

On the status of palatalization in Gbari language

Onyinye Anulika Aniagboso
anuligirl@gmail.com

Ebitare F. Obikudo
ebitare.obikudo@uniport.edu.ng
and

Roseline Ihuoma Alerechi
roseline.alerechi@uniport.edu.ng

*Department of Linguistics & Communication Studies,
University of Port Harcourt.*

Abstract

Palatalization is ascertained to be a phenomenon common in the Nupoid languages of the New Benue-Congo phylum, and to Gbari language in particular (Hyman and Magaji 1970, Rosendall 1992, Philip and Sheshi 2004, Blench 2009, Mohammed, 2012). This paper discusses the issue of palatalization in Gbari with the aim of highlighting the irregularity observed in the consistency of its formation in identical phonetic environments. Data was elicited via the 1700 SIL comparative wordlist, associative constructions and also from available literature. The Adobe Audition 1.5 software was used in the editing of audio files while the Praat software was used for data annotation and analysis. Acoustic investigations show that the plosives /k/, /b/, /p/, perceptually interpreted as palatalized before front vowels are acoustically analyzed as sequences of vowels (vowel hiatus). However, in the environment of the low back vowel /a/, they are palatalized and phonemic. No palatal feature is recorded in the production of the bilabial nasal and the nasally released plosives, though the palatalized nasally released voiced bilabial plosive /b^{mi}/ is recorded before the vowel /a/. Further findings show that words with the CGV syllable structure have the fricative /z/ derived through the process of vowel syncope and the plosives, palatalized and phonemic before the low back vowel /a/. Only the voiced velar plosive is realized as palatalized and phonemic before the front vowels /i/ and /e/. This work thus suggests palatalization is not phonetic in the Gbari language but phonemic. Vowel hiatus and vowel syncope are also seen as the phonological phenomena that accounts for some supposed palatalized sounds in the language.

Keywords: *palatalization, vowel hiatus, vowel syncope, Gbari language*

Introduction

Palatalization which generally involves the superimposition of the raised frontal part of the tongue in the production of a consonant sound, is attested across many languages. One of the conditions for palatalization is that there is always an environment that triggers the raising of the tongue. For most languages with evidence of palatalization, the consonant in the environment of the close front vowel /i/ and/or close-mid front vowel /e/ is always produced with a raising of the tongue thereby producing the consonant with some colouration of /i/ or /j/ sound. These vowels always yield the same influence on the receding consonants given the same environment. In the language in question, this paper discusses palatalization in line with the environment in which it occurs in the language and the consistency of its occurrence.

It is the norm of linguists to always pick interest in the processes involved in languages. Investigating palatalization in Gbari is the focus of this paper. The background for this work is set by stating the language situation, the research problem and

methodology; review of relevant concepts and palatalization in other languages. This is followed by data analysis, findings and conclusion.

The Gbari Language

The names Gwari, Gbagyi and Gbari have often been used by different researches to refer to a particular large group of the Nupoid family. Gwari, though a derogatory name given to this group by the Hausas, was used as an umbrella name that considerably captures the two major varieties (Gbagyi Ngenge and Gbagyi Nkwa). Gbagyi, is considered as the original form of the name. This is attested in its presence in the traditional names of the varieties as given earlier in brackets which harbours only the form 'Gbagyi' before 'Ngenge or Nkwa' and not Gwari or Gbari.

Gbari on the other hand is opined as a product of mispronunciation of Gbagyi by the white men who do not have the alveolar implosive /d/ in their sound inventory and naturally replaced the implosive with a trill /r/. However, in recent times, the Gbagyi Nkwa group has identified themselves as the Gbari people. The government has also approved this identity by instituting a body that is mandated with the task of developing the Gbari orthography. This body is different from the committee in charge of the Gbagyi orthography.

The people, Gbagyi and Gbari, however, share similar origin, tradition, facial marks, culture, craft and pottery, music, the remarkable shoulder-carrying culture and also marginalization by the dominant Islamic language, Hausa, which Gbagyi elites believe, majorly inhibited the growth of the language. The only significant difference recorded in their history is some degree of language variation. Rosendall (1992) carried out a lexicostatistic research on the Gbagyi Nge and Gbagyi Nkwa variants, the relationship recorded was 72% but the standard recorded text testing score was not more than 51%. The standard text recording test result, graded them as separate languages. Also in the ethnologue of the world's languages (Simons and Fleming, 2018), Gbagyi Nge and Gbagyi Nkwa are registered as different languages and referred to as Gbagyi and Gbari respectively. It is based on these linguistic evidences, political influence and the disposition of the linguistic consultants that the authors of this research work consider Gbari a language and shall refer to it as such henceforth.

The name Gbari refers to the language and Agbari for the people. The Agbaris are found in Nassarawa, Niger states and in FCT, Abuja Municipal Area Councils (AMAC) of Central Nigeria. Gbari is made of two main dialects, the Southern Gbari and the Northern Gbari with lexical similarity of 89-98%. (Rosendall,1992). The speakers of Northern Gbari reside in Nasarawa and Niger States while speakers of Southern Gbari reside within the FCT suburbs- Gwagwalada, Kwali, Kuje, Paiko,Dobi, Gwako,Knatse and others. The Gbari language is classified as Nupoid language, belonging to the New Benue-Congo phylum. It is closely related to Gbagyi. Other related languages are Nupe, Egbira and Gade (Willianson,1989 and Blench 1989).

Gbari Phonology

Hyman and Magaji (1970) twenty-five consonants of Gbari language. They also identified five (5) oral vowels /a, e, i, o, u/ and one (1) nasal vowel/ĩ/. Muhammad (2012), acknowledged 16 vowels consisting both long and short vowels, though his work is a more on comparative study.

