

# A Descriptive Study of Pashto Diphthongs

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## Abstract

This paper investigates the Pashto diphthongs of the Yousafzai dialect spoken in Khyber Pakhtunkhwa, Pakistan. It is the standard dialect of Pashto, widely spoken in the province. The data were collected from the native speakers in audio recordings to determine whether the dialect allows diphthongs. The fifteen hours of audio recordings covered various topics over 20 days. During the analysis of the audio recordings, it was found that the Yousafzai dialect allows diphthongs based on the lexical items. Then, the identified words were designed into the minimal set of Pashto diphthongs. The twelve native speakers pronounced this set to verify the identified diphthongs further. Subsequently, the diphthongs were verified by Pashto experts (linguists and teachers). Once all the relevant sources confirmed that the Yousafzai dialect of Pashto has five diphthongs /əɪ/, /aɪ/, /ɔɪ/, /əʊ/, /aʊ/, the story of “The North Wind and Sun” was also recorded by the native speakers as supplementary material which also endorsed the study’s analysis of five diphthongs. The findings of distributional patterns show that all diphthongs occur word-initially, medially, and finally. The study further reveals that three diphthongs, /əɪ/, /ɔɪ/ and /aʊ/, occur in mono-syllabic and bi-syllabic words, while two diphthongs, /aɪ/ and /əʊ/ exist in bi-syllabic and tri-syllabic words. It also exhibits that each diphthong glides from low to high positions as /əɪ/, /aɪ/, /ɔɪ/, /əʊ/, /aʊ/. However, languages like English also allow glides from high positions to a low position, such as /ɪə/, /ʊə/, and /eə/ on the vowel trapezium.

**Keywords:** *Pashto, Language, Yousafzai, Dialect, Diphthongs, Trapezium.*

## 1. Introduction

Pashto, classified as an Eastern Iranian language, holds a significant linguistic presence in the geographical expanse encompassing Southern Afghanistan, substantial portions of Baluchistan, and the province of Khyber Pakhtunkhwa. Notably, it is formally integrated into the educational curriculum of Khyber Pakhtunkhwa, where it is taught as a principal subject spanning from primary to secondary levels. The language exhibits a diversified linguistic landscape featuring five major dialects, as outlined by Rahman (2009). For the current research, the Yousafzai dialect has been specifically chosen as the focal point of investigation, representing a deliberate selection from among the diverse Pashto dialectical variations.

Pashto phonology has been the subject of extensive scholarly examination, as evidenced by the works of notable researchers such as Hallberg (1992), Tegey and Robson (1996), and Din and Rahman (2011). These studies have shed light on various aspects of Pashto phonology, with specific attention to distinctive features, as demonstrated by Bell and Saka's investigation (1982) into Reverse Consonant Cluster and Khan's research (2012) on The Syllable Structure of Pashto. However, it is noteworthy that, although valuable, prior investigations have not comprehensively addressed the exploration of Pashto phonemes. The predominant focus of earlier studies has been compiling reference grammars (Tegey & Robson, 1996) or dictionaries (Raverty, 1969) of Pashto, thereby leaving a discernible gap in the thorough exploration of Pashto phonemes. Consequently, the principal objective of the present study is to rectify this scholarly void by undertaking a qualitative exploration of Pashto diphthongs, thereby contributing to a more comprehensive understanding of the language's phonological intricacies. The primary objective of this study is to delineate the number of diphthongs within the Pashto. An oral and written corpus was meticulously constructed to achieve this, with a deliberate focus on lexical words. The research design incorporated the conceptual framework proposed by Trudgill (1987) for systematic data collection. Notably, the data on diphthongs was exclusively collected from conversational exchanges involving individuals falling within the category of NORMS (non-mobile, old, rural, males). Notably, all participants shared a common geographical characteristic, belonging to the Malakand division of the Khyber Pakhtunkhwa province. The selection of words containing diphthongs for analysis was predicated on their frequent usage in the daily vernacular of elder members, ensuring a representative sample reflective of typical linguistic patterns within the designated cultural and demographic context.

