

Contrastive Analysis of the use of palatalisation in Hausa & Kanuri languages

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Abstract

This study investigates palatalisation in Hausa and Kanuri languages with particular attention to their phonological and morphophonological structures and functions. Drawing on Feature Geometry Theory, the study examines the typological similarities and differences in the distribution, conditioning environments, and outcomes of palatalisation between the two languages. Data were obtained from published literature and supplemented by native-speaker intuitions from the authors, who are native speakers of Hausa and Kanuri. A comparative descriptive approach was employed to analyse both automatic and non-automatic palatalisation processes. The findings reveal significant cross-linguistic variation in the nature and productivity of palatalisation. Hausa exhibits both automatic and non-automatic palatalisation, with morphologised palatalisation functioning productively across morpheme boundaries in processes such as plural formation and derivation. In contrast, Kanuri demonstrates a predominantly automatic and phonologically conditioned type of palatalisation that is largely restricted to assimilatory environments involving high front vowels and palatal glides. Unlike Hausa, Kanuri lacks extensive morphologised palatalisation and exhibits multiple palatalisation outcomes, including full palatalisation, affrication, and context-dependent consonantal alternations. The study further shows that while palatalisation is attested in both languages, the phonological segments involved, the conditioning environments, and the resulting palatal sounds differ considerably. Hausa illustrates a more advanced stage of phonologisation in which historical palatalisation has become integrated into morphological processes, whereas Kanuri retains a more conservative and primarily allophonic system.

Keywords: Palatalisation, Morphophonology, Hausa, Kanuri, Automatic Palatalisation, Non-Automatic Palatalisation.

1. Introduction

Generally, the term palatalisation, here, is one of the phonological processes whereby the behaviour of non-sonorant coronal and velar obstruent phonemes changes to have palatal characteristics (Abubakar, 1983). Similarly, Schuh (2002) sees word palatalisation as a phenomenon whereby palatal articulation is added, as a secondary articulation, to consonants, or alveolar sound changes to palato-alveolar. In some languages, palatalisation can be identified based on automatic and non-automatic palatalisation. While almost all languages have automatic palatalisation, other languages have both automatic and non-automatic palatalisation.

Automatic palatalisation is the process whereby coronal consonant phonemes and velar stop consonants change to either full palatal consonants or have a palatal release, such as /j/ like ending. In Hausa, velar sounds such as /k/ and /g/ are palatalised to [kʲ] and [gʲ] when followed by the mid-front and high-high front vowels /e/ and /i/. For example, *giya* becomes *gyiya* (alcohol), or *kira* becomes [kyira] ‘call’ (Abubakar, 1999). Automatic palatalisation

is a context-driven, context-specific process and predictable. It is a regular and rule-based process triggered by the phonetic environment, resulting in it being allophonic. It is a change taking place in the environment before mid-front and high-front vowels or the palatal glide consonant /j/. Irrespective of words or word classes, provided there is a contact between mid-front vowels or palatal consonant and coronal consonants, such a palatalisation will automatically be applied. However, this process does not cause meaning alteration but variation in pronunciation.

On the other hand, non-automatic palatalisation is the type of palatalisation that is applied across morpheme boundaries. For Hausa, the segments undergoing this type of palatalisation are the non-sonorant coronal phonemes: /s/, /z/, /t/ and /d/ and the bilabial approximant /w/ when transformed into one of the following: plural verb form, verbal-nominal or patronymics such as the word *ƙasa* (country) becomes *ƙasashe* (countries) in Hausa language (Abubakar, 1999). Based on the explanation above, the two types of palatalisation operate in languages such as Hausa. Therefore, this work mainly concerns a comparative analysis of the use of palatalisation in Hausa and Kanuri

languages, aiming to determine their typological relationships.

Palatalisation in English

Palatalisation is quite a common linguistic practice in the English language. It is a movement of the tongue toward the hard palate in articulating consonant phonemes, and it may involve both a change in the primary place of articulation and the addition of secondary palatal features. In English, the process commonly affects coronal consonants occurring before the palatal glide /j/. A combination of alveolar consonants with palatal glide /j/ in articulating palato-alveolar—commonly known as YOD coalescence in English—is the most common palatalisation in English phonology (Wells, 2006), for example, *did you* → /dɪdʒu:/; *don't you* → /dəʊntʃu:/; *miss you* → /mɪʃu:/. Research in sociophonetics revealed social distribution in palatalised variants in English, arguing that regional, age, class and speech style influence the use of palatalised forms (Rees-White, 2021)

1.2 Background of the Study

1.2.1. Hausa language

Hausa is predominantly spoken in most parts of northern Nigeria and plays a vital role as a lingua franca in the region.