Gbari consonants																									
Phonetic representation	p	b	ḃ	f	v	m	t	d	s	z	l	n	tʃ	ʒ	ʃ	dʒ	j	w ^j	n ^j	k	g	kp	gb	ŋw	w
Orthographic representation	p	b	ḃ	f	v	m	t	d	s	z	l	n	c	j	sh	zh	y	wy	ny	k	g	kp	gb	nw	w

(Hyman and Magaji, 1970)

Philips and Sheshi (2004) presented five (5) vowels /a, e, i, o, u/ and twenty-six (26) consonants making a total number of thirty-one (31) phonemes. Philips and Sheshi (2004) added the alveolar implosive /d/ coupled with the voiceless alveolar affricate /ts/, the flap /r/ and the /h/. these additional sounds are evident and phonemic in the Lambata dialect considered to be more central in speech and relationship with other dialects. Though the sounds /d/ and /h/ are rare in the lexicon of the language. The palatalised alveolar nasal /n^j/ is seen as a consonant cluster of /n/ and /j/ and the nasalised vowel /ĩ/ as phonetic. Orthographically, the voiceless post alveolar affricate /tʃ/ is represented as ‘ch’ in Philips and Sheshi (2004). Hyman and Magaji (1970) established the syllable structures of Gbari language as V, C, CNV, CGV and CMYV, where V stands for vowel, C for consonant, N for nasal consonant (representing nasal release in plosives) and G for glide using the Kuta dialect. The ‘my’, they used to represent CNGV structure, that is, occurrence in some set of words with nasally released plosives followed by a glide. Gbari, like most African languages, is a tonal language. According to Hyman and Magaji (1970) there are three basic tones in Gbari language: [] low, [] mid, and [] high. He noted other tones such as: [] low-mid tone (a tone level lower than the mid tone), [ˇ] a rising tone and [^] a falling tone.

Statement of the problem

Palatalization as a secondary articulation presupposes a superimposition of the raising of the frontal part of the tongue in the production of a non-palatal consonant sound. Its occurrence at a phonetic level is also conditioned in the environment of a high vowel /i/ or front vowels /i/ and /e/ or the glide /j/. The resultant sound is viewed as a single segment produced with /i/ like sound. In the Gbari language, these parameters are active in the palatalization process presented in literature. Palatalization is also represented in orthography with the letter ‘y’ (Philips and Sheshi 2004:20) such that a word like mĩ - swallow is written as ‘myi’. However, Philips and Sheshi (2004:20) in testing out the orthography designed for the language, discovered that speakers of the language find it difficult to recognize the presence of the letter ‘y’ and when it should be added to a spelling. They suggested that in literacy classes, words that have additional ‘y’ should be distinguished from those that do not. Samples of such words with their counterparts which are listed as presented in example (1)

Example (1)

- (a) y appears in epyí ‘house’; but not in pí ‘to cross over’
- (b) y appears in pmyí ‘to twist’ ; but not in pmí ‘to separate’
- (c) y appears in pye ‘to winnow’; but not in pé ‘to surpass’
- (d) y appears in byi ‘to bury’ ; but not in bida ‘meat’
- (e) y appears in èbmyi ‘outside’ ; but not in ebmi ‘cave’
- (f) y appears in ebye ‘joke’ ; but not in ebè ‘knife’
- (g) y appear in myí ‘to swallow; but not in mi ‘I/me

- (h) y appears in byi ‘to ask’ ; but not in biḃili ‘evil’
(Excerpts from Philips and Sheshi, 2004:21)

This excerpt suggests that given the same environment, palatalization occurs in some words and not in others. It may also suggest some kind of stage two of the secondary articulation process where palatalization is phonemic. This paper seeks to find out what is acoustically obtainable.

Methodology

The research design adopted in this work is the descriptive survey design. Nwankwo (2013:63) attests to this in his definition that ‘descriptive survey study is that in which the researcher collects data from a large sample drawn from a given population and describes certain features of the sample as they are at the time of the study and which are of interest to the researcher, however, without manipulating any independent variable of the study. The cluster sampling method is used to group the Gbari speakers using their local government areas. Kwali local government was picked for this research. Data was collected using the 1700 SIL comparative wordlist, words are also drawn from existing literature. The linguistic consultants are six, four males and two females within the age range of about 35-70. Yul-Ifode (2007:98) defines instrumental phonetics as carrying out phonetic investigation using adequate physical apparatus to measure or/ and analyze data. Centuries past, linguists rely only on the trained ear of the researcher for phonetic investigation. The researcher listens attentively and repeatedly with the aim of drawing out the properties of the sound and its relatedness to other sounds. This method though handy may be weak in ascertaining accuracy considering the perceptive competence of the hearer and other individuals, environmental and sociolinguistic differences that may hamper proper perception or/and interpretation. However, instrumental phonetics bridges that scientific gap because it deals with conducting phonetic investigation with some gadgets designed to gather, interpret or/and analyze the properties of a given sound. The instruments relevant to this research are Adobe audition 1.5 for data segmentation and Praat software used to generate spectrographs.

Adobe audition 1.5 was used for word to word filing and Praat (Boersma and Weenink, 2015) was used for acoustic analysis.

