

## An Acoustic Analysis of Diphthongs in Pakistani and British English

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### Abstract

*This study investigates the acoustic differences in closing diphthongs between Pakistani English and Standard British Pronunciation. Both quantitative and qualitative research design were employed, and speech samples were collected from 20 participants (20 Pakistani English speakers including female and male). Acoustic analysis was conducted using Praat speech analyzer software. To analyze the selected sixteen words with closing diphthongs in different linguistic context, this study examined the variation of closing diphthongs in Pakistani English (a non-native English variety) by applying the Input Hypothesis (Krashen, 1982) with a focus on the 'i' component.. The results show significant differences in the acoustic parameters of closing diphthongs between Pakistani English pronunciation and British pronunciation. Specifically, Pakistani English speakers produced diphthongs with less inclination towards [əʊ] sounds and replace closing diphthong sounds with the short vowel sound [o] and the diphthong [aʊ] is pronounced as [ao] and [o].*

**Keywords:** *acoustic, diphthongs, linguistic context, Pakistani English*

### 1. Introduction

English, a global language with diverse accents and dialects, has become a lingua franca for international communication. The acoustic characteristics of diphthongs, a fundamental component of speech sounds, play a significant role in speech intelligibility and language teaching. Diphthongs are an important component of speech sounds and play an important role in shaping the phonetic identity of language. A sound made by combining two vowels is called diphthong. Closing Diphthongs have the characteristics that all of them end with a glide towards a closer vowel. This is because the second part of the diphthong is weak than the other. Mostly they do not reach a position that is called close. The key aspect is that a smooth transition occurs from relatively more open vowel position to a relatively closer vowel position, characterized by a continuous glide motion.

Two diphthongs, əʊ and aʊ, exhibit a gliding motion towards the close back rounded vowel ʊ, accompanied by a concurrent lip rounding movement. However, this lip movement is relatively subtle due to the weakness of the second part of the diphthong. The diphthong əʊ (found in words like 'load', 'home', and 'most') begins with a starting position identical to the schwa vowel ə (as in the first syllable of 'about'), with slightly rounded lips anticipating the glide towards ʊ. In contrast, the diphthong aʊ (found in words like 'loud', 'gown', and 'house') starts with an open vowel similar to aɪ, which requires a significant tongue movement to reach the ʊ position. However, the tongue often falls short of this target, resulting in only slight lip rounding, as the movement towards ʊ is not fully realized. This is because the open quality of the starting vowel aɪ makes the transition to the close back rounded vowel ʊ a more substantial movement, which is not always fully achieved. Pakistani English, with its unique linguistic and cultural context, has emerged as a distinct variety of English, yet its acoustic features remain understudied.

This research aims to investigate the acoustic differences in diphthongs between Pakistani English and British Pronunciation, two dialects with distinct linguistic and cultural backgrounds. Specifically, this

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study focuses on the ending diphthong sounds əʊ (as in "go") and aʊ (as in "how"), which are crucial for distinguishing between words in English. While existing research has explored diphthongs variation in Pakistani English, a comparative analysis of Pakistani English and British Pronunciation is lacking. This study addresses this gap by examining the formant frequencies, formant transitions, and other acoustic parameters of the əʊ and aʊ diphthongs in both accents. This study aims to investigate the production of closing diphthongs in Pakistani English, with a specific focus on the role of linguistic context in shaping their acoustic properties. Drawing on Krashen's Input Hypothesis (Krashen, 1982), which posits that comprehensible input is the primary driving force behind language acquisition and development, this research explores how the input speakers receive influences their production of closing diphthongs. According to the Input Hypothesis, learners progress along the language acquisition continuum as they receive comprehensible input that is slightly beyond their current level of proficiency. In the context of this study, we examine how the linguistic context in which closing diphthongs appear affects their production, shedding light on the complex interplay between input, linguistic context, and phonetic production. By examining the effects of linguistic context on diphthong production, this research seeks to contribute to our understanding of phonetic variation in Pakistani English and shed light on the dynamic nature of language variation and change. Furthermore, this study's findings will have implications for language teaching, learning, and communication, highlighting the importance of considering linguistic context and comprehensible input in language instruction and communication strategies (White, 1987).

