

Glide Insertion And Dialectal Variation In Kurdish

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Abstract

One of the strategies used as a hiatus resolution is glide insertion. Previous Kurdish phonological works involve only a description of glide insertion in one dialect neglecting the segmental context. This study provides an analysis of glide insertion in word-medial vowel clusters in Kurdish and it is the first attempt to analyse the effects of dialect and segmental context. The speech material includes a set of words consisting of a stem plus a suffix with different vowel sequences at their boundaries. It is produced by four native speakers from four Kurdish speaking areas. The data analysis involves word transcription, their segmentation and the comparison of vowel sequences within and across the subdialects. The results indicate that glide insertion is not the only strategy used as word medial hiatus resolution, but it depends on the segmental context and dialect. Generally, the vowel hiatus is resolved by /j/ insertion. Vowel deletion is also used obligatorily in some segmental contexts when the second vowel in a sequence is /i/ and also when there are identical vowels in a sequences. Dialectal variations are observed in some vowel sequences in which /j/ insertion and vowel deletion both are used and when the first vowels in the sequence are the high back vowels in that /j/ and /w/ insertions are used. The findings suggests that /j/ insertion is the default strategy to resolve word-medial vowel clusters in Kurdish, the insertion of /w/ or vowel deletion are other strategies which are limited to some dialects and vowel sequences.

Keywords: Glide insertion, hiatus resolution, dialectal variation, segmental context, vowel deletion

Introduction

Glide insertion (GI) is one of the phonological rules that involve consonantal insertion, i.e. a process in which a consonant which is not present underlyingly appear on the phonetic surface (Zygis, 2010). In this

process, a glide sound, /j/ or /w/, is inserted between two adjacent vowels. Both /j/ and /w/ are considered glides in the phonemic system. They are mentally represented as neither vowels nor consonants, have their own constriction degree, and have two designated articulators: [Coronal] and [Dorsal] in the case of /j/, and [Labial] and [Dorsal] in the case of /w/ (Nevins and Chitoran, 2008). Glides differ from the vowels in the constriction degree (vowels have less constriction, while glides have greater constriction) and the property of vocalic (syllabic) (they do not occur at syllable-nuclear position) (Ibid).

As other types of insertion, GI has the functions of avoiding vowel hiatus and militating against onsetless syllables (Zygiz, 2009). Usually languages do not tolerate vowel clusters: two vowels occurring consecutively. When two vowels occur together, languages adopt different strategies to resolve this hiatus. One of these strategies is GI in that a glide, /j/ or /w/ is inserted to break the vowel sequence.

Uffman (2007) claimed that in intervocalic contexts, glides are preferred because they are the most sonorous segments and very similar to vowels, i.e. they have the same featural make up as vowels except for syllabicity. In both place and manner of articulation, glides are maximally similar to their vocalic context in that they are minimally contrastive with their environment.

As for the other function of GI, there is a cross-linguistic preference for syllables with onsets which is expressed by the onset constraint: syllables must have onsets (Uffmann, 2007; Molczanow, 2008; Blevins, 2008). Thus GI is used as a strategy to satisfy this onset constraint. In other words, the inserted glide acts as the onset of the second vowel in a vowel sequence.

Actually, there are no general classifications of the types of GI in the literature. Booij (1996) distinguished homorganic GI in Dutch in which the quality of the glide is determined by the first of two adjacent vowels: /j/ is inserted after front vowels (1a) and /w/ after high back vowels (1b).

1-	a-	ree-en	[rejən]	(ruin)
	b-	boaz	[bowas]	(id)

Another type of GI is identified in which one type of glide is inserted regardless of the quality of the adjacent vowels. This type will be distinguished as non-homorganic GI. In Uyghur (Vaux, 2001), for example, GI is not homorganic because [j] is inserted regardless of the quality of the two neighbouring vowels, as in:

2-	a-	oqu+Al-	[oquyal-]	(to be able to read)
	b-	iSlä+Al-	[iSläyäl-]	(to be able to work) (Hahn, 1991 cited in Vaux, 2001:5)

In Guajiro (Vaux, 2001), an Abajero dialect also, non-homorganic GI can be identified in that [w] is inserted regardless of the vowel quality, as in:

3-	a-	atpanaa+ee+chi	atpanaa[w]eechi	(it will be rabbit)
	b-	ke+kii+ee+shi	kekii[w]eeshi	(he wants to have a (good head) (Vaux, 2001: 8)

GI occurs in a large number of languages such as Polish (Rubach, 1984), Dutch (Booij, 1996), Japanese (Kawahara, 2002), Sinhala and Shona (Zygis, 2010), Persian (Dehghan, 2012) and American English (Davidson & Erker, 2014), to mention but a few. In all these languages, GI is the most frequent phonological process whose context is well-defined: [j] is inserted in the context of preceding or following high vowels and [w] in the context of preceding or following non-high vowel and it has the functions of avoiding vowel hiatus and militating against onsetless syllables.

Zygis (2009), in his survey of phonological processes on 400 languages, showed that phonologically such process involves an insertion of segments which incur features via spreading from the neighbouring vowels, whereas phonetically no segment is inserted, i.e. it is rather a percept of formant transition of neighbouring vowels which makes the perceptual indication of a new emerging sound. In order to gain more insights into the topic, he conducted a perceptual study which involved the manipulation of transition length in the item [ia]. The transition between [i] and [a] was lengthened from 50 to 230 ms in 30 ms steps so that a 7-step continuum was created. The total duration of the item and the duration of [a] were made constant. The files were played twice from a laptop via headphones to ten native speakers of German, three native speakers of Polish and three of English. The subjects were asked to write down what they hear. [j] was heard in all answers at various transition lengths.

Staroverov (2014), on his part, proposed that in GI no phonological insertion operates, but the addition of the consonant in the output results from a mapping where the input segment corresponds to two output segments. For example, in the /e+a/ vowel sequence in the input, /e/ splits to /ej/ in the output. The major consequence of his theory is that the epenthetic consonants are affected by faithfulness, i.e. preserving input features. In other words, in any input-output mapping, epenthetic segments will seek to be as faithful as possible to their input correspondents. Thus, /e/ in the above examples, splits to /ej/ not /ew/ because /j/ is more faithful to /e/ than /w/.