Literature review

The process of palatalization and importance of acoustic investigation are discussed in this section. Palatalization in Anaang, Hausa and Gbari languages are also reviewed in this section

Palatalization

Palatalization has a large scope of definition. It is viewed as a secondary articulation, a raising of the front part of the tongue [k] becomes [k^j], coronalisation - a fronting of the tongue towards the hard palate [t] becomes [t^j] or spirantization – a complete shift in the place of articulation [g] becomes [d^j] (Bhat1978, Katamba 1989, Hume 1994). In this paper, Palatalization is viewed as a process where a raising of the front part of the tongue is superimposed on a non-palatal consonant. This gesture is characterized by an [i] colouration perceived in the production of the consonant (Egbokhare 2002).

From the definitions above, it is deduced that palatalization is essentially a one segment feature, both the primary and secondary stricture are contained within a given duration for the production of the consonant, the contact and the release period. Ladefoged and Maddieson (1996:363) confirms this in their definition that palatalization is the raising of the front part of the tongue, like in the production of the vowel [i], imposed on a consonant during its production and perceived more during the release of that consonant. Bhaskararao et al (2009:5) also opines that palatalization may be felt much stronger either ways, before the production of the consonant or during its release. Palatalization is therefore viewed in this work perspective of a secondary articulation. Ekpe (2013:3) concludes that palatalization is characterized with two ends, the cause or the motivation for the action and the effect the action has in its environment. In a typical situation, the cause is the high or front vowel environment while the effect in the raising of the blade/tip of the tongue in the production of the consonant, giving it a palatalized effect. The cause Ekpe (2013) called, trigger and the effect, target. When palatalization does not show contrast in a given language it is considered phonetic but when it is responsible for a change of the meaning in words, it is said to be phonemic and part of the sound inventory of the language (Clements, 1991:22). Palatalization is symbolized with palatal approximant superscript [ʲ] as in [bʲ]. (Ekpe 2013:4).

Palatalization in Anaang

Ekpe (2013) carried out a research work to investigate the articulatory features of palatalization in the phonology of Anaang, a lower cross language of the Benue-Congo sub-family of the Niger-Congo language phylum, using the articulatory model of Browman & Goldstein (1990). In Anaang, Palatalization is imposed on consonants that are not produced at the palatal region, found only at word or syllable initial positions. The assimilatory process is regressive and the effect is a secondary articulation. The high front vowel /i/ triggers the process while the effect rests on the consonants which Ekpe (2013) refers to as the target. Palatalization is evident in the CV, CVC syllable structures in Annang. Examples are shown in (2).

Example (2)

- | | |
|----------------------|---|
| (a) /é-di/
V-CV | [é-dʲi] ‘pig’
V-CʲV |
| (b) /é-ti/
V-CV | [é-tʲi] ‘good’
V-CʲV |
| (c) /é-líp/
V-CVC | [é-lʲíp] ‘twenty’
V- CʲVC |
| (d) /wíp/
CVC | [wʲíp] ‘ask’
CʲVC (Ekpe 2013:159-60) |

Palatalization in Hausa

Hausa is a West Chadic language under the Chadic group of the Afro-Asiatic phylum In Hausa language, the alveolar /s t d z/, the velars the /k/ / ƙ / /g/ and the labio-velar /w/ are palatalized before the front vowels /i/ and /e/. The velars are palatalized as a result of the raising of the front part of the tongue such that /k/ / ƙ / /g/ are realized as /kʲ/ / ƙʲ / /gʲ/ .

This is typical of a secondary articulation. However in the alveolar, the raising of the blade produces a shift in the place of articulation such that /s/ becomes /ʃ/, /t/ becomes /tʃ/, /z/ and /d/ become /j/. (Amfani 2007). Examples are given using both single and plural forms. Plural suffix in Hausa evident in the example is –Ce, where C is identical to the last consonant in the root word. Examples are shown in (3)

Example 3:

(a)	/kásá/	- kasase -	kásàǰé
	country		countries
(b)	/gida/	-gidade -	gidàǰé
	house		houses

(Amfani, 2007:133)

(c)	wake	/wak ^h e/	beans
(d)	baki	/bak ^h i/	mouth
(e)	baƙi	/baƙ ^h i/	black
(f)	geza	/g ^h eza/	stick/cane
(g)	keya	/k ^h eja/	lice
(h)	gini	/g ^h ini/	building

(Basiru, 2015:43-4)

The secondary articulation in example 3 (c-h) is the interest of this paper.

Palatalisation in Gbari

Palatalisation in Gbari is viewed in existing literature as the superimposed raising of the frontal part of the tongue in the production of consonant sounds before the front vowels /i/ and /e/. Examples of such palatalisation are adapted from Rosendall (1992), Hyman and Magaji (1970), Philips and Sheshi (2004) and generated data for this research. Examples are shown in (4)

Example 4:

a)	gyi/dyi	‘eat’
b)	myī	‘swallow’
c)	fyī	‘fill up something empty’
d)	pyī	‘draw out’
e)	ɸyī / ɸyiḅó	‘ask’
f)	byè	‘plant(v)’
g)	èbyè	‘joke’
h)	kyésā	‘reduce’

Examples (4a-e) show palatalization before front vowel /i/ and examples (4f-h) show palatalization before the front vowel /e/. this next section is set to investigate the palatalization process in Gbari.

Data Analysis

The previous section discussed palatalization in Gbari with vivid examples, however it is observed that the data in example (4) does not fully represent interactions in the language. The consonants are not consistent with acquiring palatal feature given the same environment of the front vowels /i/ and /e/. This is shown in example (5).