Minority tribes in the region use it as a link language to communicate in social activities. According to Newman (2000), it is spoken in the northern region of Nigeria and the southern region of the Niger Republic. The language is a member of the Chadic family of the Afro-Asiatic phylum of African languages (Greenberg, 1963). Hausa is also a tonal language with lexical and syntactic tonal aspects. It has a Subject-Verb-Object (SVO) word order (Newman, 2000). Hausa has 32 consonants: /b, t, d, k, g, k^w, g^w, kɪ, gɪ, ʔ, ʔɪ, ɓ, ɗ, s', k', k^w, kɪ, m, n, ɸ, ɸɪ, s, z, ʃ, h, tʃ, dʒ, l, r, ɾ, j, w/ (Sani, 2005). Hausa features a vowel system of 12 phonemes, consisting of five short monophthongs, their long equivalents, and a couple of diphthongs—/a, i, o, u, e, a:, i:, o:, u:, e:, ai, au/ (Newman, 1997).

1.2.2. Kanuri language

Kanuri is a Saharan language of Nilo-Saharan phylum of African languages (Greenberg, 1963) spoken by over three million people in the Lake Chad region, with its largest population in northeastern Nigeria (Bulakarima & Shettima, 2012). It is a tonal language, exhibiting high, low, rising, falling, and occasionally mid tones (Wolff, 1987; Bulakarima & Shettima, 2012). Phonologically, Kanuri has a relatively small inventory of consonants (18 contrastive

phonemes: /b, t, d, k, g, f, s, z, n, l, r, dʒ, tʃ, m, ŋ, h, j, w/, and six major dialects exist: Yerwa, Bilma, Mowar, Suwurti and Manga, among which the Yerwa dialect is the most widely spoken (Bulakarima & Shettima, 2012; Cyffer, 1998). Kanuri has six vowels: /a, i, o, u, e, ə/. In addition, four allophones which include [p], [f], [ɔ], and [ʃ] serve as variants of /b/, /f/, /l/ and /s/ respectively (Cyffer & Hutchison, 1979; Bulakarima & Shettima, 2012). In addition, the language employs six prenasalised consonants — /mb, nd, nj, ng, ny, nz/ — which function as single phonemes, though they are represented orthographically as digraphs (Modu, 2012). Other consonantal realizations arise through phonological processes, including [ɸ] (bilabial fricative), [ʔ] (glottal stop, predictable at the onset of vowel-initial words), [ŋ] (velar nasal), and [ɣ] (voiced velar fricative).

1.2.4. Hausa and Kanuri nexus

The Hausa, Kanuri and Ngizim nexus exists in the context of language contact, where Hausa serves as a lingua franca in northern Nigeria, Kanuri, a Saharan language of the Nilo-Saharan phylum of African languages phyla (Greenberg, 1963) is a major regional lingua franca spoken mainly in present Borno and Yobe States. Kanuri, as the major indigenous language in

Yobe State, is currently under heavy pressure from Hausa, the lingua franca in northern Nigeria.

1.3. Research questions

This research aims to examine the use of palatalisation in Hausa and Kanuri languages, and it is guided by the following questions: (i) Are there any typological difference in palatalisation among Hausa and Kanuri languages? (ii) Do the two languages show evidence of both automatic and non-automatic palatalisation?

2. Literature review

2.1. Palatalisation

The sounds resulting from palatalisation may vary from language to language. In linguistics, the term palatalisation is a sound change that either results in a palatal or palatalised consonant occurring before a front vowel (Bhat, 1975). Palatalisation involves change in the place or manner of articulation of consonants or the fronting or raising vowels (Bhat, 1975). Therefore, Schuh (2002) states that in some cases palatalisation involves assimilation or lanion.

As earlier stated, in some languages, palatalisation can be categorised into automatic and non-automatic palatalisation.

2.2. Automatic palatalisation

Automatic palatalisation refers to a predictable phonological process in which a consonant acquires palatal characteristics due to the influence of an adjacent front vowel (/i, e/) or palatal glide (/j/). Because the process is entirely determined by the phonetic environment, it is considered allophonic rather than phonemic. Bateman (2007) defines automatic palatalisation as a type of consonant-vowel coarticulation that becomes phonologised as a regular assimilatory rule. Similarly, Hume (1994) describes it as the spreading of palatal features from a neighbouring vocalic segment to a consonant. The automatic palatalisation involves plain velar consonants /k/, /κ/ and /g/, being palatalised when they are followed by high-front and mid-front vowels /i/ or /e/, for example, /g/ → [gʲ] as in [gʲida:] ‘house’; /k/ → [kʲ] as in [kʲiraa]; /k/ → [kʲ] as in [bakʲi:].