Using a mixed methods approach, combining qualitative and quantitative analyses, this study will provide a comprehensive understanding of closing diphthong production in Pakistani English. The results of this study will not only enhance our knowledge of Pakistani English phonetics but also contribute to the broader field of linguistics, shedding light on the complex interplay between linguistic context, input, and phonetic production. For the analysis of diphthongs in Pakistani English, this research has collected speech samples from undergraduate students of the University of Management and Technology (UMT), Sialkot, Pakistan. This population was chosen to represent the urban, educated variety of Pakistani English, which is widely used in academic, professional, and social contexts. By comparing the acoustic features of the əʊ and aʊ diphthongs in Pakistani English and British Pronunciation, this study seeks to answer the following research questions: 1. How do Pakistani English speakers pronounce the closing diphthongs [əʊ] and [aʊ] in initial, medial, and final positions? 2. What are the acoustic properties (frequency, intensity, duration) of the diphthongs [əʊ] and [aʊ] in Pakistani English, and how do they differ from those in Standard British English?

## 2. Research Objectives

The following research enquired will be enquired in the present study:

- i. To compare the acoustic properties of the diphthong əʊ and aʊ in Pakistani English and British English, analyzing formant frequencies and intensity.
- ii. To examine the role of comprehensible input in shaping the phonological development of Pakistani English speakers, in accordance with Krashen's Input Hypothesis.
- iii. To identify the distinct phonological features of Pakistani English, differentiating it from other varieties of English.

## 3. Literature Review

The study of diphthongs in linguistics has been a topic of interest for many researchers. Diphthongs are a crucial aspect of speech sounds, and their acoustic characteristics play a significant role in speech intelligibility and language teaching. Previous studies have investigated the acoustic properties of

diphthongs in various languages, including English. For example, (Kent & Read, 1992) examined the formant frequencies and formant transitions of diphthongs in American English, while (Li & Ge, 2020) investigated the acoustic characteristics of diphthongs in Chinese English. Research has also focused on the differences in diphthong production between native and non-native speakers of English. (Jenkins, 2000) found that non-native speakers tend to produce diphthongs with a more monophthongal quality, while (Hansen, Bokshi, & Khorram, 2020) observed that native speakers produce diphthongs with a more rapid formant transition.

Studies have also explored the role of diphthongs in language teaching and learning. (Morley, 1996) emphasized the importance of teaching diphthongs in English language instruction, while (Nunan, 1999) highlighted the challenges faced by non-native speakers in producing accurate diphthongs. However, there is a gap in the literature regarding the comparison of diphthongs in Pakistani English and British Pronunciation. This study aims to address this gap by investigating the acoustic differences in closing diphthongs between Pakistani English and Standard BBC Pronunciation. Overall, the literature suggests that diphthongs play a significant role in speech sounds and language teaching, and that there are differences in diphthong production between native and non-native speakers of English. This study contributes to the existing literature by providing new insights into the acoustic characteristics of diphthongs in Pakistani English and Standard British Pronunciation. Diphthongs are speech sounds that combine two adjacent vowel sounds pronounced in a single syllable, and their pronunciation can vary significantly across different accents. Here are some examples of variations in diphthong pronunciation within different accents: [aʊ] (as in "how" or "now"): In General, American English, [aʊ] is pronounced with a relatively open and back quality, almost like [oʊ] (Gottfried, Miller, & Meyer, 1993). In Received Pronunciation (RP) and other Standard English accents, [aʊ] is pronounced with a more closed and central quality, like [aɪ]. In Scottish English, [aʊ] is often pronounced with a more open and rounded quality, like [ɔʊ]. [əʊ] as in "go" or "show" (Grant, 1913). In General, American English, [əʊ] is pronounced with a relatively open and back quality, almost like [ɔʊ]. In RP and other Standard English accents, [əʊ] is pronounced with a more closed and central quality, like [əɪ]. In Australian English, [əʊ] is often pronounced with a more open and rounded quality, like [oʊ]. [aɪ] (As in "buy" or "fly") (Cox, 1999). In RP and other Standard English accents, [aɪ] is pronounced with a more closed and central quality, like [aɪ]. In Irish English, [aɪ] is often pronounced with a more open and rounded quality, like [ɔɪ]. [ɔɪ] (As in "boy" or "coin"): In General, American English, [ɔɪ] is pronounced with a relatively open and back quality, almost like [ɔʊɪ]. In RP and other Standard English accents, [ɔɪ] is pronounced with a more closed and central quality, like [ɔɪ]. In Scottish English, [ɔɪ] is often pronounced with a more open and rounded quality, like [oɪ] (Wolfram & Schilling, 2015).