Example 5:

Column A	Gloss	Column B	Gloss
a) gyī/dýī	'eat'	gì	'give'
b) myī	'swallow'	mī	'I/me'(1st Per.Sg.)
c) fyī	'fill up something empty'	fībā	'spray (like chemical)
d) pyī	'draw out'	pí	'drive'
e) byī	'ask'	bíbi	'evil'
f) byè	'plant(v)'	bè	'belch'
g) èbye	'joke'	èbè	'knife'
h) kyésā	'reduce'	kétfā	'to be lean'

From the examples in (5), it is observed that the same consonants in the identical environment of front vowels /i/ and /e/ at the same word position seem to be palatalized in one environment and not palatalized in another. The consonants /g m f p b/ of column A (5a-e) seem to be produced with a superimposed raising of the front of the tongue, while their counterparts in column B (different words entirely), given the same environment, are realized without palatalized effect. Likewise, in column A examples (5f-h), the effect of raising the front part of the tongue is observed but there are no such raisings in their counterparts in column B. This inconsistency questions palatalization as the phonetic process operational in the data. On the other hand, it may be argued that Palatalization in Gbari is phonemic. This means that the palatal feature becomes an inherent part of the consonant such that its appearance in word positions may be triggered by front vowels /i/ and /e/ as seen in words such as zyǎ - 'pour away water', pya -to fan and byá - blow(fire). It also means that it contrasts with its single counterpart as shown earlier in example (5). However, it is observed that at word interaction in normal speech, the consonants discard the palatal feature which was characterised phonemic. Examples are shown in (6)

Example (6)

a)	myī	#	étí	-	myétí	-	mítí	'swallow yam'
	swallow		yam					
b)	myī	#	èbī	-	myèbī	-	mībī	'swallow a child'
	swallow		child					
c)	myī	#	égá	-	myégá	-	mígá	'swallow a gall'
	swallow		gall					
d)	myī	#	èmī	-	myèmī	-	mìmī	'swallow excreta'
e)	swallow		faeces					
f)	pyí	#	ènā	-	piènā	-	pīnā	'press out (liquid) from a goat'
	press out		goat					
g)	dýí	#	ènā	-	díènā	-	dīnā	'eat goat'
	eat		goat					

From the example 6 (a-g) it is observed that at boundary interactions, the palatal feature is not realized. Example 6(f and g) fully portays this in the tone borne by the adjacent vowels before the elision. To further investigate the status of palatalization in Gbari, words with the given palatalized sounds are recorded alongside the ones having the plain counterparts. The focus is to (1) segment the sounds, listen and observe the spectrogram to identify the features of each. (2) observe any difference in the production of the palatalized sounds and the plain counterparts.

In Fig.1 and 2 the spectrograms of the words gí - give , gyī -eat and gyè -see are displayed.

Fig 1

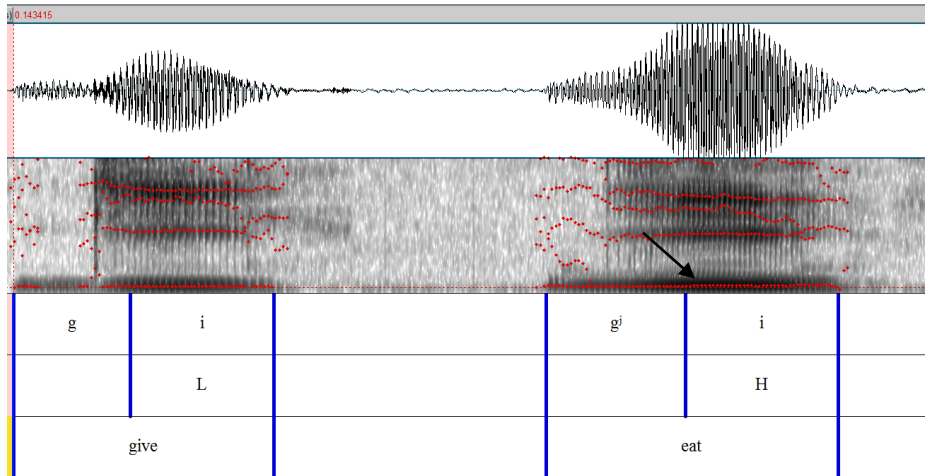


Fig 1 spectrograms for the words 'gi –give and gyi – eat'

In Fig 1, the arrow points to the part of the spectrogram produced with a narrower constriction of the vocal tract perceived as a [j] sound accompanying the release of the velar plosive in the word 'gyi – eat' this is absent in the spectrogram for the word 'gi – give' . The widening apart of the F1 and F2 at the glide onset (indicated by the arrow) is not often visible enough in the environment of the close vowel /i/ however, in Fig 2, it is clearly seen.

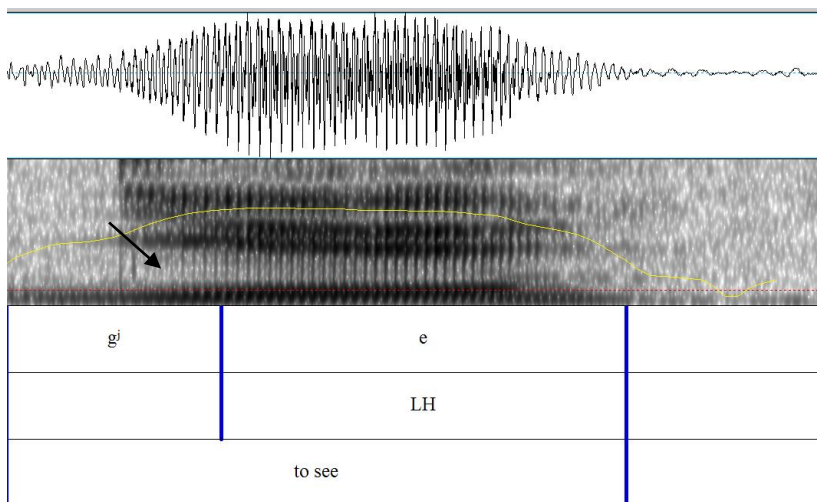


Fig 2. Spectrogram of the word 'gye- to see' showing secondary articulation.