2.3. Non-automatic palatalisation

Non-automatic palatalisation refers to palatal alternations that are not predictable from the phonetic environment but are instead conditioned by morphological, lexical, or historical factors. Such alternations may occur even when no front vowel or glide is present synchronically. According to Kochetov (2002), non-

automatic palatalisation arises when earlier phonetic assimilation becomes phonologised and incorporated into a language's morphological system.

Abubakar (1983) notes that non-automatic palatalisation is the second type of palatalisation which applies across morpheme boundaries. The segments undergoing this type of palatalisation are the non-sonorant coronals /s/, /z/, /t/ and /d/ and the labio velar approximant /w/ when transformed into one of the following: plural, verb form, verbal nominal or patronymics. Therefore, Bhat (1975) sees non-automatic palatalisation as a sound change, which is usually triggered only by mid and high front vowels or the semi vowel {j}. The alternation is no longer fully predictable from the phonetic environment and has become morphologically or lexically conditioned. This suggests that earlier assimilatory processes have become phonologised and incorporated into the morphological system.

2.4. Full palatalisation

Full palatalisation occurs when the consonant undergoes a complete change in its primary place of articulation, resulting in a new palatal or alveo-palatal consonant. In this process, the original consonant is replaced by a palatal segment rather than merely acquiring secondary palatal features.

Bateman (2007) notes that full palatalisation often represents the historical outcome of repeated assimilatory processes and may lead to the emergence of new phonemes.

2.5. Secondary palatal articulation

Secondary palatalisation occurs when a consonant retains its primary place of articulation while simultaneously acquiring a secondary palatal articulation. The tongue body is raised toward the hard palate during the production of the consonant, but the original place of articulation remains unchanged. For example, /k/ may be realised as [kʲ] rather than changing completely into a palatal consonant. According to Ladefoged and Maddieson (1996), secondary palatalisation is best viewed as an additional articulatory gesture superimposed on the primary consonantal articulation.

2.6. Assibiliary palatalisation (Affricating palatalisation)

Assibiliary palatalisation is a subtype of full palatalisation in which stops or fricatives become sibilant affricates. For example, /t/ may become /tʃ/ and /d/ may become /dʒ/. Bateman (2011) identifies assibilation as one of the most common outcomes of palatalisation cross-linguistically, especially when coronal consonants occur before high front vowels or glides.

3.0. Theoretical Framework

This study adopts Feature Geometry Theory (Clements, 1985; Clements & Hume, 1995) as its theoretical framework. The theory views phonological segments as hierarchically organised bundles of distinctive features and explains phonological processes such as assimilation and palatalisation through the spreading of features between adjacent sounds. Palatalisation is analysed as the transfer of palatal or coronal features from front vowels or glides to neighbouring consonants, resulting in modifications of their place of articulation. The framework is particularly suitable for the present study because it provides a systematic account of palatalisation patterns and facilitates a detailed comparison of how palatalised consonants are formed and distributed in Hausa and Kanuri. Feature Geometry distinguishes four types of palatalisation: full palatalisation, secondary palatal articulation, alveo-palatalisation and affrication.

4.0. Research Methodology

The study employs a comparative descriptive method, which involved: collection of data from existing literature; analysis of phonological patterns in all the

three languages; comparison of environments where palatalisation occurs.

4.1. Data source

The study employed both primary and secondary sources of data collection; first, by extracting data from existing literature, and second, by self-providing more data by the authors who are native speakers of both Hausa and Kanuri languages. The use of native-speaker intuition as a source of linguistic evidence is well established in linguistic research (Chomsky, 1965; Ameka, 2006). In descriptive and documentary linguistics, native-speaker linguists are increasingly recognised not only as informants but also as analysts capable of providing reliable linguistic data and interpretation (Ameka, 2006). Furthermore, linguistic fieldwork traditions acknowledge the value of native-speaker expertise in the description and analysis of language structures (Newman & Ratliff, 2001). For the secondary data, studies conducted by Abubakar (1983) for Hausa, and Bulakarima & Shettiamma (2012) for Kanuri, where the palatalisation was explained both of the languages. Supplementary data were collected from published literature, field notes and secondary sources documenting on non-automatic palatalization to provide

contextual insights into the phonological rules.

5.0. Data presentation and analysis

The two languages show different degrees of palatalisation ranging from full palatalisation, secondary palatal articulation, affrication, and alveo-palatal shifts.