These variations in diphthong pronunciation can affect the naturalness of speech, and are an important consideration in language teaching, speech therapy, and accent coaching. Much work is available in the study of English diphthongs, but it is noted that there is urgency to explore the same in the other dialects and varieties of English. Thus, studying the quality of diphthongs in Pakistani English may fill some research gap in academia.

#### 4. Theoretical Framework

Input Hypothesis of Stephen Krashen theory (1982) is used as a theoretical framework to understand how comprehensible input influences language acquisition and pronunciation. Input Hypothesis of Stephen Krashen, developed in the 1970s and 1980s, proposes that language learners progress when they receive comprehensible input slightly beyond their current level. This hypothesis emphasizes the

crucial role of comprehensible input in language acquisition. The Natural Order Hypothesis complements this idea, suggesting that language rules are acquired in a linear sequence (1, 2, 3...).

In this context, 'i' represents the last learned rule or language form, and 'i+1' is the next structure to be acquired. Importantly, not just any input is sufficient; it must be comprehensible to facilitate language learning. Input Hypothesis places more emphasis on the acquisition of the second language. This theory suggests that comprehensible input is the crucial and necessary ingredient for the acquisition of language. It emphasizes the importance of understanding spoken and written language input as the only mechanism that results in the increase of underlying linguistic competence. Additionally, it highlights that language output is not seen as having any effect on the ability of learners. This study will explore the impact of input on learners' acquisition of closing diphthongs by focusing on the 'i' component of the Input Hypothesis (Krashen, 1982). By analyzing the input features, such as contextualization, and clarity, this study will investigate how the input itself (i) contributes to learners' development of closing diphthongs, without considering the 'i+1' aspect of the hypothesis.

**Sampling:** Participants were recruited through purposive sampling, which allows for an in-depth analysis of the input features and their impact on learners' production, which is essential for understanding the 'i' component of the Input Hypothesis. By using purposive sampling, researchers carefully selected materials that reflect the natural input learners receive, allowing the research to examine how the input (i) influences learners' acquisition of closing diphthongs in the Pakistani accent. The sample was consisted of 20 undergraduate students of English department from university of Management and Technology Sialkot.

## 5. Methodology

This study employed a mixed-methods research design, combining both quantitative and qualitative data collection and analysis methods.

The study used a comparative design, comparing the pronunciation of closing diphthongs [əʊ] and [aʊ] in Standard British and Pakistani English. The study also employed a descriptive design, describing the acoustic properties of the diphthongs in both varieties of English.

Quantitative data was collected through audio recordings of 20 undergraduate students from the University of Management and Technology, Sialkot, listening to 16 selected words containing the target diphthongs in standard British accent. Qualitative data was collected through a qualitative analysis of the words, examining the initial, medial, and final positions of the diphthongs in each word. The following figures present the results of the acoustic analysis of both Standard British and Pakistani English, focusing on the comparison of formants (F1 and F2) and intensity. Using Praat software, we annotated and analyzed the words containing

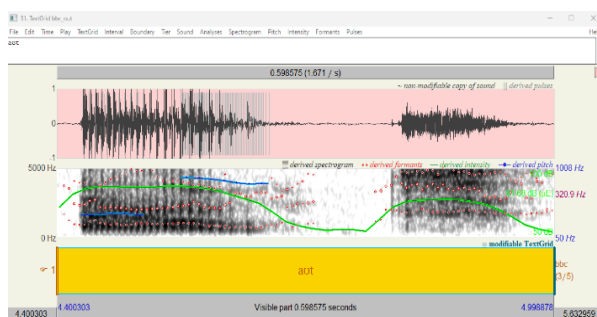


Figure 1. British (out)

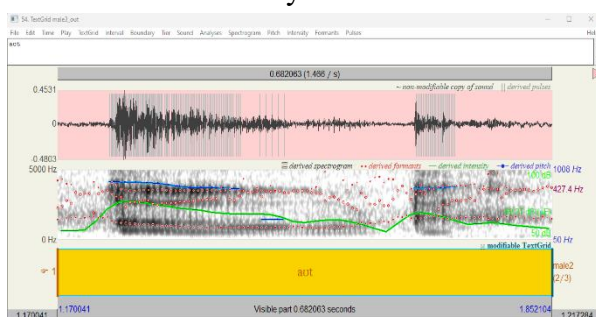


Figure 2. Pakistani (out)