Finally, it is important to distinguish GI from glide formation that is found in a number of languages to avoid vowel hiatus as well. In Russian (Molczanow, 2008), for example, gliding of the high front vowel is used as a hiatus resolution strategy in #iV, Vi# and ViV strings. So, for instance, the underlying sequence /ia/ (ja 'I') is realised as [ja], constituting a well-formed syllable with an onset filled with the glide. Molczanow states that the change of a vowel into a glide entails the deletion of an underlying mora and it is

better to delete a mora than to have an onsetless syllable (according to the markedness constraint: syllables must have onsets).

Kurdish Language

Kurdish belongs to the Indo-European family of languages. It is a member of the north-western subgroups of Iranian languages which are subdivisions of the Indo-Iranic branch of this largest family of languages in the world. The Kurdish speech area is divided among five neighbouring countries of Turkey, Iran, Iraq, Syria and Russia. Kurdish is divided into a number of dialects. According to the Kurdish Academy of Language (1992), Kurdish dialects are classified into: Northern Kurdish dialects (NK), Middle Kurdish (MK), Southern Kurdish (SK), Dmili or Zaza and Hawrami.

Although there are a number of studies on the Kurdish phonemic system (Marif, 1976; Ways, 1984; McCarus, 1987; Thackston, 2006; Mohammed, 2009; to mention but a few), no general and unified classification of the phonemic inventory exists to date. Scholars disagree on the number of phonemes especially with regard to their phonological status. Based on Hasan (2012), the following tables summarises the vowels (table 1) and consonants (table 2) of Kurdish. The MK (Middle Kurmanji) and NK (Northern Kurmanji) beside the phoneme symbol indicate that it is just found in that variety.

Table 1: Kurdish vowel phonemes

	Front	Central	Back
Close	i: i		u
Mid-close	e:		o
Mid-open	a		
Open			a:

Table 2: Kurdish consonant phonemes

	Bilabial	Labio-dental	Alveolar	Palato-alveolar	Palatal	Velar	Uvular	Pharyngeal	Glottal
Fricatives		f v	s z	ʃ ʒ		x ɣ		ħ ʕ	h
Plosives	p p ^h _(NK) b		t t ^h _(NK) (NK) d			k k ^h _(NK) g	q		
Affricates				tʃ tʃ ^h _(NK) dʒ					
Nasals	m		n						
Flap			r						
Trill			r						
Lateral			l l _(MK)						
Approximants	w				j				

Concerning syllable structure, it is claimed that one-vowel syllables do not exist in Kurdish (Marif, 1976) because vowel-syllables are usually preceded by a glottal stop /ʔ/. Furthermore, concerning the distribution of vowels and consonants in the syllable, any vowel may appear in the nucleus of the syllable and any consonant can appear in the onset and coda parts except /ʕ/ which does not occur in the coda (Hasan, 2009). As for phonotactics, Kurdish permits consonant clusters-two or more consonants coming together in one sequence without an intervening vowel, but it does not allow more than two consecutive consonants in initial and final positions of the syllable.

Previous works in GI in Kurdish

GI is not analysed systematically in previous works in Kurdish phonology. It is only described in the literature on morphology that by adding a vowel-initial suffix to a vowel-final stem, an [y] (= /j/ IPA) is inserted (Fattah, 1980; Thackston, 2006; Yasin, 2006). For example, the indefinite suffix has two forms: <ek> is added to consonant-final words and <yek> is added to vowel-final words, as illustrated in 4a and 4b. Throughout the paper, the examples are written using the Latin Kurmanji writing system⁷², their transcription is given using IPA (revised version 93) in slashes and their meanings in English are given in rounded brackets.

4-	a-	mirov + ek	mirov-ek human being-INDEF	/mirovak/	(a human being)
	b-	xanî + yek	xanî-yek house-INDEF	/xa.nijak/	(a house)

Similar to previously mentioned languages, Hasan (2012) also claims that in NK Kurdish, GI is applied to avoid vowel clusters and satisfy the onset constraint. She identifies it as a phonological process that occurs between two adjacent vowels word medially at root-suffix boundary and according to onset requirements the inserted glide acts as the onset of the vowel-initial suffix (or the initial syllable of polysyllabic suffixes).

She adds that this rule is obligatory and it is applied whenever a vowel-initial suffix is added to a stem in which the final vowel is [î, u, or o], as illustrated in the following examples in 5a-d:

⁷² Kurdish is written in different writing systems, namely modified Arabic, Latin Kurmanji and Cyrillic. Even in the symbols within these systems differ between the scholars and they do not contain symbols for a lot of sounds which are also identified in Kurdish. This study adopts the Latin Kurmanji writing system (Kurdish Academy of Language, 1992) because it is very close to the English writing system and because it is very close to the IPA phonetic transcription system used. Some letters which give different sound symbols include [a] for /a:/, [c] for /dʒ/, [ç] for /tʃ/, [e] for /a/, [ê] for /e:/, [h̄] for /h/, [î] for /i:/, [j] for /ʒ/, [l̄] for /l/, [r] for /r/, [r̄] for /r/, [ş] for /ʃ/, [t̄] for /t/, [û] for /u:/, [x̄] for /x/, [y] for /j/ and [E' e'] for /ʕ/.

5-	a-	gundî + êt	gundî-y-êt	/gundije:t/	(villagers of...)
	b-	rêvî + ê pîr	rêvî-y-ê pîr	/re:vije: pi:r/	(the old fox)
	c-	xwesu + a min	xwesu-y-a min	/xwasuja: min/	(my mother-in-law)
	d-	zaro + ê min	zaro-y-ê min	/za:roje: min/	(my child)

Additionally, she states that when the final syllable of the stem ends in [a, e, or ê] followed by a vowel-initial suffix, either a glide is inserted or the vowel of the stem is deleted and the remaining onset consonant acts as the onset of the vowel-initial suffix (6a-e).