5.1. Palatalisation in the Hausa language

Palatalisation in the Hausa language is categorised into automatic and non-automatic, as identified and reported by Abubakar (1983).

5.1.1. Automatic palatalisation in Hausa

As earlier explained, automatic palatalisation is the type of palatalisation determined by phonetic environments due to a non-palatal sound occurring before a front vowel phoneme or palatal glide. In this regard, Abubakar (1983) identified a number of palatalised sounds in Hausa, as shown in Table 1. The table indicates secondary palatal articulation is added to both voiceless and voiced velar stop consonant sounds /k/ and /g/ before mid-front and high-front vowels in Hausa. The word *gida* is phonetically realised as [gʲida:], and *baaki* ‘mouth’ is realised as [bakʲi:]. On the other hand, the word *rakee* ‘sugar case’ is realised with secondary palatal

articulation as [rak^hee] before a mid-front vowel, and geeroo ‘millet’ is realised as /g^heeeroo/ in Hausa. Velar ejective /k/ is also

realised with a secondary palatalisation as shown in the word *k^hiraa* [k^hiraa] ‘smithing’.

Table 1.

Phoneme	Realisation	Exemplar Hausa words		Gloss
/g/	[g ^h]	/gidaa/	[g ^h ida:]	‘house’
/k/	[k ^h]	/k ^h iraa/	[k ^h iraa]	‘smithing’
/k ^h /	[k ^h]	/baaki/	[bak ^h i:]	‘mouth’
/g/	[g ^h]	/geeroo/	/g ^h eeeroo/	‘millet’
/k/	[k ^h]	/rakee/	[rak ^h ee]	‘sugar cane’

5.1.2. Non-automatic palatalisation in Hausa

The Hausa non-automatic palatalisation operates in certain plural forms, mutable verbs and patronymics. Consonants have been observed to undergo palatalisation when they occur before a front vowel.

5.1.2.1. Hausa non-automatic palatalisation in plural formations

Abubakar (1983:165) notes that this palatalisation operates in three plural formations in Hausa. This includes plural marker formed by:

- (i) duplicating the final consonants of the singular form and suffixing /i/ vowel
- (ii) completely duplicating the singular form and adding /e/ suffix to the stem
- (iii) adding a plural suffix /-i/ only to the stem of the singular form

Palatalisation in plural formation by duplicating final consonant and suffixing /i/ vowel

Table 2 demonstrates some examples of plural formation by reduplicating the final consonant and suffixing /-i / in Hausa. As indicated in the word *butoti* ‘kettles’ plural of

the base *buta*, /t/, a final consonant is reduplicated in the plural word before a high-front vowel /i/ is finally suffixed. Consequently, the final syllable and plural morpheme /ti/ is phonetically realised as [tʃi], thus the complete word is represented as [bu:to:tʃi:]. Similarly, the second and third examples indicate the realisation of alveolar stop /d/ and alveolar fricative /z/ as palato-alveolar in the environment before a mid-

front vowel /e/, rendering the plural morphemes /de/ and /ze/ to be realised as [dʒe], thus the complete words being realised as *gidade* [gʲida:dʒe] and *mazaze* [maza:dʒe:]. These illustrate affricating palatalisation in Hausa, and they fall under the non-automatic category of palatalisation because they occur at the word boundary against the plural morphemes, not the stem.

Table 2. Plural formation by duplication the final consonants of the singular forms

Phoneme	Realisation	Perfect verbs	Gloss	Palatalised words	Gloss
/t/	[tʃ]	‘buta’ [buta]	‘kettle’ ‘singular’	‘butoti’ [bu:to:tʃi:]	‘kettles’ ‘plural’
/d/	[dʒ]	‘gida’ [gʲida]	‘house’	‘gidade’ [gʲida:dʒe]	‘houses’
/z/	[dʒ]	‘maza’ [maza]	‘man’	‘mazaze’ [maza:dʒe:]	‘men’

Palatalisation in plural formation by completely reduplicating and suffixing /e/

Table 3 demonstrates some examples of plural formation by complete reduplication of the singular form and addition of /-e/ suffix. The final stem vowel of the singular is deleted by truncation. According to the Hausa morphological rule, mid-front vowel is suffixed to the end of the reduplicated plural form, and this is followed by dropping the final /a/ vowel of the stem *sata*, thereby

modifying the word to *sate+sate* and finally realised as *sachesache* [satʃesatʃe:] due to the influence of the palatal-like mid-high vowel /e/ (Abubakar, 1983). This illustrates full palatalisation of alveolar stop consonant /t/, by moving the phonetic realisation to a different place and manner of articulation, palato-alveolar and affricate. Similarly, both second and third examples demonstrate alveo-palatalisation, although the second example, *lasae+lasae* retains its fricative

feature in the phonetic form *lashe+lashe*

[la:ʃela:ʃe:].