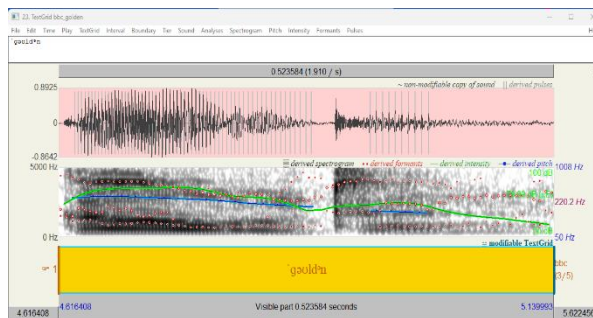


Figure 3. British (Golden)

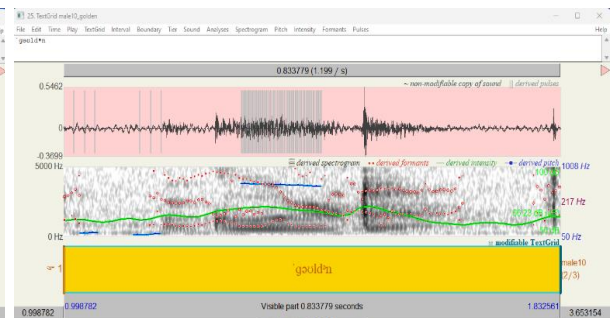


Figure 4. Pakistan (Golden)

closing diphthongs [əʊ] and [aʊ] in both varieties of English, enabling a detailed comparison of their acoustic properties.

Quantitative data was analyzed using Praat software to measure the acoustic properties of the diphthongs, including frequency, intensity, and duration. Qualitative data was analyzed using thematic analysis, identifying patterns and themes related to the pronunciation of the diphthongs in different positions.

## 6. Descriptive Data Analysis

This study applies Krashen theory's Input Hypothesis (1982) to investigate how comprehensible input influences language acquisition, with a focus on the analysis of words in initial, medial, and final positions within the Pakistani English accent (Bahrani & Nekouezadeh, 2014). By providing learners with abundant and gradual exposure to diphthong in different positions, this study examines how the input hypothesis can account for the development of a new variation of diphthongs within the phonological patterns.

In the initial position, words starting with the target sound combination (e.g., [aʊ] in "out") were analyzed to understand how the initial sound affects the pronunciation of words. In the medial position, words containing the target sound combination (e.g., [aʊ] in "house") were examined to investigate how the medial sound influences the pronunciation of word in Pakistani English accent. Finally, in the final position, words ending with the target sound combination (e.g., [aʊ] in "how") were analyzed to understand how the final sound affects the pronunciation of the word. This study applies Krashen's Input Hypothesis (1982) to investigate how comprehensible input influences language acquisition, with a focus on the analysis of words in initial, medial, and final positions within the Pakistani English accent. By providing learners with abundant and gradual exposure to diphthongs in different positions, this study examines how the input hypothesis can account for the development of a new variation of diphthongs within the phonological patterns. In particular, this study focuses on the closing diphthong [əʊ], which is a combination of two vowel sounds pronounced in a single syllable, with the sound gradually changing from [ə] to [ʊ]. The closing diphthong [əʊ] is a common feature of many English words, such as "go" [gəʊ], "show" [ʃəʊ], and "know" [nəʊ]. This study examined the variation of closing diphthongs in Pakistani accent by applying the Input Hypothesis (Krashen, 1982) with a focus on the 'i' component. We categorized words containing closing diphthongs into three positions: initial, medial, and final. By analyzing the input features in each position, we evaluated how the input (i) contributes to the variation of closing diphthongs.

The study analyzes words in three positions:

Initial position: Words starting with the target sound combination (e.g., [əʊ] in "out") are examined to understand how the initial sound affects the pronunciation of words.

Medial position: Words containing the target sound combination (e.g., [əʊ] in "house") are examined to investigate how the medial sound influences the pronunciation of words in the Pakistani English accent.

Final position: Words ending with the target sound combination (e.g., [əʊ] in "how") are analyzed to understand how the final sound affects the pronunciation of the word.

By examining the pronunciation of words in these different positions, this study aims to shed light on how the input hypothesis can explain the development of a new variation of diphthongs, in the phonological patterns of Pakistani English.

Recordings were analyzed using Praat software (version 6.1). Overall formant frequencies of (F1, and F2), intensity and pitch were measured.

In this section, the textual examples are presented containing the translation strategy of amplification with page number of each extract from translated book is also given for future referencing.