Observations in Fig 1 show that /g^j/ contrast in the language and no counterpart exist in the language for the word 'gye' in Fig 2. Conversely, the voiceless velar plosive /k/ is perceived with no secondary articulation. The Formant bars are clearly defined with no perturbation that may signify a narrower stricture. This is shown in Fig.3.

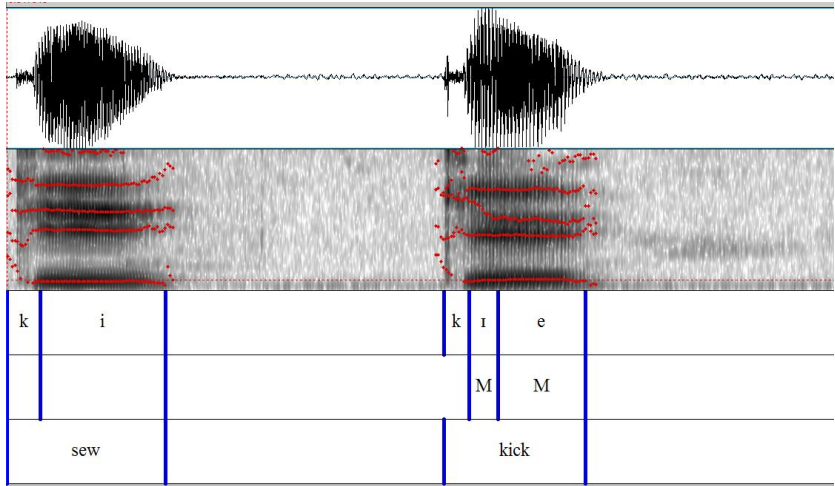


Fig 3 Spectrogram of the words ‘ki –sew and kye-kick’ Henceforth, the sounds under each segmented portion of the spectrograms represent what was perceived. This may differ from the orthographic representation used in the body of the work.

The voiced bilabial plosive is observed in Fig 4.

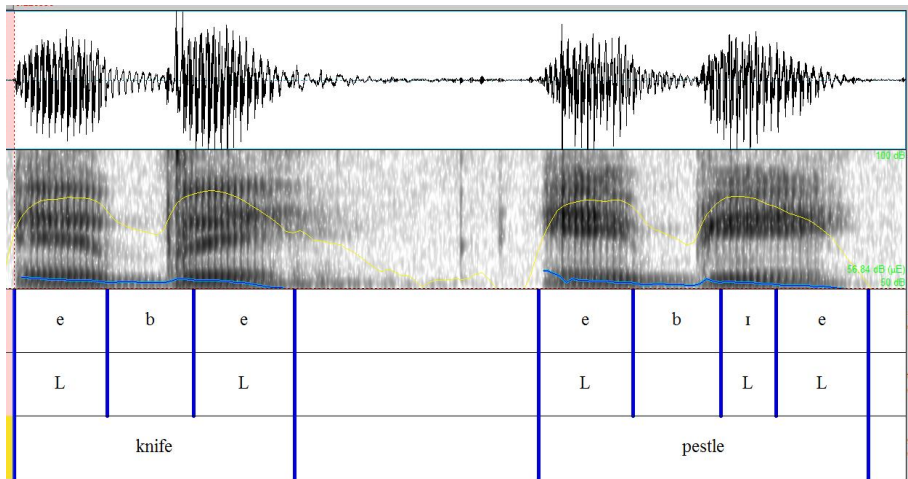


Fig.4 Spectrograms of the words ‘ebe – knife’ and ‘ebye – pestle’.

In Fig.4, the spectrogram for the word ‘ebye’ shows well defined F1 and F2 bars that indicate the presence of the /ɪ/ sound which was also played and confirmed perceptually. The demarcating lines signifying total closure evident in the /b/ sound of the two words in the spectrograms and similarity in both releases (plosive outburst) show that no sound is imposed on any of them. This is also evident in the word ‘pyisni – to set trap’ as seen in Fig 5.

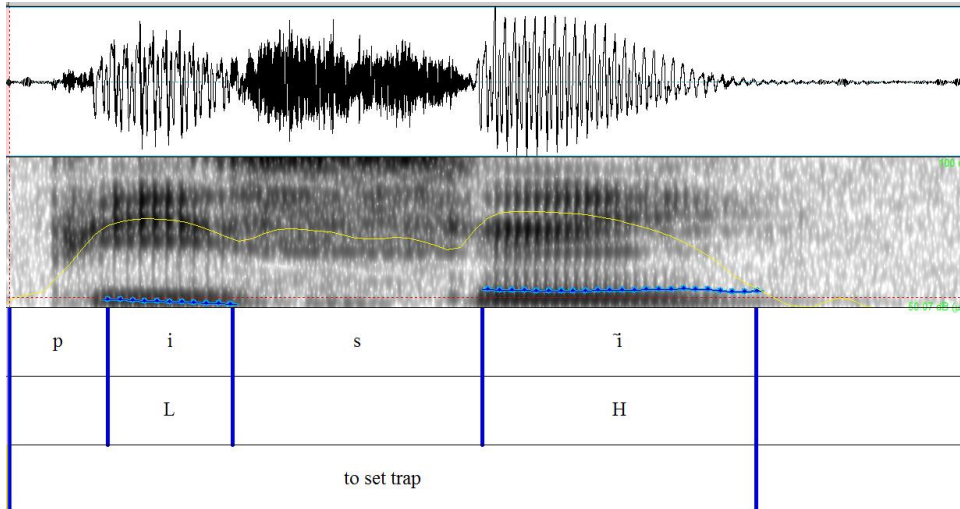


Fig.5 Spectrogram of the word 'pyisni – to set trap'
 The sounds under each segmented portion of the spectrograms represent what was perceived. This may differ from the orthographic representation used in the body of the work

Fig 4 and 5 show that the bilabial plosives before the close vowel /i/ and the mid-close vowel /e/ (for the voiced bilabial plosive) are not produced with the raising of the front part of the tongue. The spectrograms of the bilabial nasal which has also been perceived in the literature as palatalized sounds are given in Fig. 6.