As explained by Odden (2005), a diphthong is a sequential articulation involving a glide from one vowel to another. Such vowel sounds, characterized by tongue movement, are formally recognized as diphthongs and are typically denoted by two vocalic symbols. Moreover, they exhibit a temporal proximity to long vowels, as Davenport (2005) and Ladefoged (2006) noted. An exemplification of this linguistic phenomenon is evident in the English language, which features eight diphthongs, including /ɪə, eə, ʊə, eɪ, aɪ, ɔɪ, əʊ, aʊ/. Notably, the structural composition of a diphthong entails a first part characterized by greater strength and duration than the subsequent segment, as elucidated by Roach (1992). Meyer (2009) further posits that a diphthong occurs when a vowel within a syllable transforms both quality and articulation. The synthesis of two vowels resulting in a distinct sound is concisely explained by Yule (2010), encapsulating the essence of the diphthong.

## **2. Literature Review**

Numerous studies have delved into the distinctive features of Pashto phonology, as evident in the aforementioned works. Concurrently, a significant facet of these investigations has focused on exploring phonemic inventories, as delineated below. Penzl (1954) provides a comprehensive examination of the orthography and spelling conventions of the Pashto language, specifically the Kandahari dialect, elucidating the phonemics of contemporary Pashto. In his seminal work, Penzl posits the existence of four diphthongs in Pashto, proposing the phonetic representations as /ay, ey, aw/ew, ei/. Furthermore, Penzl's subsequent work in 1961 is dedicated to analysing

borrowed words from diverse linguistic sources integrated into Pashto. Even in this context, the significance of diphthongs is acknowledged, with the author affirming the presence of two specific diphthongs in Pashto, namely /ay/ and /āy/. These findings contribute substantively to the understanding of Pashto phonological structures and the incorporation of borrowed linguistic elements.

Miran's (1969) study is centred on the linguistic differentiation between the Dari and Pashto languages, delving into the inherent challenges speakers of these linguistic systems face. In his study, the primary focus shifts to examining the diphthongs present in the Pashto language. These diphthongs are formed through the combination of the vowels /æ, e, ə, u, a/ with the semivowels /y/ and /w/, resulting in distinctive phonetic combinations such as /æy, ey, əy, uy, ay, æw, əw, ow, aw/. Similarly, Bashir's (1991) study engages in a comprehensive contrastive analysis between Pashto and Urdu. She introduces seven specific diphthongs—/ay, əy, āy, oy, uy, aw, āw/—founded upon her scholarly investigations. This dual exploration significantly contributes to an enhanced understanding of Pashto phonetics and facilitates a comparative examination of phonological structures between Pashto and Urdu. Tegey and Robson's seminal work in 1996 offers an illuminating exploration of a specific Pashto dialect, namely the Kabul or central dialect. This comprehensive study, aptly titled 'After the Grammar of Pashto', is dedicated to fulfilling the fundamental requisites for language acquisition and serves as instructional material for teaching Pashto to non-native learners. The research focuses on the central dialect, extensively examining its historical evolution, encompassing grammatical structures, phonology, pronunciation intricacies, and the lexicon, including loan words. Notably, a segment of their linguistic inventory is dedicated to elucidating diphthongs, wherein the authors assert that semivowels manifest through the amalgamation of vowels. The enumeration of Pashto diphthongs presented in their work includes /ey, əy, ay, āy, uy, aw/. This meticulous study serves as a valuable resource for comprehending the linguistic nuances of the Pashto language, particularly in the context of its central dialect.

Ijaz (as cited by Shierani, 2009) directs his focus towards incorporating novel name entities within media, particularly concerning personal names and organizational entities. The author meticulously elucidates the challenges posed by this phenomenon in the context of translation. The crux of Ijaz's research lies in examining contemporary methodologies aimed at constructing a bilingual English-Pashto lexicon specifically tailored for proper nouns on the web. In tandem with these considerations, the researcher articulates the phonetic characteristics of Pashto diphthongs, identifying four distinct instances, namely /ey, ay, oy, and ow/. This scholarly inquiry contributes valuable insights into the intricate processes of linguistic translation and the development of lexicons, particularly emphasising the nuanced treatment of proper nouns in the English-Pashto bilingual domain.