Diphthong [aʊ]		Diphthong [əʊ]	
Words		Words	
1	Allow	Almost	
2	Sow	Home	
3	Vow	Golden	
4	Clown	Show	
5	Cloud	Load	
6	Fowl	Owe	
7	Out	Own	
8	Owl	Over	

### 6.1. Phonological explanation of the Closing diphthong [aʊ]

The closing diphthong "aʊ" is a phonological sound combination that consists of two vowel sounds pronounced in a single syllable. Here's a breakdown of its phonological characteristics:

Starting point: The sound begins with an open front unrounded vowel sound [a], similar to the "a" in "father" or "car".

Ending point: The sound then glides towards a close-mid back rounded vowel sound [ʊ], similar to the "u" in "put" or "boot".

Transition: The transition between the two sounds is smooth and continuous, with no clear break or pause, making it a diphthong.

Closing: The term "closing" refers to the fact that the sound ends with a closer, more rounded vowel sound [ʊ], which is produced by bringing the tongue closer to the roof of the mouth.

Phonologically, the closing diphthong "aʊ" can be represented as a combination of two vowel sounds: [a] + [ʊ] → [aʊ]. This diphthong is a common feature of many English words, such as:

"Out" [aʊt] "house" [haʊs]"how" [haʊ]"now" [naʊ] "proud" [praʊd]

In these words, the "aʊ" diphthong is a single phonological unit, representing a smooth transition between the two vowel sounds.

### 6.1.1 Phonological analysis of words with the closing diphthong “aʊ” in (initial-position)

Two words starting with aʊ diphthong were included in the list of the words selected for research purposes, which start with the aʊ diphthong. One is “out” and the other one is “owl”.

Words	Standard British pronunciation	Pakistani English pronunciation
Out	/aʊt/	/aʊt/
Owl	/aʊl/	/aʊl/

In Pakistani English accent the word [out] is pronounced with the combination of open-front unrounded vowel [a] and close-mid back protruded vowel [o]. The diphthong variation formed in Pakistani English by combining two short vowels. In British pronunciation, diphthong formed with the combination of different short vowels. In British accent, the word “out” is pronounced with the combination of open-front unrounded vowel [a] and near-close back protruded vowel [ʊ]. These results indicate that the input (i) has a significant impact on the variation of closing diphthongs in Pakistani accent, with position-specific, it also shows that regional accent has influenced diphthong production.

Diphthong /aʊ /							
Word	Pronunciation						
	Formant Hz			Pitch Hz		Intensity dB	
		British	Pakistani	British	Pakistani	British	Pakistani
Out	F1	1347	1022	320	317	81	72
	F2	2968	2596				
Owl	F1	888	1017	126	317	81	71
	F2	2594	2617				

Table 1.1: Acoustic analysis of standard British pronunciation in comparison with Pakistani

The table above presents a comparison of the mean F2 formant values and intensity levels for the words "out" and "owl" between Pakistani and British speakers. Notably, the mean F2 value for the word "out" is 2596 Hz for Pakistani speakers, which is lower than the 2968 Hz observed in British speakers. In contrast, the mean F2 value for the word "owl" is slightly higher for Pakistani speakers (2617 Hz) compared to British speakers (2594 Hz) when the [aʊ] diphthong is in the initial position. Additionally, the intensity levels for both words are higher in British speakers (81 dB and 81 dB, respectively) compared to Pakistani speakers (72 dB and 71 dB, respectively).

### 6.1.2 Phonological analysis of words with the closing diphthong “aʊ” in (medial-position)

Three words were selected in which the diphthong aʊ was taking the medial-position of the words. Clown, cloud and fowl are the words which are pronounced with [aʊ] diphthong in standard British accent.

Words	Standard British pronunciation	Pakistani English pronunciation
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Clown	/klaʊn/	/klaʊn/
Cloud	/klaʊd/	/klaʊd/
Fowl	/faʊl/	/faʊl/

In the medial-position the closing diphthong [aʊ] is pronounced as [aʊ] in Pakistani English. The diphthong variation within Pakistani accent is formed by combining two short vowels. These words are pronounced with the combination of open-front unrounded vowel [a] and close-mid back protruded vowel [o]. These results indicate that the input (i) has a significant impact on the variation of closing diphthongs within Pakistani accent.