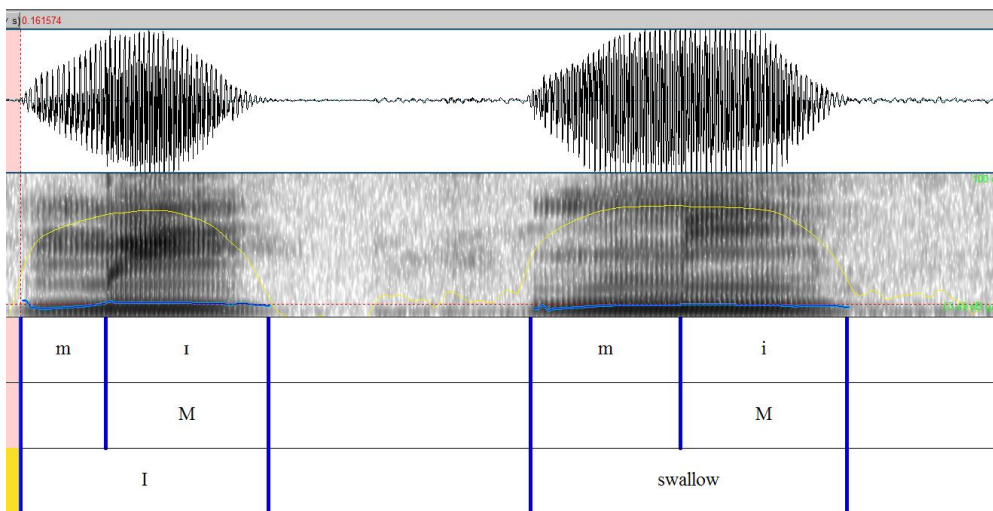


Fig.6 spectrograms of the words 'mɪ - I/me' and 'myi – swallow'

In Fig. 6, the bilabial nasal /m/ in the words were segmented and played, each was perceived no palatal feature. The formants of the vowels are not quite visible signifying great effect of nasalization on the vowels. This is also obtainable in plosives with nasal release as shown in Fig 7.

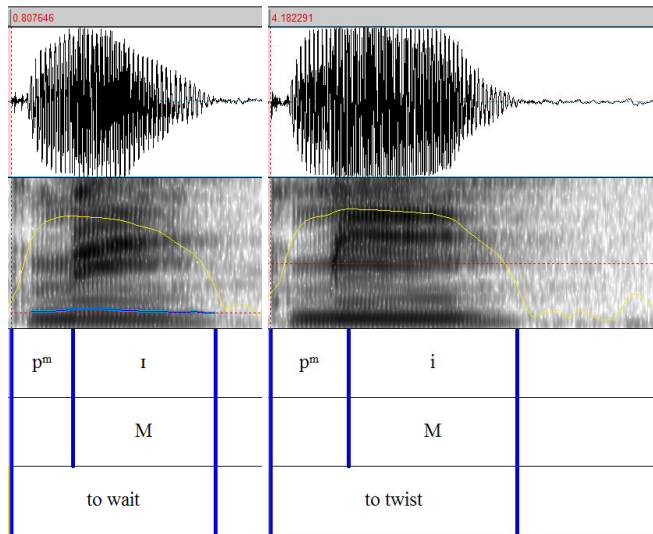


Fig 7. Spectrograms of 'pmi-to wait' and 'pmyi to twist'

From the spectrograms in Figs 6 and 7, it is observed that the long close vowel /i/ and its short form /ɪ/ contrast. The long and short close vowels are part of the vowels identified in the language. (Muhammad, 2012). The phonemic status of the vowels is, however not the focus of this paper rather to investigate the secondary palatal feature which is absent in the production of the bilabial nasal and the nasally released voiceless bilabial plosive. So far the plosives /p/ and /b/ and /k/ and the bilabial nasal do not succumb to the influence of the front vowels. The palatalized voiced velar plosive /gʲ/ is considered phonemic due to contrast with its single counterpart. Further investigation will include glides realized in non-high or front environments. The next section is treated under vowel elision /syncope

Vowel elision/syncope

Elision simply means the deletion of a vowel segment in speech. Vowel syncope is the dropping of a vowel in a string of utterance. Hyman (1972) observed vowel syncope in the origin of nasalized vowels in Gbari. He analyzed the origin of nasal vowels using this process of CVNV>CNV>CNV>CV̄. Where the first vowel is lost by syncope, then nasalization takes place followed by the loss of the nasal consonant. In this study, we posit that the CVNV structure may not be exhaustive. It is argued that the structure may not always be a CVNV where only nasals are found in the intervocalic position. Typical of a natural language, other possibilities may exist such as glides - CVGV producing intervocalic positions such as CVyV, CVwV. In this scenario, when vowel syncope occurs, the structure becomes a CGV structure. In Blench (2013)'s comparative wordlist, the word 'pour (water)' is recorded as 'zeya [zeja] under Gbari Nkwa and Kwali. This word is also recorded in data generated for this research as 'zja'. The spectrogram is shown in Fig. 8