Table 3. Plural formation by complete reduplication of the singular form and suffixation of /-e/.

Phoneme	Realisation	Perfect verbs examples	Palatalised words	Gloss
/t/	[tʃ]	‘sata+e#sata+e’	‘sachesache’ [satʃesatʃe:]	‘stealing’
/s/	[ʃ]	‘lasa+e#lata+e’	‘lashelashe’ [la:ʃela:ʃe:]	‘
/z/	[dʒ]	‘ciza+e#ciza+e’	‘cije cije’ [tʃi:dʒetʃi:dʒe]	‘biting’

Palatalisation in plural formation by suffixation of /i/ vowel only

Table 4 provides several examples of plural formation by suffixation of /-i/ only. This process was also examined by Abubakar (1983:167), who noted that after a plural, /-i/ is added to the singular stem, and the singular stem vowel is deleted by the

truncation rule, as shown in the table. In this case, the /i/ vowel serves as the plural morpheme being suffixed to the words, and its occurrence word-finally resulted realising the words *ciyawa+i* *ciyawi* as [tʃijaji:]; *kaza+i*, *kazi* as [ka:dʒi:].

Table 4. Plural formation by suffixation of /-i/ only.

Phoneme	Realisation	Exemplar words Singular words	Gloss	Palatalised plural words	Gloss
/w/	[j]	‘ciyawa’ <i>ciyawa+i</i>	‘grass’	‘ciyayi’ [tʃijaji:]	‘grasses’
/z/	[dʒ]	‘kaza’ ‘kaza+i’	‘hen’	‘kaji’ [ka:dʒi:]	‘hens’
/w/	[j]	‘kabewa’ ‘kabewa+i’	‘pumpkin’	‘kabe:ji’ [kabe:ji]	‘pumpkin’

5.1.2.2. Hausa palatalisation in mutable verbs

In the case of mutable verbs, the palatalisation operates in the verbs of grade two, three and four, as exemplified by Abubakar (1983). The mutable verbs, the

feature mutable is used here to refer to a certain class of verbs which undergo suffix modification, or likely undergoing stem modification, as shown in Table 5. This set of

verbs also demonstrates how alveolar fricatives /s/, /z/ and alveolar stop /t/ become palatalised after elision of /a/ vowel, as Table 5.

shown in the words ciza+i → cizi realised as [tʃi:ɖʒi:]; sata+i → sati [satʃi:] and lasa+i → lasi [la:ʃi:].

Phoneme	Realisation	Words	Reduced form	Palatalised form	Gloss
/z/	[ɖʒ]	‘ciza’ ‘ciza+i’	‘cizi’	[tʃi:ɖʒi:]	‘bite’
/t/	[tʃ]	‘sata’ ‘sata+i’	‘sati’	[satʃi:]	‘steal’
/s/	[ʃi]	‘lasa’ ‘lasa+i’	‘lasi’	[la:ʃi:]	‘

6. Palatalisation in the Kanuri language

In Kanuri, some cases of palatalisation remain predictable consistently, while other cases tend to be a case of free variation or a mark of dialectal variation across several Kanuri dialects, for example, alveolar fricative /s/ is palatalised in two ways as [ʃ] or [tʃ]. While the former sound remains consistent allophonic variants of /s/ occurring before a high-front vowel, the latter is a marker of dialectal variation or dialectal variant. As in other languages, the use of palatalisation is evident in Kanuri language. Bulakarima & Shettima (2012) and Hutchison (1981) note that palatalisation is one of the sources of consonant weakening in Kanuri, whereby front vowels /e/ and /i/ influence their neighbouring consonants to change their place of articulation. Kanuri velar stop consonants /k/ and /g/ are realised /j/ before front vowels /e/ and /i/. The palatalisation in Kanuri is not only limited to

alveolar phonemes, but it commonly affects the bilabial and nasal sounds, whereby /b/ and /n/ are palatalised as [j] and [ɲ]. Hutchison further argues that /ŋ/ is not a contrastive phoneme but an allophone of alveolar nasal /n/ due to its conditional and predictable occurrence in the environment before a high front vowel /i/. The phoneme /b/ is weakened and realised as palatal [j] or sonorant [w] on many occasions.

6.1. Automatic palatalisation in Kanuri

Bulakarima & Shettima (2012) noted that palatalisation in Kanuri takes place when the affected consonants occur before front-high /i/ or front mid /e/ vowel. However, our Kanuri data indicate that /a/ vowel also influences palatalisation of consonants in the language, as illustrated in the later sections.