6-	a-	zava +ek	zava-y-ek/zav-ek	/za:va:jak/ za:vak/	(son-in-law/indef.)
	b-	çira+ ek	çira-y-ek/çir-ek	/ʃira:jak/ ʃirak/	(lamp/indef.)
	c-	pale +ê	pale-y-ê/pal-ê pîr	/pa:laje:/ pa:le: pi:r/	(an old worker)
	d-	perde + ek	perde-y-ek/perd-ek	/pardajak/pardak/	(curtain/indef.)
	e-	pê + ên	pê-y-ên/pên wî	/pe:je:n/ pe:n wi:/	(his feet)

Besides, she claims that GI in NK is not homorganic in that /j/ is inserted regardless of the quality of the first vowel, although she does not carry out any experiments to show the effect of segmental context on GI. However, she adds that /w/ is also possible in some subdialects when the first vowel is /o/ or /u/, but she does not identify exactly which subdialects. For instance:

7-	a-	du + em	du-y-em/du-w-em	/dujam/ duwam/	(the second)
	b-	sto+ê	sto-y-ê/sto-w-ê	/stoje:/ stowe:/	(neck of ...)

Hasan (2012) concludes that the GI rule in NK Kurdish is a domain span rule which is applied at root-suffix boundary and she identifies the phonological word (PW) as the rule-application domain.

The previous works on GI have described this process in one dialect (for example, Thackston, 2006 and Hasan, 2012 for NK Kurdish), but no studies have described GI across a number of dialects to observe whether there are any dialectal variations. Additionally, the effects of segmental context on GI have not been investigated yet. This study is the first attempt to analyse the effects of dialect and segmental context on GI.

Methodology

Speech material

To achieve the purpose of the study, a set of words are formed by the combination of stems and suffixes which involve different vowel-vowel sequences at the root-suffix boundary. The designed words include roots ending in the vowel sounds /a:, a, e, o, u, i:, i/, which represent the seven vowel sounds of Kurdish (Hasan, 2012) and the vowel /u:/ which has some debates about its phonemic status in the literature, plus suffixes beginning with the same vowel sounds. Words ending in /i/ cannot be found and

suffixes beginning with /u, o and u:/ do not exist. Additionally, vowel sequences /e/+i: and i/ and /u/+i: and i/ are not examined due to the unavailability of data. Thus, the total number of vowel sequences that are examined are 31. Table 3 illustrates the data design of the study.

Table 3: Method of data design

Stems	Suffixes
Ending in /ɑ:/: derya (sea), çiya (mountain)	Beginning with /e/: [ên] plural possessive
Ending in /a/: perde (curtain)	Beginning with /a/: [ek] indefinite singular
Ending in /e/: pê (foot)	Beginning with /ɑ:/: [a] singular feminine possessive [an] plural suffix
Ending in /o/: çeqo (knife)	
Ending in /u/: saku (jacket), gezu (nut)	
Ending in /i:/: kanî (spring)	
Ending in /u:/: rû (cheek)	
Ending in /ɑ:/: rawest (stay)	Beginning with /i:/: [în] first person plural personal pronoun
Ending in /a/: bike (do it)	
Ending in /o/: bixo (eat)	Beginning with /i:/: [in] second person plural personal pronoun
Ending in /i:/: krî (buy)	
Ending in /u:/: çû (go)	

Speakers

The study is based on recordings of the designed words as produced by four Kurdish native speakers (2 males and 2 females) from four subdialects, namely, Duhok, Qamishlo and Diyarbakir from NK and Hewler from MK. All the speakers are recruited in Duhok because they either live, study or work there. The speakers are educated and they speak another language in addition to Kurdish. However, they use these languages occasionally. So we can assure that there is no influence of the second language on their native language because of its rare use. Furthermore, none of the speakers reported any speech or hearing problems and all of them were naïve as to the purpose of the study. Additionally, none of them had been recorded before. Their participation was voluntary and did not imply any kind of compensation.

Procedures of data collection

The recordings took place in Duhok. The speakers had been recorded individually. Each speaker was asked to produce the word that was formed by a given stem and a suffix. The speaker's production of the formed word was recorded. The recording sessions lasted for four weeks.

The data designed were written in Arabic and Latin alphabet because speakers who were from Duhok and Hewler knew the Arabic alphabet, but those who were from Qamishlo and Diyarbakir knew the Latin Kurmanji alphabet. The recordings were carried out using a computer, microphone and PRAAT program (Boersma & Weenink, 2009).

Data analysis

The data was transcribed using the Latin Kurmanji writing system. Then it was segmented manually using PRAAT. The stem of the word and the suffix were separated and the inserted glide was indicated. Figure 1 shows the segmentation of an example from the data.

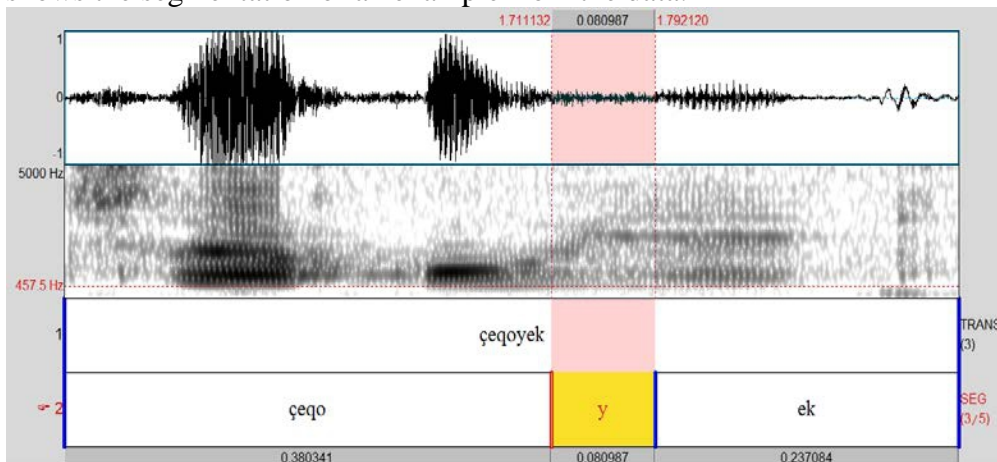


Figure 1: A PRAAT window showing the segmenting of the word <çeqoyek> (a knife) as produced by a female speaker from Duhok dialect

The other part of data analysis involves making comparisons. Each sound sequence was contrasted with other sound sequences in two ways. On one hand, a specific sound sequence produced by a specific speaker was compared with other sound sequences produced by other speakers in one dialect. This comparison helped to provide intra-dialect information about GI. On the other hand, a specific sound sequence was compared with similar sound sequences produced by speakers from other dialects. This gave information about inter-dialect variations.