Diphthong /aʊ /							
Word	Pronunciation						
	Formant Hz			Pitch Hz		Intensity dB	
		British	Pakistani	British	Pakistan i	British	Pakistani
Clown	F1	1257	1116	196	367	80	72
	F2	2559	2519				
Cloud	F1	1436	1141	228	357	79	72
	F2	3114	2567				
Fowl	F1	1158	1015	199	326	83	72
	F2	2724	2620				

Table 1.2: Acoustic analysis of standard British pronunciation in comparison with Pakistani English

The table above clearly shows that British speakers have higher F2 formant values (2559 Hz, 3114 Hz, and 2724 Hz) for the words Clown, Cloud, and Fowl, respectively, compared to Pakistani speakers (2519 Hz, 2567 Hz, and 2620 Hz). Additionally, the intensity levels for British speakers (80 dB, 79 dB, and 83 dB) are higher than those for Pakistani speakers (72 dB, 72 dB, and 72 dB) for all three words, when the [aʊ] diphthong is in the medial position.

### 6.1.3 Phonological analysis of words with the closing diphthong “aʊ” in (final-position)

The list comprised three words with the [aʊ] diphthong in the final position. The list consists of the following words: allow, sow, and vow.

Words	Standard British pronunciation	Pakistani English pronunciation
Allow	/əˈlaʊ/	/əlaʊ/, /əlo/
Sow	/saʊ/	/sao/, /so/
Vow	/vaʊ/	/vao/, /vo/

These words are typically pronounced with the diphthong [aʊ], but in Pakistani English, this sound is replaced with [o]. This variation is formed by combining two short vowels: the open-front rounded vowel [a] and the close-mid back protruded vowel [o]. The resulting diphthong [aʊ] is a distinct characteristic of the Pakistani English accent in these words. Interestingly, Pakistani speakers also pronounce the above-mentioned words with another alternative pronunciation. This variation in the Pakistani accent is attributed to the substitution of the [aʊ] diphthong with the short vowel [o], resulting in a distinct pronunciation. These results indicate that the input (i) has a significant impact on the variation of closing diphthongs in Pakistani accent.



Diphthong /əʊ /							
Word	Pronunciation						
		Formant Hz		Pitch Hz		Intensity dB	
		British	Pakistani	British	Pakistan	British	Pakistani
ALLOW	F1	1030	1004	117	351	78	71
	F2	2705	2518				
SOW	F1	1353	1147	328	316	79	71
	F2	3225	2669				
VOW	F1	1178	921	186	316	80	71
	F2	3131	2553				

Table 1.3 Acoustic analysis of standard British pronunciation in comparison with Pakistani English

The table above reveals a consistent pattern in the comparison of mean formant values for the words Allow, Sow, and Vow. British speakers exhibit higher F2 values (2705 Hz, 3225 Hz, and 3131 Hz) compared to Pakistani speakers (2518 Hz, 2669 Hz, and 2553 Hz). Additionally, intensity levels of British pronunciation (78 dB, 79 dB, and 80 dB) for these words are higher than those of Pakistani speakers (71 dB, 71 dB, and 71 dB) when the [əʊ] diphthong is in the final position.

## 6.2. Phonological explanation of the closing diphthong [əʊ]

The closing diphthong "əʊ" is a phonological sound combination that consists of two vowel sounds pronounced in a single syllable. Here's a breakdown of its phonological characteristics:

**Starting point:** The sound begins with a mid-central vowel sound [ə], which is a neutral, relaxed vowel sound, similar to the [u:] in "the" or "a" in "about".

**Ending point:** The sound then glides towards a close-mid back rounded vowel sound [ʊ], similar to the [u:] in "put" or "boot".

**Transition:** The transition between the two sounds is smooth and continuous, with no clear break or pause, making it a diphthong.

**Closing:** The term "closing" refers to the fact that the sound ends with a closer, more rounded vowel sound [ʊ], which is produced by bringing the tongue closer to the roof of the mouth.

Phonologically, the closing diphthong "əʊ" can be represented as a combination of two vowel sounds: [ə] + [ʊ] → [əʊ]. This diphthong is a common feature of many English words, such as "go", "show", "know", and "grow". To examine the role of input in learners' acquisition of closing diphthongs, this study will apply the Input Hypothesis (Krashen, 1982) with a focus on the 'i' component. Specifically, this study will investigate the characteristics of the input that learners receive, without considering the 'i+1' aspect of the hypothesis. By examining the quality and characteristics of the input (i), this study aims to understand how it influences learners' production of closing diphthongs.