## **2.1. Existing Diphthongs in the Secondary Data**

Numerous investigations have explored various aspects of Pashto, particularly emphasising diphthongs as a salient linguistic feature. Noteworthy contributions to the study of Pashto diphthongs include works by Penzl (1954 & 1961), Miran (1969), Tegey and Robson (1996), and

Shierani (2009). However, each of these endeavours presents divergent numerical representations and symbolic identifications of diphthongs, thereby revealing considerable dissimilarity among studies. Despite potential concurrences in the enumeration of diphthongs, the symbols assigned exhibit substantial variation. The existing body of literature underscores a visible gap in knowledge regarding the precise quantification of diphthongs in Pashto, prompting a critical inquiry into this linguistic aspect. Hence, the imperative need for a dedicated research endeavour to conclusively determine the exact number of extant diphthongs in Pashto arises, with the main goal of addressing and bridging the existing gap.

The above existing literature shows the various numbers of diphthongs in the Pashto language. Penzl (1954), encircled in his study these four diphthongs /ay, ey, aw/ew, ei/; Miran (1969) defined these nine /æy, ey, əy, uy, ay, æw, əw, ow, aw/; Bashir (1991) explored seven /ay, əy, āy, oy, uy, aw, āw/; Tegey and Robson (1996) collected six in number /ey, əy, ay, āy, uy, aw/; Shierani (2009) pointed out four /ey, ay, oy, ow/.

A discernible commonality emerges from the aforementioned studies, particularly evident in the similarity of numerical representation between Penzl (1954) and Shierani (2009). Despite this similarity, notable discrepancies persist in the symbolic delineation of diphthongs across these studies. A further point of similarity lies in the inclusion of the diphthongs /aw/ and /ay/ within the phonemic inventories of Penzl (1954), Miran (1969), Bashir (1991), Tegey and Robson (1996), and Shierani (2009), where /ay/ is consistently acknowledged, but /aw/ is variably treated. Another shared observation is the recognition of the diphthong /ey/ across Penzl's (1954), Miran's (1969), Tegey and Robson's (1996), and Shierani's (2009) studies. These nuanced disparities in numerical and symbolic representation underscore the intricacies of characterizing Pashto diphthongs and emphasize the necessity for precision and clarity in studying this linguistic element.

The diphthong /ay/ is consistently identified across several pivotal studies, namely those conducted by Penzl (1954) and (1961), Miran (1969), Bashir (1991), Tegey and Robson (1996), and Shierani (2009). Notably, the diphthong /aw/ is recognized in all of the aforementioned studies except for Penzl (1961) and Shierani (2009). The diphthong /ow/ is explicitly noted in the works of Miran (1969) and Shierani (2009), while the inventory of Bashir (1991) and Shierani (2009) signifies the existence of the diphthong /oy/. The diphthong /uy/ is documented in the studies of Bashir (1991) and Tegey and Robson (1996). Furthermore, the diphthong /əy/ is discerned in the research of Miran (1969) and Tegey and Robson (1996), whereas the diphthong /āy/ is specifically ascertained in the studies conducted by Penzl (1961) and Tegey and Robson (1996). Additionally, the diphthong /ew/ is exclusively identified in Penzl's (1954) study, while the diphthongs /əw/, /æw/, and /æy/ are specifically elucidated solely in the work of Miran (1969). These meticulous observations collectively contribute to a comprehensive delineation of the diverse diphthongs identified within the Pashto language across the corpus of seminal studies, thus forming a foundational understanding for the nuanced exploration of Pashto phonology.

## 2.2. Total Number and Symbols of Diphthongs in Secondary Data

As delineated in the preceding section, the authors under consideration have introduced distinct numerical representations of diphthongs within their respective works. Not only do these studies diverge in their quantification of Pashto diphthongs, but they also exhibit variability in the symbols employed to denote these linguistic elements. The extant diphthongs identified, along with their corresponding symbols, encompass /ay, ey, āy, æy, əy, uy, oy, aw, ew, ow, æw, əw, ei/. This compilation of thirteen distinct diphthongs and their associated symbols is derived from the comprehensive inventories compiled by the aforementioned researchers in their investigations centred on the Pashto language. This nuanced enumeration provides a comprehensive overview of the multifaceted nature of Pashto diphthongs, acknowledging the variations in both their numerical representation and symbolic depiction across the corpus of relevant scholarly works.