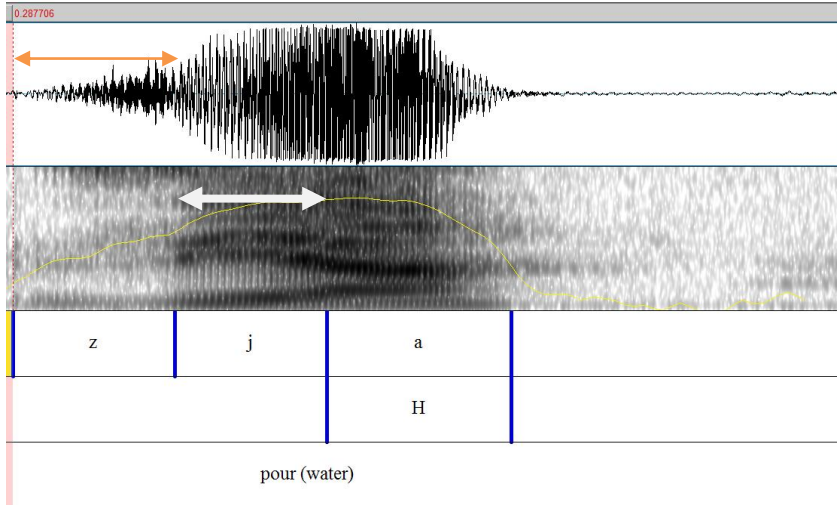


Fig 8 spectrogram showing the word ‘zja – pour (water)’

In Fig.8 shows the complete production for the voiced alveolar fricative [z] perceived and identified by the aperiodic waves, and the widening between the F1 and F2 typical of the approximant [j]. The word is also perceived with a floating low tone which auditory may be assigned as a contour Vowel elision at word interaction in normal speech is further observed as shown in example 7.

Example 7

- (a) zè núwá - ‘pour the water (away)’
pour water
- (b) zè éná núwá yā - ‘pour away the goat water’
pour goat water away
- (c) zjǎ - pour (water) away.
pour away
- (d) fi –sweep
- (e) fiyá – sweep away

In example 7 (a and b) , it is observed that the word for ‘pour’ is zè and is associated with ‘ya’ as a compound verb. While 7(c) records vowel elision, 7 (e) do not. this is a clear case of vowel elision. The words ‘bja – blow (fire)’ and ‘pja – to fan(v)’ were not traced to any different underlying form. However, it is observed that when placed under the spectrogram, the bilabial plosives were produced with palatal superimposition as indicated with the arrows in the spectrogram in Fig.9

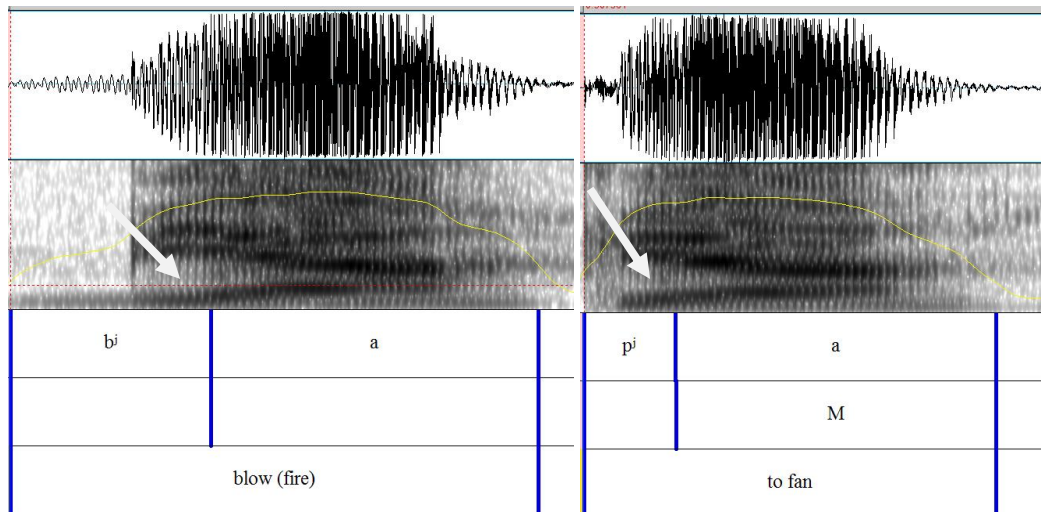


Fig.9 spectrograms of the words ‘bya –blow (fire)’ and ‘pya – to fan’ showing secondary articulation.

The nasally released plosived is also observed to acquire the palatal feature which signifies that during the time of nasal release, there is also a raising of the front part of the tongue. The spectrogram is shown in Fig 10. This also contrast with the word ‘bmà – to break’ this structure is rare in the language.