6.1.1. Secondary palatalisation

A good example of secondary palatalisation in Kanuri is the automatic

realisation of /ni/ syllable and the 1st person possessive morpheme <ni> ‘my’ at the end of a nominal in Kanuri. For example, sawa ‘a friend’ can be suffixed with ‘ni’ to realise as [sawaɲi] ‘my friend’. This affects the sense of the word from a common friend to my

Table 6.

Phoneme	Palatalised sound	Exemplar words	Realisation	Gloss
/n/	[ɲ]	‘sawani’	[sawa.ɲi]	‘my man, my friend’
		‘kani’	[kaɲi]	‘goat’ secondary articulate
		‘buni’	[buɲi]	‘fish’
		‘gəni’	[gəɲi]	‘orphan’

friend. It is worth noting that this realisation is a dialectal feature in Kanuri, as Kanuri speakers, speaking non-Yerwa dialects use the non-palatalised ‘ni’ within the same semantic environment, and this will therefore be termed as a free variation.

6.1.2. Full palatalisation in Kanuri

6.1.2.1. Voiceless and voiced velar plosive consonants /k/ and /g/ → voiced palatal glide [j]

The voiceless velar plosive /k/ and its voiced counterpart are realised as palatal

Table 7.

Phoneme	Palatalised sound	Exemplar words	Realisation	Gloss
/k/	[j]	‘rikada’	[rijada]	‘they feared’
/g/	[j]	‘buladega’	[buladeja]	‘hamlet, village’

glide [j] syllable-initially (but not word-initially) before /a/ vowel, as shown in Table 7.

6.1.2.2. Voiced bilabial plosive /b/ → voiced palatal glide [j]

The voiced bilabial plosive /b/ is realised as a palatal glide [j] before high-front

/i/, as shown in Table 8. Bulakarima & Shettima (2012) note that palatalisation of /b/

to [j] is one of the weakening processes in Kanuri. Apart from palatalisation to [j], /b/ is realised as [w] in some Kanuri words, a

process known as sonorisation (Bulakarima & Shettima, 2012; Hutchison, 1981).

Table 8.

Phoneme	Palatalised sound	Exemplar words	Realisation	Gloss
/b/	[j]	‘nabi’	[naji]	‘Prophet’
/b/	[j]	‘abi’	[aji]	‘what’

6.1.2.5. Voiced palato-alveolar affricate /ɖʒ/ → voiced palatal glide [j]

The voiced palato-alveolar affricate is realised as [j] before a high-front /i/ vowel

in the second syllable of Kanuri words, as evident in Table 9.

Table 9.

Phoneme	Palatalised sound	Exemplar words	Realisation	Gloss
/ɖʒ/	[j]	‘daji’	[daji]	‘then’

6.1.3. Assibilatory palatalisation in Kanuri

6.1.3.1. Voiceless velar plosive /k/ → voiceless palato-alveolar affricate [tʃ]

The voiceless velar plosive /k/ is realised as a voiceless palato-alveolar affricate [tʃ] word-or syllable-initially before mid-front /e/ and high-front /i/ vowels. Table 10 shows some good examples of this type of palatalisation in Kanuri. This differs from the Hausa palatalisation where secondary articulation is added on top of the velar plosive consonants in Hausa words.

It is observed that the same /k/ has a two-way palatalisation behavior. It can be realised as /j/ before /a/ vowel and in a second or third syllable of Kanuri words, but not at the first syllable of a word, as earlier shown in Table 7 above, while it is realised as [tʃ] before /i/ or /e/ and at the first syllable of Kanuri words, as earlier shown in Table 10.

Table 10.

Phoneme	Palatalised sound	Exemplar words	Realisation	Gloss
/k/	[ɟ]	‘kesa’	[ɟesa]	‘sand’
/k/	[ɟ]	‘kemi’	[ɟemi]	‘co-wife’
/k/	[ɟ]	‘kime’	[ɟime]	‘red’
/k/	[ɟ]	‘kim’	[ɟim]	‘bitter’

6.1.3.2. Voiced velar plosive /g/ → voiced palato-alveolar affricate [dʒ]

The voiced velar plosive /g/ is realised as [dʒ] in the environment before a high-front vowel /i/ word-initially, as evident in Table 10. This realisation is Table 10.

dialectal, as it is not quite common in Yerwa dialect but in dialects of Kanuri such as Manga and Suwurti.