Beyond the aforementioned distinctions and correspondences in the literature, an additional observation merits consideration. Specifically, it has been asserted that the only diphthong /ei/, identified exclusively in Penzl's study (1954), is distinctive in that it emerges from the combination of pure vowels, while the remaining diphthongs within Pashto are formed through the combination of a vowel followed by a semivowel. This dissimilarity in the compositional structure of Pashto diphthongs, wherein the sequence entails variations in the combination of pure vowels versus a vowel followed by a semivowel, raises questions about the adherence of these linguistic constructs to established definitions of diphthongs. Dissimilarity found in the combination in the Pashto diphthongs sequence does not satisfy definitions of diphthongs as given below:

The definitions provided by Odden (2005), Davenport (2005), and Ladefoged (2006) elucidate that diphthongs entail a sequential glide from one vowel to another, incorporating tongue movement and represented by two vocalic symbols. Moreover, these definitions suggest a proximity in duration to long vowels. However, upon study of the extant literature on Pashto diphthongs, it becomes evident that the identified diphthongs in Pashto diverge from these established definitions. The observed contrast introduces flexibility in ascertaining the categorization of these linguistic elements in Pashto. Consequently, recognizing the need for a more precise determination of the number of diphthongs in Pashto, the present study is poised to undertake a systematic investigation employing a well-defined methodology, thus contributing to the refinement and clarity of the number of Pashto diphthongs.

## 3. Methodology

The data collection for the present study was recorded using ZoomH6 by native speakers of the Yousafzai dialect spoken in the Malakand division. An oral corpus was built, comprising a cumulative recording duration of 15 hours. The data compilation was conducted in an unrestrained environment, capturing natural linguistic interactions without imposed restrictions. The researchers actively engaged with native speakers, particularly elders, in everyday conversational settings. The researchers dedicated a continuous period of three weeks to this endeavour, consistently recording the unfolding dialogues. Subsequently, for data integrity, only

recordings exceeding a threshold of 30 minutes were considered, while exceptionally brief or acoustically challenging conversations were deliberately excluded from the dataset. This rigorous approach ensures a substantive and methodologically sound foundation for the subsequent analyses within the research study.

The auditory analysis of the oral corpus by the researchers was conducted with careful attention to detail, encompassing a comprehensive review undertaken four times over 28 days. Each daily session involved an approximate two-hour engagement with the recorded material. Throughout this listening process, particular emphasis was given to discerning root words within the oral corpus that featured diphthongs. Subsequently, the identified words incorporating diphthongs were transcribed manually. Upon the culmination of this meticulous process, a written corpus was systematically built and organized by the specific parameters and criteria delineated by the study's objectives.

The initial phase of the study involved the careful organization of words into distinct minimal sets, with a subsequent selection of a singular minimal set exclusively presented in Table 3.1 for this investigation. Following the minimal set, a comprehensive validation process ensued. The meaning of each word was systematically verified through consultations with elder native speakers, ensuring not only the accuracy of the words but also their contextual relevance and prevalent usage in day-to-day conversations. Subsequently, extensive discussions were conducted with experts, specifically educators and lecturers specializing in Pashto, who provided valuable insights and unequivocally affirmed each word's lexical significance and frequent applicability within the Pashto language. Finally, a cross-verification process was undertaken, referencing authoritative dictionaries to validate both the existence and accurate meanings of each word, thereby fortifying the reliability and comprehensiveness of the lexical data under examination.

### 3.1. Materials

The oral corpus was transferred to a laptop for listening to transcription. Only free morphemes were considered for further processing. The relevant words were arranged in minimal various sets. Then, a single minimal set was designed in a CV context (see Table 3.1).

Table 3.1: Minimal Set of Pashto Diphthongs in CV Context

Pashto Diphthongs	Transcription	Pashto	Glossary
əɪ	zəɪ	زئ	(you) Go
aɪ	zai	خائ	Place
oɪ	zoi	خوئ	Son
əʊ	zəʊ	زو	Puss
aʊ	zaʊ	خاو	Attack

The set of Pashto diphthongs was taken into account from the recorded data. All words in consonants and vowels (CV) context are developed for further processing. The CV context was designed after a long search of multiple sources and the recorded data, which lack a minimal set of words that rhyme with the CVC context.