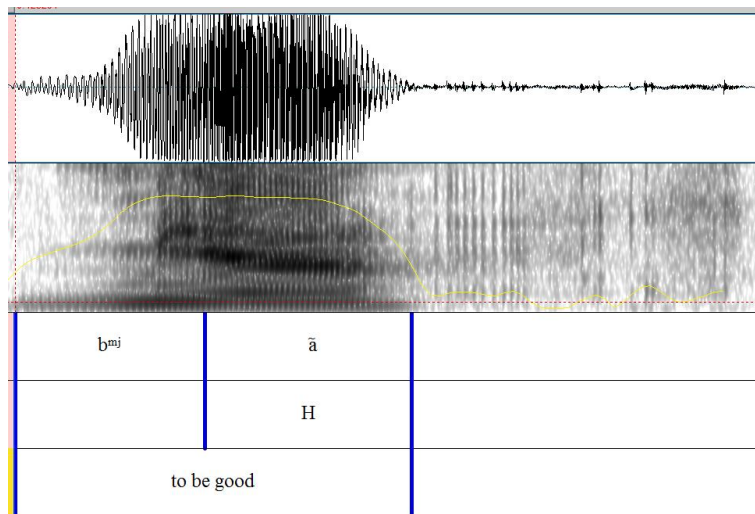


Fig 10. Spectrogram of the word ‘bmya – to be good’ showing a colouration of feature indicating double secondary articulation

Conclusion

This paper investigated palatalization process in Gbari using some words already attested to contain palatalized sounds in the language and some generated data. Words were employed across word boundaries and were observed acoustically too. It was discovered that the palatalization as generally attested in the language in not consistent given identical environment and across word boundaries. Palatalization is phonemic in Gbari evidenced in the sounds /bⁱ/, /p^j/, b^{mj}/ before the low vowel /a/ and /g^j/ before /i/ and /e/. The glides observed in the fricative /z/ is attributed to have evolved by vowel syncope though very

rare. It is also discovered that the sounds /p/,/b/,/pⁿ/, /m/ and /k/ are realized without the palatal feature in the environment of the close vowel /i/. Sound segmentation in praat reveals that some supposed palatalized sounds have well defined F1 and F2 bars typical of vowels. palatalization is not an active phonetic process in Gbari it is considered in this work to have graduated to a phonemic status as indicated by the velar trace. Supposed cases of secondary articulation (triggered by /i/) with /k/,/b/,/p/ are cases of vowel hiatus while /m/, /pⁿ/ are cases of long/short vowel distinction.

References

- Amfani, H. 2007. Hausa phonology. In Ore Yusuf (ed.). *Basic linguistics for language teachers*. Port Harcourt: M & J Grand Orbit Communications.
- Basiru H.S.2015. *A feature driven analysis of labialization and palatalization as phonological processes in Hausa*. An unpublished B.A research project, Usman Danfodiyo University, Sokoto.
- Bhaskararao P., Hassan, S., Naikoo,I. A., Ganai,P. A., Wani, N. H. and Ahmad,T. 2009. A phonetic study of Kashmiri palatalization. In Minegishi, M. et al (ed.). *Field Research, Corpus Linguistics and Linguistic Informatics* (Working Papers in Corpus-based Linguistics and Language Education), No. 3: 1 – 17. Tokyo: Tokyo University of Foreign Studies.
- Bhat, D. N. S. 1978. A general study of palatalisation. In Greenberg, J. H. (ed.). *Universals of Human Language*. Stanford: Stanford University Press.
- Blench, R. M. 1987. Nupoid. In Bendor-Samuel, J. (ed.). *The Niger-Congo languages*, pp. 305-322. Lanham, Maryland: University Press of America.
- 2009. Nupe dictionary. Cambridge: Kay Williamson Educational Foundation
- 2013. *The Nupoid languages of West-Central Nigeria: An overview and comparative wordlist*. Cambridge: Kay Williamson Educational Foundation.
- Boersma,P and Weenink,D .2015.Praat: doing phonetics by computer. Retrived from <http://www.praat.org/>
- Clements, G.N. 1991. Place of articulation in consonants and vowels: a unified theory. In B. Laks and A. Rialland, (eds.), *L'Architecture et la Géométrie des Représentations Phonologiques*. Paris :CNRS,.
- Ekpe, M. B. 2013. Articulatory analysis of palatalization in Anaang. *International Journal of Applied Linguistics and English Literature*. Vol. 2, No. 6:pgs 155-160
- Egbokhare, F. 2002. Introductory phonetics. Ibadan: Quasar and Language Solutions.
- Hyman, L. M. and Magaji, D. J. 1970. *Essentials of Gwari grammar*. Ibadan: Institute of African Studies, University of Ibadan.
- Hyman, L. M. 1972. Nasals and nasalization in Kwa. *Studies in African Linguistics*, Vol.3, No. 2: pp 167-206
- Katamba, F. 1989. An Introduction to phonology. England: London Press
- Ladefoged, P. 2003. *Phonetic data analysis: An introduction to field work and instrumental techniques*. Massachusetts: Blackwell publishers.
- Ladefoged, P. and Maddieson, I. 1996. *The sounds of the world's languages*. Oxford: Blackwell.
- Muhammad, A B.2012.*A comparative study of Hausa and Gbagyi sound systems*.Unpublished thesis work submitted to the PostGraduate School, Ahmadu Bello University, Zaria
- Nwankwo, O.C.2013. A practical guide to research writing:for students of research enterprise. Port Harcourt: University of Port Harcourt Press
- Philip, A. N. and Sheshi, N. 2004. *The Gbari orthography*. Minna: Gbari Language Development Committee.
- Rosendall, H. J. 1992. *A phonological study of the Gwari lects*. Dallas: Summer Institute of Linguistics.

- Simons, G. F. and Fening, C. D. (eds.). 2018. (21st edn.). *Ethnologue: Languages of the world*. Dallas, Texas: SIL International. Online version available at: <http://www.ethnologue.com>.
- Williamson, K.1989. Niger-Congo overview. In John Bendor-Samuel, J. (ed.). *The Niger-Congo languages*, pp. 3 – 45. Lanham, Maryland: University Press of America.
- Yul-Ifode, S. 2008. *Basic phonetics*. Port Harcourt: University of Port Harcourt Press.