Results

The results show that the vowel clusters at root-suffix boundary are resolved by different strategies depending on the vowel sequence and dialect. They are usually resolved by /j/ insertion, while /w/ insertion and vowel deletion are also used depending on the dialect and vowel sequence, as well as some speaker variations are also observed.

Hiatus resolution by /j/ insertion

In the following vowel sequences, the vowel clusters are resolved by /j/ insertion in all dialects by all speakers. The inserted /j/ acts as the onset of the vowel initial suffix.

- | | | |
|-----|---------------|-----------------------------------|
| 8- | /ɑ: / + /ɑ: / | derya + a/an → deryaya / deryayan |
| 9- | /ɑ: / + /a / | çiya + an → çiyayan |
| 10- | /ɑ: / + /e: / | derya + ek → deryayek |
| | | çiya + ek → çiyayek |
| 11- | /ɑ: / + /i: / | derya + ên → deryayên |
| 12- | /a / + /i: / | çiya + ê/en → çiyayê / çiyayên |
| 13- | /e: / + /ɑ: / | rawesta + îin → rawestayîin |
| 14- | /e: / + /a / | bike + îin → bikeyîin |
| 15- | /e:/ + /e:/ | pê + an → pêyan |
| 16- | /o / + /ɑ: / | pê + ek → pêyek |
| 17- | /o / + /a / | pê + ê/en → pêyê / pêyên |
| 18- | /o/ + /e:/ | çeqo + a/an → çeqoya / çeqoyan |
| 19- | /o/ + /i:/ | çeqo + ek → çeqoyek |
| 20- | /i: / + /ɑ: / | çeqo + ên → çeqoyên |
| 21- | /i:/ + /a/ | bixo + îin → bixoyîin |
| 22- | /i:/ + /e:/ | kanî + a/an → kanîya / kanîyan |
| 23- | /u:/ + /i:/ | kanî + ek → kanîyek |
| | | kanî + ên → kanîyên |
| | | çû + îin → çûyîin |

Consider the following figures which illustrate the production of <çûyîin> in the four sub-dialects.

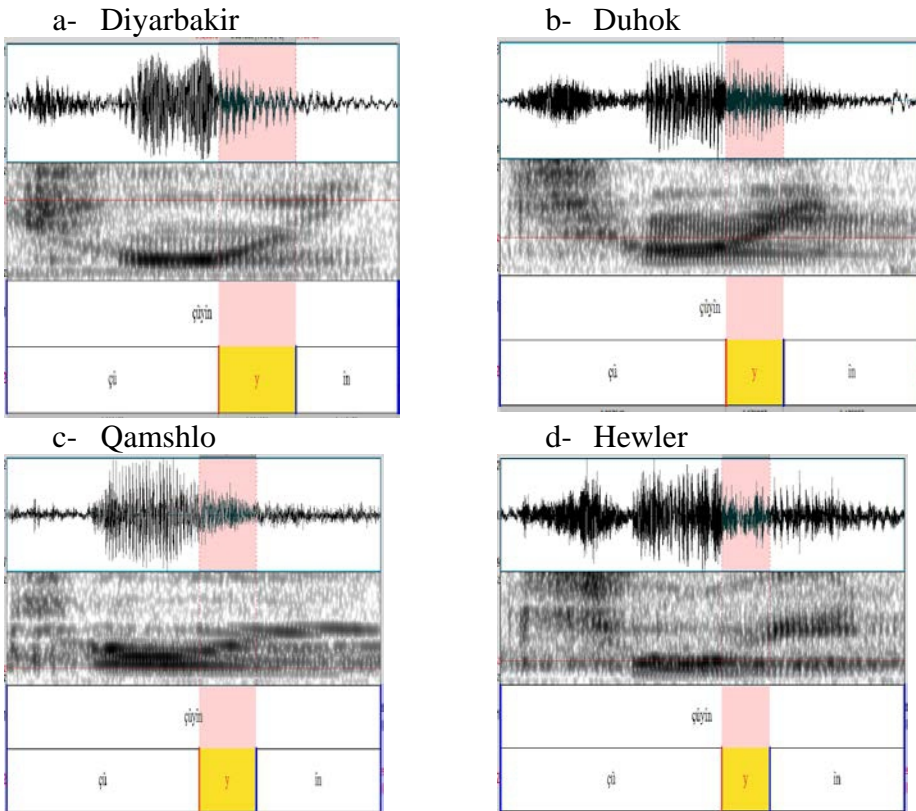


Figure 2: Spectrums of the word <çûyîin> as produced by speakers from Diarbakir, Duhok, Qamshlo and Hewler

The sequences indicate that /j/ is inserted regardless of the vowel quality, i.e. it is inserted after front (a, i:, e:) and back vowels (ɑ:, o, u:) as well. This result confirms Hasan’s (2012) claim that GI is non-homorganic in Kurdish.

Hiatus resolution by vowel deletion

Vowel deletion is another strategy used to resolve word-medial vowel hiatus. It is observed when the second vowel in sequence is /i/. When the suffix <-in> which begins with /i/ is added to stems ending in /ɑ:, a, o, i:, or u:/, vowel deletion occurs in that /i/ of the suffix is deleted to avoid vowel cluster in all dialects. When /i/ is deleted, resyllabification triggers in that the remaining coda consonant is resyllabified to form a coda to the preceding syllable. For example,

- | | | |
|-----|------------|---------------------------|
| 24- | /ɑ:/ + /i/ | rawesta + in → ra.we.stan |
| 25- | /a/ + /i/ | bike + in → bi.ken |
| 26- | /o/ + /i/ | bixo + in → bi.xon |
| 27- | /i:/ + /i/ | krî + in → krîn |
| 28- | /u:/ + /i/ | çû + in → çûn |

The following figures illustrate the production of the word <krîn> as produced by the speakers of the four dialects.