Phoneme	Palatalised sound	Exemplar words	Realisation	Gloss
/g/	[dʒ]	‘gim’	[dʒim]	‘bedroom’

6.1.3.3. Alveolar fricative /s/ → alveo-palatal affricate [tʃ]

The voiceless alveolar fricative /s/ is realised as a voiceless alveo-palatal affricate [tʃ] in the environment before high vowels. In Kanuri, especially in some dialects, palatalisation is influenced not only by mid front and high front vowels /i/ and /e/, but also by high back vowels, which influence palatalisation. Evidence of all three sorts of

palatalisation is shown in Table 11. While the first examples indicate palatalisation influenced by /i/ vowel, the second and third examples indicate the influence of the back front vowel /u/ in palatalising the voiceless alveolar fricative consonant /s/. The influence is only limited to /i/ and [e] in Hausa.

Table 11.

Phoneme	Palatalised sound	Exemplar words	Realisation	Gloss
/s/	[ʃ]	‘sidi’ [sidi]	[[ʃɪdi]	‘ground’
/s/	[ʃ]	‘suro’ [suro]	[ʃuro]	‘inside’ ‘inner part’
/s/	[ʃ]	‘suluyin’ [sulujin]	[ʃulujin]	‘moving out’

6.1.3.4. Voiceless alveolar fricative /s/ → palato-alveolar [ʃ]

The voiceless alveolar fricative /s/ is realised as [ʃ] in the environment before a high-front vowel /i/ word-initially. The phoneme [ʃ] is not a contrastive phoneme in

Kanuri (Bulakarima & Shettima, 2012), but an allophone of the alveolar fricative /s/, as shown in Table 12.

Table 12.

Phoneme	Palatalised sound	Exemplar words	Realisation	Gloss
/s/	[ʃ]	‘shila’	[ʃila]	‘bone’
/s/	[ʃ]	‘shimalo’	[ʃimalo]	‘tears’

6.1.3.5. Palatalised velar /kj/ → palate-alveolar [tʃ]

The only palatalised velar is realised as palato-alveolar [tʃ] word initially or syllable-initially in a few Kanuri words, as shown in Table 13. It is worth noting that this process of palatal sound being palatalised

further is a case of free variation whereby Kanuri speakers use the two palatal sounds interchangeably without affecting the sense of the words in question.

Table 13.

Phoneme	Palatalised sound	Exemplar words	Realisation	Gloss
/ky/ /kj/	[tʃ]	‘kyari’ [k'ari]	[tʃari]	‘old male person’

7. Discussion

This study compared the use of palatalisation in Hausa and Kanuri languages. The discussion is guided by the two research questions earlier formulated: (i) Are there any typological differences in palatalisation among Hausa and Kanuri languages? (ii) Do the two languages show evidence of both automatic and non-automatic palatalisation?

In response to the first research question, whether there are any typological differences in the use of palatalisation among the two languages, the comparison indicates palatalisation variability between the two languages. Hausa exhibits a single way of palatalisation, where each of the alveolar stop and alveolar fricative consonants changes to only one palatal sound. Alveolar stop /d/ and alveolar fricative are realised as [ɟʝ] only, while voiceless alveolar stop /t/ is realised as palato-alveolar [tʃ] only. The voiceless alveolar fricative /s/ is realised as voiceless palato-alveolar [ʃ], maintaining voicing and fricative qualities between the original and the palatal sounds. The only full palatalisation in Hausa is from bilabial

approximant /w/ to palatal glide [j] at word boundary.

Conversely, Kanuri palatalisation is more of a phonological process. The findings indicate only one instance of secondary palatal articulation in the language. Kanuri exhibits multiple-way palatalisation where two or more affected consonants are realised as a particular palatal sound on the one hand, and a particular affected consonant is realised as two different palatal sounds. Bilabial stop /b/ and velar stop /k/, /g/ consonants are all realised as palatal glide [j], illustrating full palatalisation. While /b/ is only palatalised to [j], velar stops /k/ and /g/ are further palatalised as [tʃ] and [ɟʃ] in other contexts, as earlier shown. The voiceless alveolar fricative /s/ also has dual-way palatalisation as [ʃ] or [tʃ], depending on the context of use. In addition, it is observed that voiced palato-alveolar affricate consonant /ɟʃ/ is also fully palatalised as [j]. Alveolar nasal /n/ is also palatalised as [ɲ] in Kanuri as long as it precedes a high-front vowel /i/, irrespective of the environment or context in which it occurs, particularly in Yerwa dialect, while non-palatalised /ni/ is evident in some other Kanuri dialects. Apart from the two front vowels /i/ and /e/, the affected alveolar, velar, and bilabial consonants are palatalised even

when preceding the /a/ vowel, as evident in the words *rikada* [rijada] and *buladega* [buladeja] in Table 7 above. Velar stop consonants undergo progressive palatalisation, where a preceding /i/ vowel influences them to realise as palatal [j], indicating a contrary direction in other contexts, where the affected consonants precede the /i/.