The recorded data reveal that Pashto is rich in diphthongs, and the above list includes all the sensical words with the gloss. In addition, another list of lexical morphemes from the recorded data was built with the gloss, showing Pashto diphthongs in initial, middle and final positions (see Table 4. 1). Both the developed minimal set and the word distribution list were also checked in Pashto dictionaries (Raverty, 1859 & Pashtoon, 2009) to ensure the reliability of the words. For further verification, the recommended story of the International Phonetic Association (IPA), ‘The North Wind and the Sun,’ was first translated into Pashto and the International Phonetic Alphabet (IPA) from English and then used during the analysis to determine whether the language allows diphthongs. The story, both in Pashto and IPA transcription, is given in the following:

The transcription of the story in Pashto language.

قیصه:

نمر او سیلی په شر شو چې څوک په کبني ډېر زور وړ دي، کله چې یو مسافر راغي او خان ئې په گرمه چغه کبني رانغښتی وو. دوي فیصله اوکړه چې په دي دواړو کبني کوم یو اول د مسافر نه چغه وستو کبني وړاندې شو نو هغه به په دي دواړو کبني زور وړ منلي شي. بیا سیلی په خپل پوره زور سره وچلیده، خو چې څومره سیلی په تیزی سره چلیده نو دومره به مسافر په خان پسي چغه کلکه راجختوله؛ او په اخر کبني سیلی خپله خواري پرېښوده. بیا نمر په تاؤ په پرقیدو شو، او مسافر په منده خپله چغه اویستله. او سیلی دا خبره اومنه چې نمر په دي دواړو کبني ډېر زور وړ دي.

The broad transcription of the story written in Pashto is transcribed in IPA.

namər au sɪləi pə ʃər ʃu ʃi sək paki: ɖər zərəwar ɖe, kalə ʃi jəu mɔsɑ:fir rɑ:ɣe au zɑ:n ji: pə garmə ʃʊɣə ki: rɑ:nɣaxte wɔ, ɖuɪ faisalə ʊkɾə ʃi pə ɖe ɖwɑ:ɾɔ ki: kum jəu əwal ɖə mɔsɑ:fir nə ʃʊɣə wɪstɔ ki: wɾɑ:nɖi ʃu nu: hayə bə pə ɖe ɖwɑ:ɾɔ ki: zərəwar mənale ʃi:. bja sɪləi pə ɣpal pɔrə zər sarə wafələɖə, ɣu: ʃi sɔmrə sɪləi pə tɛzai sarə ʃfələɖə ɖumrə bə mɔsɑ:fir pə zɑ:n pəsi: ʃʊɣə klakə rɑ:dʒɔxtə walə. au pə ɑ:ɣirə ki: sɪləi ɣpalə ɣwɑ:ri: prɛxəuɖə. bja namər pə ʃau pə pɾaqeɖɔ ʃu, au mɔsɑ:fir pə mandə ɣpalə ʃʊɣə ʊwɪstələ. au sɪləi ɖɑ ɣabarə ʊmənələ ʃi namər pə ɖe ɖwɑ:ɾɔ ki: ɖər zərəwar ɖe.

The Pashto words in the story, which have diphthongs, are tabulated in Table 4.3. The existence of these words in the story also validates the results of other sources that the Yousafzai dialect allows the diphthongs. The following section shows the analysis of the data.

#### 4. Analysis

The developed word lists based on the recordings and the story about the Yousafzai dialect of Pashto diphthongs were discussed in groups in different situations with native speakers. This process involved various steps, such as joining the conversations of older native speakers, discussions with native speakers and language experts, and checking the meaning of every word in various sources, including dictionaries. In all these steps, the focus remained on the root words.

The stimuli used in Table 3.1, the Pashto words /zəɪ/, /zai/, /zɔɪ/, /zəʊ/, /zau/ along with other relevant words were discussed with the elders and found that all of them were frequently used in the day-to-day routine. The same stimuli were discussed with youngsters, asking them the meanings of each word in the minimal set. All of them have a clear understanding of their meanings and uses. Furthermore, it was discussed with the language experts and the linguists, who gave their broad opinions about them. These experts affirmed that all the presented words hold significance in spoken and written forms of the Yousafzai dialect. It was also found that such words are commonly found in books, diaries, poetry and dictionaries. Thus, the data validate the existence of five diphthongs in the Pashto dialect. The identified diphthongs are also analyzed through the articulation process of distributional patterns tabulated in the following, which is a helpful tool for verifying phonemes. These words were also taken from the recorded data.