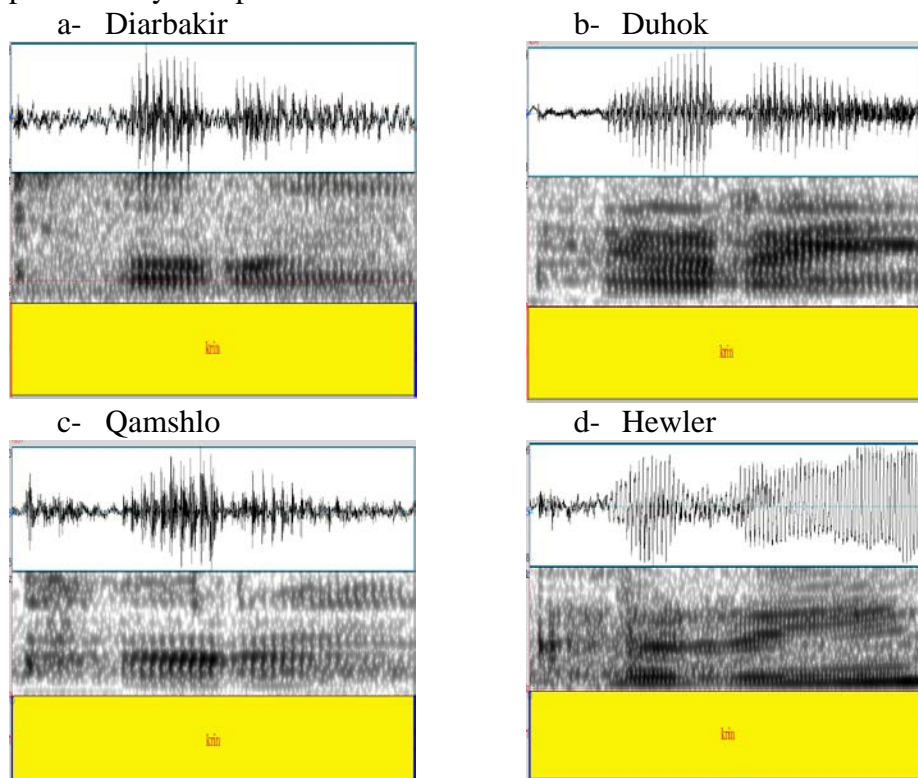


Figure 3: Spectrums of the word <krîn> as produced by speakers from Diyarbakir, Duhok, Qamshlo and Hewler

/i/ deletion has been previously described by Hasan (2012). She states that /i/ in unstressed CV syllables is deleted in most occurrences (however, it is realised in careful slow speech of some speakers). She adds when /i/ is elided an obligatory resyllabification occurs in that the remaining consonant syllabifies to form a cluster with the onset of the following syllable. She claims that this rule occurs within the PW-domain and it is applied between a prefix and a stem as in the case of the progressive prefix <di> in 29a, in mono-morphemic words as in 29b and between monosyllabic prepositions which have the structure Ci, such as <ji> (from), <bi> (by), (in) and the following noun as in 29c:

29-	a-	di+malî	/dma:li:/	PROG-sweep-PAST-3 rd SING (she was sweeping)
		di +gute	/dguta/	PROG-say-PAST-3 rd SING (she was telling)
	b-	bilind	/blind/	(name of a person)
		bişûl	/bʃu:l/	(busy)
	c-	ji+mal	/ʒma:l/	(from home)
		bi+şev	/bʃav/	(at night)

The study here shows that /i/ deletion has another function which is resolving vowel clusters. It occurs when the second vowel in a sequence is /i/. When /i/ is deleted, the remaining coda consonant is resyllabified to form a coda to the preceding syllable.

Another case in which vowel deletion is used to avoid vowel cluster is when there is a sequence of identical vowels. In the sequence /i:/+i:/, no glide is inserted and the first /i:/ is deleted to resolve the vowel cluster in all dialects.

30- krî + îin → krîn

vowel deletion has been described for French (Harris, 2011) and Dutch (Booij, 1996) which occurs to avoid vowel sequences. In French, when the masculine [le] or the feminine [la] determiners precede a vowel-initial noun, the vowel of the determiner is elided and the remaining consonant is syllabified as the onset of the following vowel-initial syllable, as in:

31-	a-	le ami	lami	(the friend (m.))
	b-	la amie	lamie	(the friend (f.))

In Dutch, vowel deletion is found in host+enclitic constructions. When the vowel is elided, obligatory resyllabification occurs and in the case of host+enclitic the enclitic is integrated with the preceding host in one PW, e.g. (from Booij, 1996: 226):

32-	zette het	(put it)	/zetə ət/	[zetət]
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To sum up, vowel deletion is another strategy used to avoid vowel sequences that occur word-medially in Kurdish. However, this strategy occurs in restricted segmental contexts, that is, when the second vowel in a sequence is /i/ and in identical vowel sequences.

Hiatus resolution by /j/ insertion and vowel deletion

When a sequence of /a/ and /ɑ:/, a or e:/ occurs, /j/ insertion and vowel deletion are used to resolve the cluster depending on the dialect. In Hewler, /j/ is inserted in these vowel sequences by all speakers, as it is found in the following examples and illustrated in the spectrums in figure 4:

- | | | |
|-----|------------|-------------------------------------|
| 33- | /a/ + /ɑ:/ | perde + an → perdeyan |
| 34- | /a/ + /a/ | perde + ek → perdeyek |
| 35- | /a/ + /e:/ | perde + ên/êk → perdeyên / perdeyêk |