### 6.2.1 Phonological analysis of words with the closing diphthong “əʊ” in (initial-position)

The list of selected words included two examples with the initial [əʊ] diphthong: 'own' and 'over'. These words were chosen to represent the [əʊ] sound in the initial position, allowing for analysis of how this sound affects the pronunciation of the words. According to Krashen's Input Hypothesis, learners can acquire the phonological patterns of the words through comprehensible input, such as listening to or reading texts. As learners are exposed to these words in context, they came up with a variation in their pronunciation of the diphthong [əʊ] at initial position.

Here is a phonological analysis of each word:

Words	Standard British pronunciation	Pakistani English pronunciation
Own	/əʊn/	/on/
Over	/əʊvə/	/ovər/

In the Pakistani English accent, words like 'over' and 'own' are pronounced with a short, close-mid back rounded vowel [o] instead of the diphthong [əʊ]. This variation is a characteristic feature of the accent, where the short [o] vowel has a distinct quality, being more closed and rounded than the diphthong [əʊ].

Table 1.4: Acoustic analysis of standard British pronunciation in comparison with Pakistani English

Diphthong /əʊ /							
Word	Pronunciation						
	Formant Hz			Pitch Hz		Intensity dB	
		British	Pakistani	British	Pakistani	British	Pakistani
OVER	F1	1082	1020	382	355	77	71
	F2	2634	2790				
OWN	F1	1280	1019	114	367	78	72
	F2	2934	2807				

The table above highlights the differences in formant values between British and Pakistani speakers. Notably, the mean F2 value for the word "Over" is higher in Pakistani speakers (2790 Hz) compared to standard British pronunciation (2634 Hz). In contrast, the word "Own" has a lower F2 value (2807 Hz) in Pakistani speakers compared to British speakers (2934 Hz). Additionally, British speakers' intensity levels (77 dB and 78 dB) for both words are higher than those of Pakistani speakers (71 dB and 72 dB, respectively) when the closing diphthong "əʊ" is in the initial position.

### 6.2.2 Phonological Analysis of Words with the Closing Diphthong “əʊ” in the (medial-position)

According to Krashen's Input Hypothesis, learners acquire language through comprehensible input. To analyze the words "almost", "home", "load", and "golden" phonologically, we can focus on the medial position of the diphthong [əʊ] in each word. Regional accent, influence diphthong production. These results indicate that the input (i) has a significant impact on the variation of closing diphthongs in Pakistani accent.

Here is a phonological analysis of each word:

Words	Standard British pronunciation	Pakistani English pronunciation
Almost	/ɔ:l məʊst/	/a:lmost/
Home	/həʊm/	/home/
Golden	/gəʊldən/	/goldən/
Load	/ləʊd/	/lod/

These four words are pronounced in Pakistani English differently than the British pronunciation. In Pakistani English, the [əʊ] diphthong in the medial position of words is replaced with a short vowel

[o], which is a distinct phonological feature of Pakistani English. The short vowel [o] is a monophthong, meaning it is a single, pure vowel sound, unlike the diphthong [əʊ] which glides from one vowel sound to another. The short vowel [o] is pronounced with a more open and rounded mouth position, similar to the "o" in "hot" or "box", but with a shorter duration. This replacement of the diphthong [əʊ] with the short vowel [o] is a characteristic feature of Pakistani English pronunciation, distinguishing it from the British pronunciation of these words.

Diphthong /əʊ /							
Word	Pronunciation						
		Formant Hz		Pitch Hz		Intensity dB	
		British	Pakistani	British	Pakistani	British	Pakistani
Almost	F1	1247	1174	143	275	74	72
	F2	3170	2573				
Home	F1	1422	1016	206	266	76	69
	F2	3158	2567				
Golden	F1	973	1171	220	277	79	68
	F2	2623	2556				
Load	F1	1826	1171	190	317	78	72
	F2	3077	2605				

Table 1.5: Acoustic analysis of standard British pronunciation in comparison with Pakistani English

The table above reveals a consistent pattern of higher F2 formant values in British pronunciation compared to Pakistani speakers for the words "Almost", "Home", "Golden", and "Load". Specifically, the British speakers' F2 values are 3170 Hz, 3158 Hz, 2623 Hz, and 3077 Hz, respectively, which are higher than the corresponding values for Pakistani speakers (2573 Hz, 2567 Hz, 2556 Hz, and 2605 Hz). Additionally, the intensity levels of British speakers (74 dB, 76 dB, 79 dB, and 78 dB) are also higher than those of Pakistani speakers (72 dB, 69 dB, 68 dB, and 72 dB) when the [əʊ] diphthong is in the final position.