##### 4.1. Distribution of Pashto Diphthongs

In the Yousafzai dialect of Pashto, diphthongs are possible in all three positions (initial, middle, and final) of root words.

Table 4.1: Distributional Data of Pashto Diphthongs

S No	Diphthongs	Position	Pashto Words	Transcription	Glossary
1	əɪ	Initial	1أى	əɪ	Oh
			2ايخه	əɪzə	Island
		Middle	1خويدل	χwəɪdɒl	Slip
			2بيدل	bəɪdɒl	Flow
		Final	1لكى	lakəɪ	Tail
2بودى	budɒɪ	Old woman			



2	aɪ	Initial	1 آئینه	amə	Mirror
			2 آئینده	aɪndə	Next
		Middle	1 میده	maɪdə	Gritty floor
			2 خابیدل	zaɪdɪl	Arranged
		Final	1 خداے	χɒdɪ	Allah
			2 لاری	la:ɾaɪ	You went
3	oɪ	Initial	1 اوینه	omə	Termite(insect)
			2 اوی	oɪ	Calling
		Middle	1 تویدل	tɒɪdɪl	Poured
			2 کویدن	koɪdɪn	Engagement
		Final	1 خوی	χoɪ	Character
			2 بوی	boɪ	Smell
4	əʊ	Initial	1 اوئر	əʊɾ	Distressed
			2 اوسان	əʊsɑ:n	Self-control
		Middle	1 سوگند	səʊgɪnd	Oath
			2 ننوتل	nənəʊtɪl	Entrance
		Final	1 لو	ləʊ	Cutting
			2 پلو	pələʊ	Scarf
5	aʊ	Initial	1 او	aʊ	Yes
			2 اوری	aʊri:	Listening
		Middle	1 خاورا	χaʊra	Soil
			2 تاوده	tɒdə	Hot
		Final	1 ملاؤ	meləʊ	Joined
			2 سیلاؤ	seləʊ	Flood

The above table shows that all the five diphthongs are found in the initial, middle and final positions. The analysis of the data reveals that three diphthongs /əɪ/, /ʊɪ/ and /aʊ/ are found in single-syllable and two-syllable words. On the other hand, the two diphthongs, /aɪ/ and /əʊ/, are found in two and three-syllable words. The distributional patterns data show that all words are lexically meaningful. Thus, this articulatory process of identification of sounds also validates the existence of Pashto diphthongs /əɪ/, /aɪ/, /ʊɪ/, /əʊ/ and /aʊ/. In addition, the IPA-recommended story ‘The North Wind and the Sun’ (see Section 3.1) is analyzed in the following for further clarification of the diphthongs (see Table 4.2). This story is mostly used in IPA illustrations.

Table 4.2: Pashto Diphthongs from IPA Recommended Story

Diphthongs	Transcription	Pashto	Glossary
əɪ	sɪəɪ	سيلى	Wind
aɪ	teɪzai	تيزى	Quickly
ʊɪ	duɪ	دوى	They
əʊ	jeʊ	يو	One
aʊ	au	او	And

The above table reveals the lexical words found in the translated version of the story (see Section 3.1). The IPA recommends this story for identifying phonemes in a language. This analysis of the study also adheres to the results of Pashto diphthongs /əɪ/, /aɪ/, /ʊɪ/, /əʊ/ and /aʊ/. The tabulated words show that all five words with diphthongs are meaningful in the language. The results reveal that the Pashto diphthongs combine two pure vowels and glide from one vowel to another, as shown in the following figure.