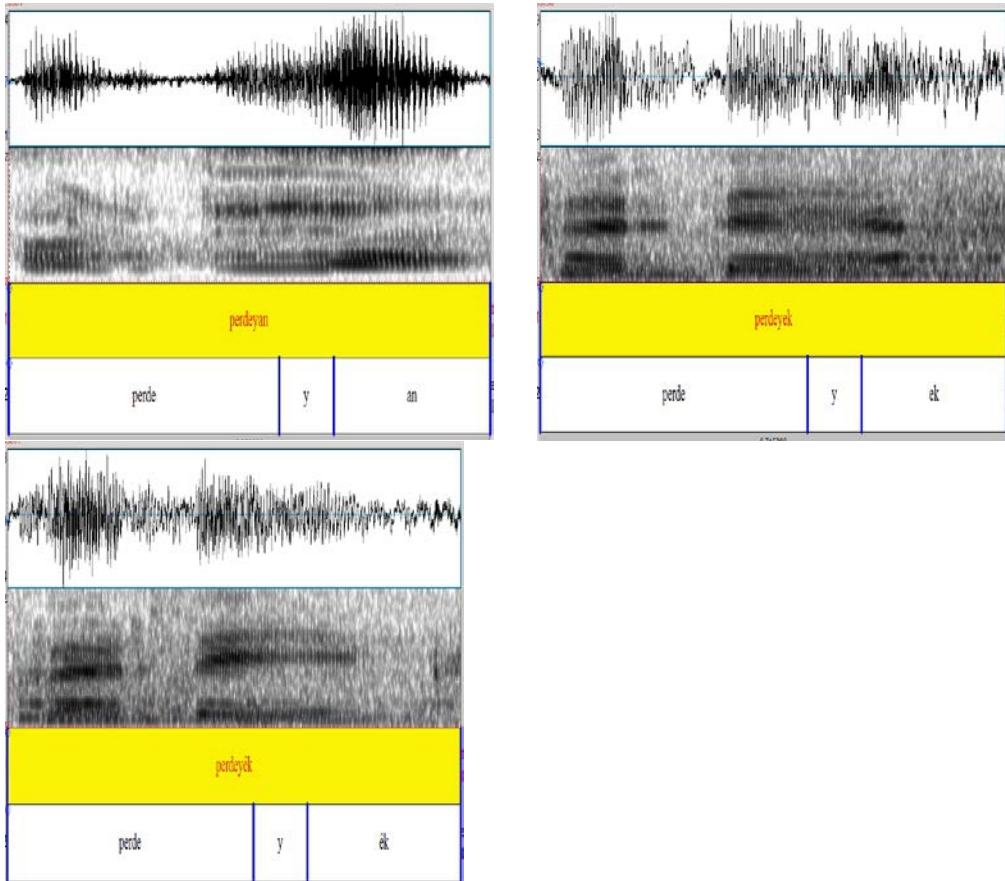


Figure 4: Spectrums of the words <perdeyan>, <perdeyek> and <perdeyêk> as produced by speakers from Hewler dialect

In Qamshlo, the cluster is not resolved by GI, but by vowel deletion. In this case, /a/ of the final syllable of the stem is deleted and the remaining onset consonant resyllabifies as the onset of the vowel-initial suffix, as illustrated in the following examples and their spectrums in figure 5:

- | | |
|-----|----------------------|
| 36- | perde + a → per.da |
| 37- | perde + ek → per.dek |
| 38- | perde + ên → per.dên |

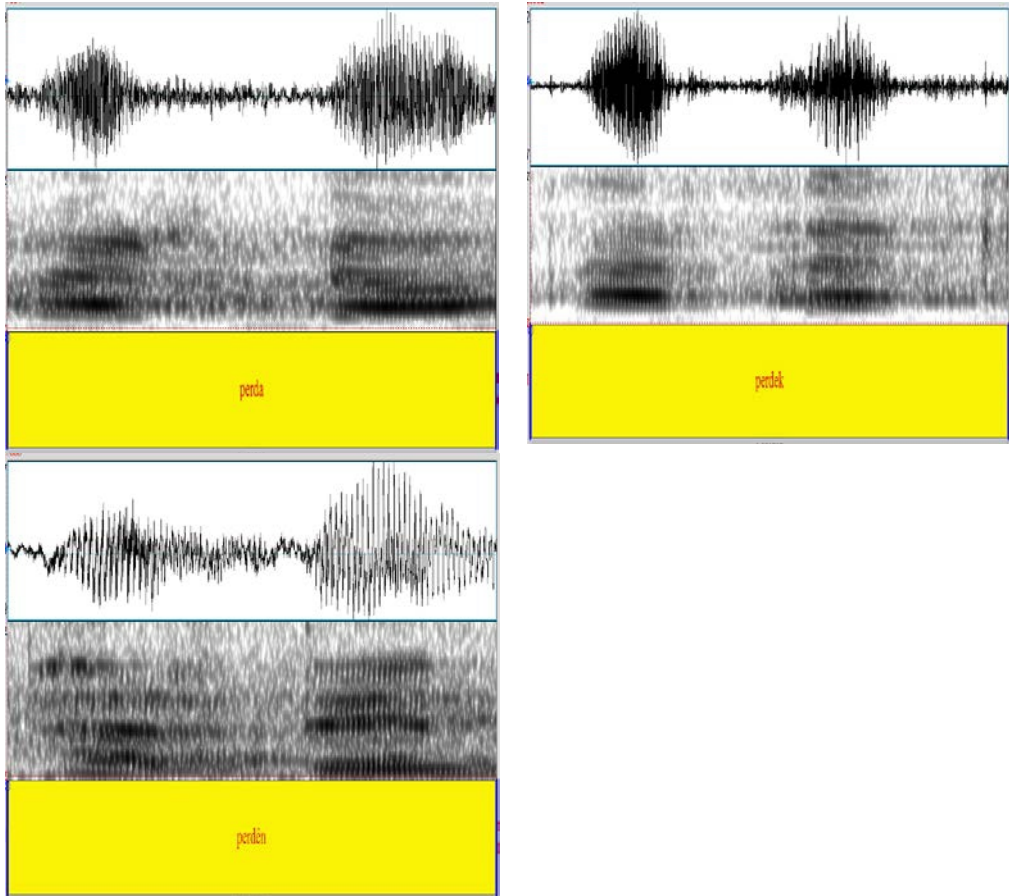


Figure 5: Spectrums of the words <perda>, <perdek> and <perdên> as produced by speakers from Qamshlo dialect

In Diyarbakir and Duhok, in the sequence /a+/e:/, the /a/ of the stem is deleted <perdên>. In the sequence of /a+/a/, all the speakers of Diyarbakir deleted the /a/ of the stem <perdek>, while the speakers of Duhok solved the cluster by the insertion of /j/, <perdeyek>. In the sequence of /a+/a:/:, in both dialects the cluster is solved by either the deletion of the /a/ of the stem <perda> or by /j/ insertion <perdeya>. Figure 6 shows the variations in the production of the structure <perde+a> in Diarbakir and Duhok.