### 6.2.3 Phonological Analysis of Words with the Closing Diphthong [əʊ] in (final-position)

Two words, 'owe' and 'show', were selected for analysis, in which the diphthong əʊ appears in the final position. According to Krashen's Input Hypothesis, a phonological analysis of these words will be conducted in a word context, examining how the diphthong əʊ functions in the final position, and how comprehensible input can facilitate language acquisition and pronunciation development.

Words	Standard British pronunciation	Pakistani English pronunciation
Owe	/əʊ/	/o/
Show	/ʃəʊ/	/ʃo/

In Pakistani English, the words 'show' and 'owe' are pronounced with a short vowel [o] instead of the diphthong əʊ in the final position, exemplifying a phonological variation that occurs in word context. According to Krashen's Input Hypothesis, this variation can be attributed to the influence of comprehensible input, where learners are exposed to different pronunciation patterns in their linguistic environment, leading to the development of a distinct phonological feature in Pakistani English, where

the diphthong əʊ is replaced by the short vowel [o] in the final position of words. According to Krashen's Input Hypothesis, learners acquire language through comprehensible input, and this input can shape their phonological awareness and pronunciation patterns. In this case, the variation in Pakistani English can be seen as a result of learners being exposed to different pronunciation patterns in their linguistic environment, leading to the development of a distinct phonological feature. These results indicate that the input (i) has a significant impact on the variation of closing diphthongs in Pakistani accent.

Diphthong /əʊ /							
Word	Pronunciation						
		Formant Hz		Pitch Hz		Intensity dB	
		British	Pakistani	British	Pakistan i	British	Pakistani
SHOW	F1	1342	1421	182	319	83	72
	F2	3113	2670				
OWE	F1	1101	918	113	392	80	71
	F2	2674	2996				

Table 1.6: Acoustic analysis of standard British pronunciation in comparison with Pakistani English

The table above highlights the differences in F2 formant values between Pakistani and British pronunciation. Notably, the mean F2 value for the word "Owe" is higher in Pakistani speakers (2996 Hz) compared to standard British pronunciation (2674 Hz). In contrast, the mean F2 value for the word "Show" is lower in Pakistani speakers (2670 Hz) compared to British pronunciation (3113 Hz) when the [əʊ] diphthong is in the final position. Additionally, British speakers' intensity levels (83 dB and 80 dB) for the words "Owe" and "Show" are higher than those of Pakistani speakers (72 dB and 71 dB, respectively).

## 7. Conclusion

In conclusion, this study has investigated the phonological variation of the closing-diphthongs əʊ and aʊ in Pakistani English, with a focus on its realization in initial, medial and final positions by applying the Input Hypothesis (Krashen, 1982) with a focus on the 'i' component. The analysis revealed that in Pakistani English, the diphthong əʊ is often replaced by the short vowel [o] in initial, medial and final positions, resulting in a distinct phonological feature that differentiates Pakistani English from other varieties of English. The closing diphthong [aʊ] is pronounced as [ao] in initial, medial and final position. The closing diphthong [aʊ] is pronounced with two variation in the final position of words, one is short vowel [o] and other one is variation of diphthong [ao]. The findings of this study support Krashen's theory Input Hypothesis, which posits that comprehensible input plays a crucial role in language acquisition and phonological development. The variation observed in Pakistani English can be attributed to the influence of comprehensible input, where learners are exposed to different pronunciation patterns in their linguistic environment. Furthermore, an acoustic analysis of formants revealed that Pakistani English speakers exhibited lower F2 in pronunciation of some words and higher F2 values in pronunciation of some words, compared to British English pronunciation, indicating a distinct acoustic characteristic of Pakistani English. The acoustic analysis using Praat revealed a notable difference in intensity between Standard British and Pakistani English speakers. Specifically, the results showed that Standard British pronunciation exhibited a significantly higher intensity, with an average of 85db, compared to Pakistani English speakers, who pronounced words with an average

intensity of less than 75db. This suggests that Pakistani English speakers tend to produce words with relatively lower acoustic intensity compared to their Standard British counterpart. The results of this study have implications for language teaching and learning, highlighting the importance of considering phonological variations in language instruction. Additionally, this study contributes to our understanding of the complex and dynamic nature of language, demonstrating how linguistic features can evolve and adapt in response to environmental factors.

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