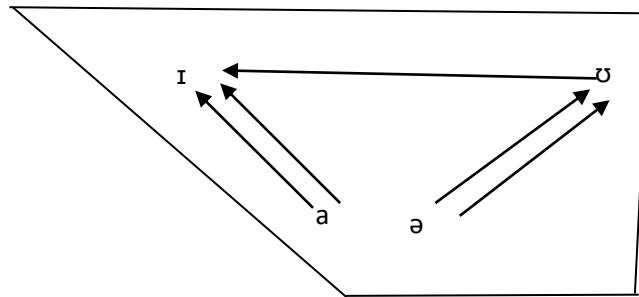


Figure 4.1: Pashto Diphthongs Grid

The above figure 4.1 shows the combination of two pure vowels in Pashto. It reflects highlights that glide in each diphthong starts from a low position towards a high position, such as the diphthong /aɪ/ starts from /a/ phoneme and glides towards /ɪ/. Similarly, the /ə/ of diphthong /əʊ/ also moves from a low position to a high position /ʊ/. The diphthong /ʊɪ/ starts from the back position towards the front position; that is, the /ʊ/ phoneme glides towards /ɪ/. However, none of them start from high to low positions. These five diphthongs are classified into two groups in the following way:

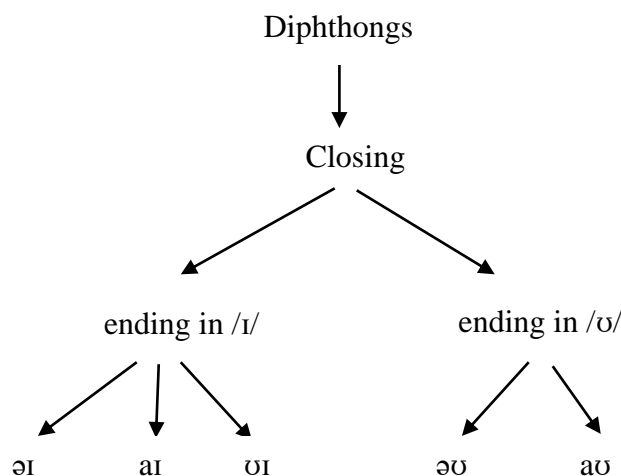


Figure 4. 2: Classification of Pashto Diphthongs

The figure shows three diphthongs of Pashto /əɪ/, /aɪ/, and /ʊɪ/ end with /ɪ/ while two diphthongs /əʊ/ and /aʊ/ end with /ʊ/. It reveals that all closing diphthongs of the Yousafzai dialect of Pashto characteristically end with a glide towards the close vowels.

## 5. Discussion

The articulatory descriptions of diphthongs show the Yousafzai dialect of Pashto, which has five diphthongs /əɪ/, /aɪ/, /ʊɪ/, /əʊ/, /aʊ/. The data were taken from the native speakers living in the Malakand division of Khyber Pakhtunkhwa, Pakistan. The routine conversations of speakers were recorded for fifteen hours. This process was followed by careful listening of the oral corpus, and free morphemes were written. The written minimal set, a long list from conversations with native speakers, and selected vocabulary from IPA were confirmed by native speakers, the experts of the language and the linguists. Moreover, secondary sources like dictionaries were also consulted, and the results were verified.

The Yousafzai dialect of Pashto has rich diphthongs, unlike subcontinent languages like Urdu, Punjabi, Pahari, and Hindko (Nawaz, 2014). Similarly, Maddieson and Dinsner (1984) state that diphthongs are rarely found in the phonemic inventory of the world's languages. They referred to a study in which diphthongs were recorded in only 23 out of 196 languages. According to Lindau et al. (1985) (cited in Nawaz, 2014), diphthongs are found in the phonemic inventories of one-third of the world's languages. On the other hand, some languages of the world allow rich diphthongs like British English has eight diphthongs (Roach, 2009) as a phonemic entity such as /aɪ/ (as in "tie"), /eɪ/ (as in "say"), /aʊ/ (as in "cow"), /əʊ/ (as in "so"), /ɔɪ/ (as in "toy"), /ɪə/ (as in "tear"), /eə/ (as in "fare"), and /ʊə/ (as in "poor"). Linguists like Clark and Yellop (1995) believe that the greater the variety of vowel sounds in a language, the more likely it is to have diphthongs. They say a language with less than ten vowels may not have a diphthong, while English has more than ten vowels. In the case of the Yousafzai dialect of Pashto, the identified diphthongs on an articulatory basis may be verified acoustically by measuring them in various

contexts like VC, CV and CVC, along with running speech. This may help determine whether the diphthong inventory exists on phonemic, phonetic or morphological grounds.

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