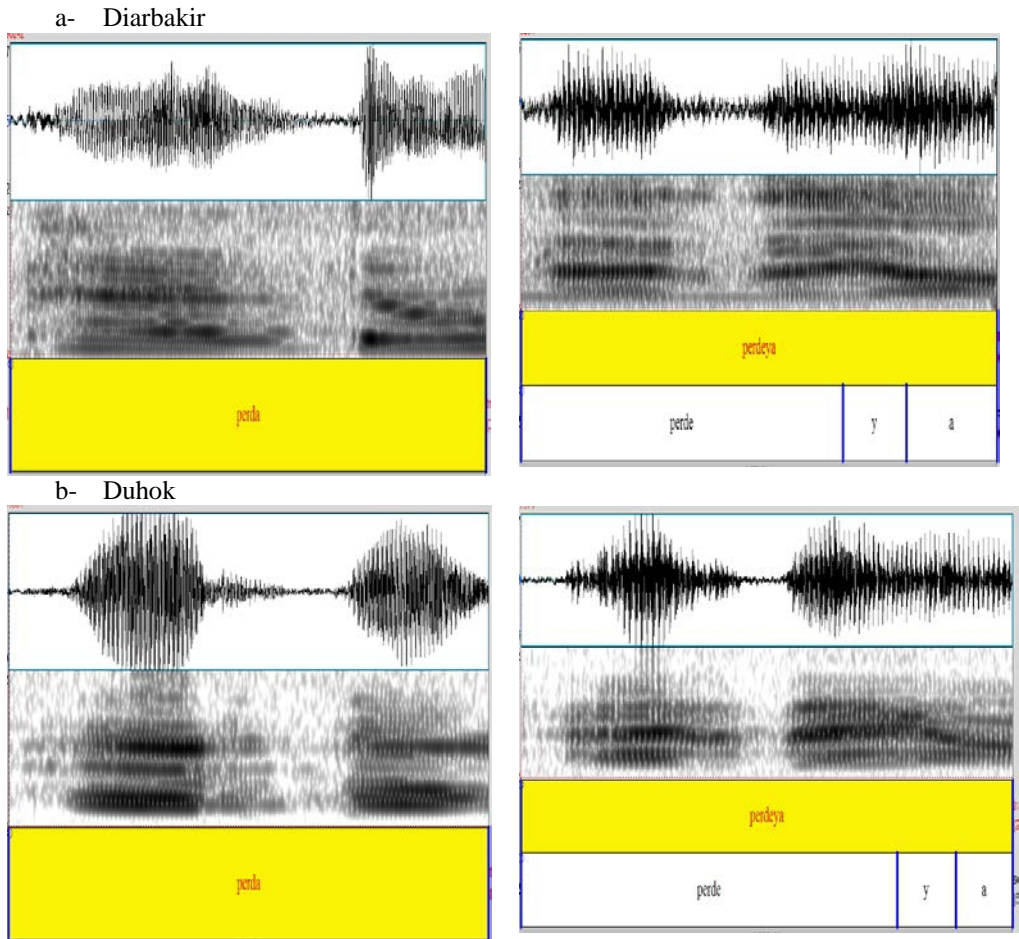


Figure 6: Spectrums of the structure <perde+a> as produced by different speakers from: a) Diarbakir and b) Duhok dialects

This variation in vowel cluster resolution strategy has been referred to before in Hasan (2012). However, she did not specified in which subdialects these variations occur. The study shows that there is variation in the vowel cluster resolution strategy in NK subdialects in word-medial vowel sequence /a/ + /a:/, a or e:/. In Qamshlo it is solved by vowel deletion, while in Diyarbakir and Duhok both vowel deletion and GI are used.

Hiatus resolution by /j/ and /w/ insertion

Additional dialectal and speaker variations are observed when the vowel sequences /u/+/a:/, a or e:/ occur in that /j/ and /w/ insertions are used to resolve the vowel cluster. In Hewler and Duhok, the speakers inserted /j/ in all these sequences except one speaker inserted /w/ in his production of the /u/+/a/ sequence in Hewler and one speaker from Duhok inserted /w/ in the production of the /u/+/a:/. This indicates that /w/ insertion is a speaker

variation in these two sub-dialects because it is not repeated constantly by all speakers. However, further verification of this generalisation needs to be done by examining more speakers.

- 39- saku + a → sakuya / sakuwa (by one speaker in Duhok dialect)
- 40- saku + ek → sakuyek / sakuwek (by one speaker in Hewler dialect)
- 41- saku + ên → sakuyên

Figure 7 illustrates the variations in the production of the structure <saku+a> by two different speakers from Duhok and Hewler.