In Hausa, two alveolar stops /t/, /d/, and two alveolar fricatives /s/, /z/, and a bilabial approximant /w/ are palatalised at the morpheme boundary, indicating evidence of non-automatic palatalisation. And the velar stop and velar ejective are realised with secondary palatalisation automatically before a front vowel.

In Kanuri, the velar sounds may be realised as voiceless palato-alveolar affricate [tʃ] in contrast with the secondary palatal articulation [j] on top of the main consonants commonly practiced in Hausa. Contrary to the palatalisation in the Hausa language, where two alveolar stops /t/, /d/ and two alveolar fricatives /s/, /z/ become palatalised, only one alveolar fricative /s/ and one alveolar nasal /n/ accept palatalisation in Kanuri. Since a combination of velar stop consonants /k/, /g/ with front vowels /i/, /e/ only resulted in automatic secondary palatal articulation in Hausa but not in Kanuri, it

could be argued that the context that results in palatalisation in Hausa may not necessarily influence palatalisation in Kanuri and vice versa. In addition to the universality across certain structures of languages, every language reserves its full right of operating their systems uniquely in some ways, ensuring its self-dependence. Kanuri does not exhibit a highly productive system of palatalisation as a major morphophonemic process. Rather, palatalisation in Kanuri is generally treated as one of several consonantal weakening or assimilatory processes, and phonologically conditioned and predictable from phonetic environments (Hutchison, 1981; Cyfferm 1998). Hutchison (1981) and Cyffer (1998, 2005) note that consonantal modification in Kanuri occurs mainly through assimilatory mechanisms and does not constitute a major morphophonemic process.

As found in this study, Hutchison (1981, p.26) had earlier argued that it is highly likely to palatalise all consonants occurring before a high front vowel, noting that words beginning with /ki/ syllable will always have an alternative realisation as [tʃi], as in the word *kime* – [tʃime] ‘red’. He further notes that palatal consonants are the weakest consonants in Yerwa dialect of Kanuri, for their function as both independent contrastive

phonemes in their own right and as allophones of other Kanuri phonemes. For example, /tʃ/, a contrastive phoneme, also functions as an allophone of a voiceless velar plosive /k/ in the environment before a high front vowel /i/. The acceptability of both realisations occupying the same environment within the same variety of language without modifying the meaning renders them in free variation.

8. Conclusion

This study set out to investigate and compare the patterns of palatalisation in Hausa and Kanuri, with particular emphasis on their phonological and morphophonological manifestations. Using Feature Geometry Theory as an analytical framework, the study examined the environments, processes, and outcomes of palatalisation in the two languages and explored whether both automatic and non-automatic palatalisation are attested between them. The findings reveal that although palatalisation is present in both languages, it differs considerably in its scope, productivity, and linguistic function. Hausa exhibits a well-developed system of both automatic and non-automatic palatalisation. Automatic palatalisation occurs predictably when velar consonants precede front vowels,

resulting in secondary palatal articulation, while non-automatic palatalisation functions as a productive morphophonemic process across morpheme boundaries, particularly in plural formation, derivation, and nominal morphology. These patterns indicate that palatalisation in Hausa has undergone substantial phonologisation and has become integrated into the language's morphological system.

By contrast, palatalisation in Kanuri remains primarily an automatic and phonologically conditioned process triggered by adjacent high front vowels and palatal glides. Unlike Hausa, Kanuri does not exhibit extensive morphologised palatalisation operating across morpheme boundaries. Instead, palatalisation functions largely as a predictable assimilatory process within stems, resulting in allophonic variation rather than morphological alternation. Nevertheless, Kanuri displays a wider range of palatalisation outcomes, including full palatalisation, affrication, and multiple correspondences between source and target consonants, reflecting the complexity of its consonantal system. From a typological perspective, the study demonstrates that languages within the same geographical region may exhibit substantially different trajectories in the development of

palatalisation. These findings support the view that similar phonetic triggers do not necessarily lead to identical phonological or morphological outcomes across languages. The study also highlights the explanatory value of Feature Geometry Theory in accounting for the spread of palatal features and the resulting changes in place of articulation. The theory provides a unified framework for understanding both automatic assimilatory processes and morphophonemic alternations, while also allowing language-specific differences to be identified and analysed systematically.

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