 4.9 and the Column Chart 4.11 show that the FRBT of the Native American and British English speakers is 0.102 seconds and 0.103 seconds respectively. On the other hand, the average FRBT of the [k] sound articulated by the male participants is only 0.015 seconds, and that of the female participants is 0.024 seconds. The sound wave 4.12 shows a little puff of air in the form of a mini wave at the end of the main sound wave as shown in the picture. This little burst spike shows how the [k] sound is aspirated by the native speakers when it appears at the end of a word like ‘cake’. But the participants from Punjab have a very weaker puff of air.

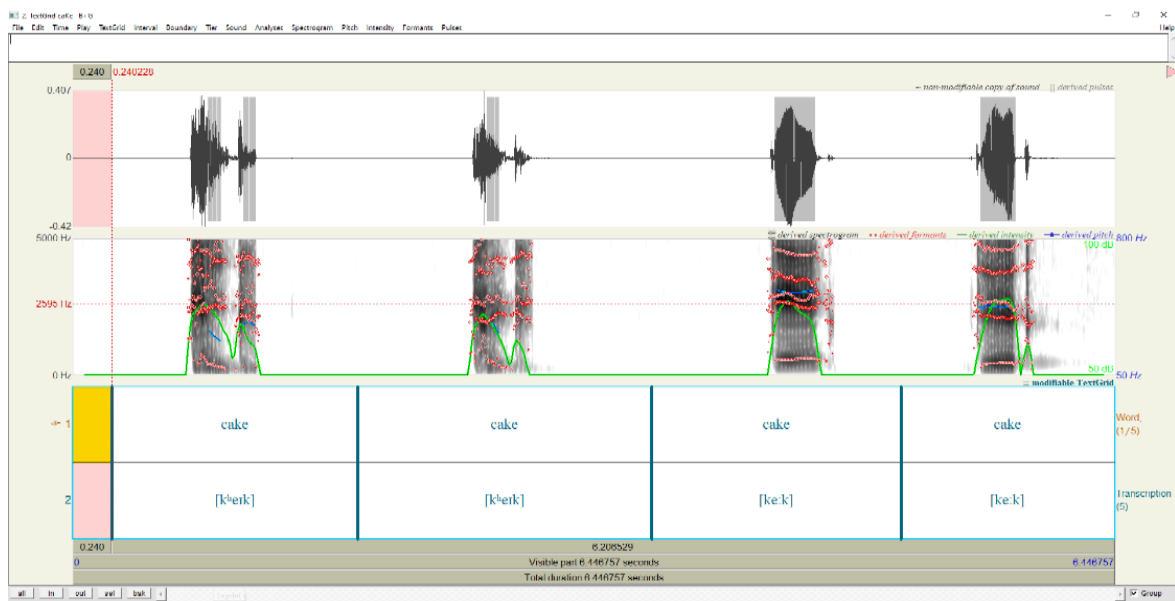


Figure 4.12 Sound Wave & Transcription Chart

5. Discussion and Conclusion

The findings of this study demonstrate that young learners of English from Punjab exhibit deviations from Standard English pronunciation. The guiding research question for this study is: In what ways do specific English consonant sounds, shaped by Punjabi phonological influence, affect the overall pronunciation of Punjabi youth? The analysis reveals that voiceless plosives are markedly influenced by certain Punjabi phonemes. It alters the phonetic realization of English and affects the pronunciation of Punjabi learners of English as a second language. The Voice Onset Times (VOTs) and Final Release Burst Times (FRBTs) of voiceless plosives—[p], [t], and [k]—were observed to be significantly shorter than those produced by native speakers of English. This suggests that Punjabi learners either fail to produce the requisite aspirated release or articulate only a considerably weaker puff of air, even in word-initial or stressed syllable positions where aspiration is phonologically salient.

The earlier studies have acknowledged the effect of Punjabi phonology on English plosive production. But they have largely overlooked the systematic measurement of VOTs and FRBTs. They have not substantiated their claims with empirical data in the form of spectrograms, tabular representations, column charts and phonetic transcriptions. In this study, the female participants demonstrated comparatively greater accuracy than their male counterparts in the articulation of voiceless plosives. However, both groups displayed a substantial divergence to a greater extent from native English norms.

Overall, the results affirm that the Punjabi learners of English articulate voiceless plosives in ways that deviate markedly from Standard English pronunciation. The present investigation is restricted to the analysis of consonants in isolated lexical items but it establishes a critical foundation for subsequent research. Future studies should extend this analysis to connected speech in order to examine whether these deviations persist or undergo modification in phrasal and sentential contexts. Moreover, subsequent inquiries should incorporate supra-segmental features like intonation, rhythm, and stress etc. which were beyond the scope of this research. In sum, the objectives of the study regarding voiceless plosives have been comprehensively achieved, which shows that the research has successfully fulfilled its aims.

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