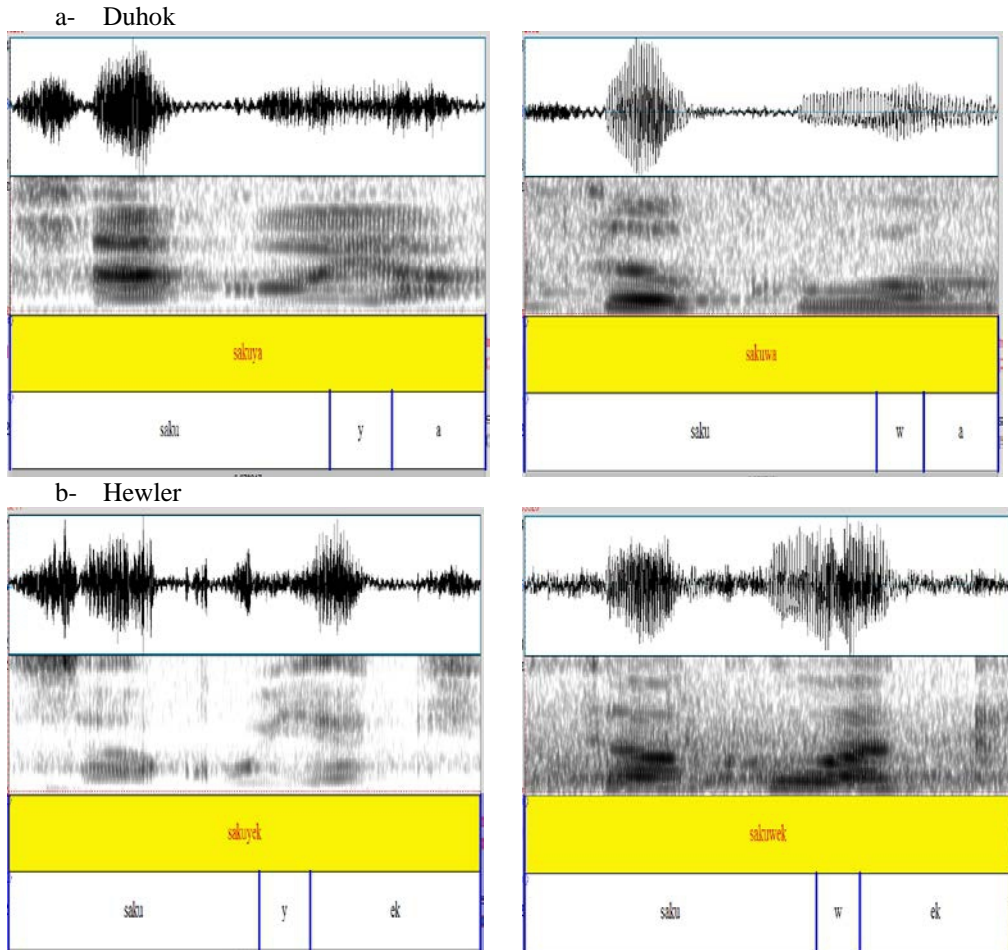


Figure 7: Spectrums of the structure <saku+a> as produced by two different speakers from a) Duhok and b) Hewler dialects

In Diyarbakir and Qamshlo, the speakers produced /j/ and /w/ in their productions of all vowel sequences.

- 42- saku + a → sakuya / sakuwa
- gezu + a → gezuya / gezuwa
- 43- saku + ek → sakuyek / sakuwek

- gezu + ek → gezuyek / gezuwek
44- saku + ên → sakuyên / sakuwên
gezu + ên → gezuyên / gezuwên

Other dialectal and speaker variations are also observed in the sequence of /u:/+/ɑ:/, e:/ and a/. In Duhok /j/ is inserted to resolve the hiatus by all speakers.

- 45- rû + an → rûyan
46- rû + ên → rûyên
47- rû + ek → rûyek

In Diyarbakir and Hewler, the speakers produce /j/ to avoid vowel clusters in /u:/+/ɑ:/ and e:/ sequences. While /w/ is also used by some speakers in the sequence /u:/+/ɑ:/.

- 48- rû + an → rûyan / rûwan

Whereas in Qamshlo only /w/ is inserted in the sequence /u:/+/ɑ:/ and e:/ by all speakers. Meanwhile, /j/ and /w/ are used in the vowel sequences /u:/+/ɑ:/.

- 49- rû + a → rûwa
50- rû + ên → rûwên
51- rû + ek → rûyek / rûwek

From what is mentioned, it can be concluded that /w/ insertion after high back vowels /u/ and /u:/ is only a speaker and dialectal variation because it is not repeated constantly by all speakers and in all dialects.

Conclusion

The study examined a frequent epenthetical process that is used in Kurdish to avoid word-medial vowel clusters, i.e. GI. It takes place word-medially at root-suffix boundaries. The study showed that word-medial vowel hiatus is always resolved. It is usually resolved by /j/ insertion. However, other strategies are also observed, namely /w/ insertion and vowel deletion, which seem to occur only in some dialects and in some vowel sequences. /w/ is inserted only when the back vowels /u or u:/ are followed by the vowels /ɑ:/, a and e:/, but this is not used consistently by all speakers of the dialects. /j/ is also produced in these vowel sequences in all the dialects examined except Qamshlo in which /w/ is constantly used in the vowel sequence /u:/+/ɑ:/. Vowel deletion is used when the second vowel in a sequence is /i/. /i/ is constantly deleted in all dialects because this vowel is the weakest vowel in Kurdish and it undergoes deletion in most cases (Thackston, 2006; Hasan, 2012). Vowel deletion also occurs in all dialects in the identical vowel sequence /i:/+/i:/ and in Qamshlo in the vowel sequences /a:/+/ɑ:/, a, and e:/. It is also used in Diyarbakir and Duhok in these vowel sequences, but not constantly because /j/ is also produced.

The following table summarises the main dialectal differences in the resolution of vowel clusters in Kurdish.

Table 4: Dialectal variation of GI in Kurdish dialects

Vowel sequence	Diyarbaker	Duhok	Qamshlo	Hewler
/ɑ:, o/+ɑ:, a, e:, i:/ /a, u:/ +/i:/ / i:, e:/ + /ɑ:, a, e:/	/j/ insertion			
/ɑ:, a, o, i, u:/+ /i/	/i/ vowel deletion			
/ a / + / ɑ: /	/a/ vowel deletion or /j/ insertion	/a/ vowel deletion or /j/ insertion	/a/ vowel deletion	j
/ a / + / a /	/a/ vowel deletion	/j/ insertion		
/ a / + / e: /	/a/ vowel deletion	/a/ vowel deletion		
/ u / + / ɑ: /	/j/ or /w/	/j/ or /w/	/j/ or /w/	j
/ u / + / a /		j		/j/ or /w/
/ u / + / e: /				j
/ i: / + / i: /	/i:/ vowel deletion			
/ u: / + / ɑ: /	j	j	/j/ or /w/	j
/ u: / + / a /	/j/ or /w/		/w/	/j/ or /w/
/ u: / + / e: /	j		/j/ or /w/	j

The strategy of hiatus resolution, either by GI (whether j or w) or vowel deletion, is accompanied by resyllabification. When a glide is inserted, it acts as the onset of the vowel-initial suffix to avoid onsetless syllables. This satisfies the cross-linguistic onset constraint that syllables must have onsets (Uffmann, 2007; Molczanow, 2008; Blevins, 2008). In other words, Kurdish like other languages has the tendency to have syllables with onsets. Additionally, when vowel deletion occurs, resyllabification occurs in that the remaining consonants act as the coda of the final syllable of the word.

The study concludes that /j/ insertion is the default strategy to resolve word-medial vowel clusters in Kurdish, the insertion of /w/ or vowel deletion are other strategies which are limited to some dialects and vowel sequences. GI in Kurdish is non-homorganic in that /j/ is inserted regardless of the vowel quality of the vowels in the sequence, while /w/ insertion is restricted to some vowel sequences and dialects and it is not repeated constantly by all the speakers of one dialect.

The results of the study provides an understanding of the regional variability in the systematic organisation of phonological patterns. Understanding such variations will lead to a deeper understanding of the phonology of the language. Additionally, the study will help to identify those

patterns which are the characteristic of the language from those which are only dialectal or contextual variations.

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