Vowel Insertion in Ikhin, an Edoid Language

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Abstract

Ikhin, a North-central Edoid language, is one of the minority languages spoken in Edo State, South-South, Nigeria. It has similar linguistic features with Edo (Bini). Vowel insertion is a non-assimilatory process observed in loan-word phonology of Ikhin language. The study investigates the manifestation of vowel insertion in Ikhin in relation to the maintenance of the CV and V syllable structure of Ikhin. The paper notes that vowel insertion in Ikhin is found in the process of nativisation of words borrowed from English language with a view to breaking the cluster of consonants. The study confirms that the inserted vowels are the high vowels [i] and [u], an example of which is /ísìkû/ 'school', formalized as: ø ⇢X/A – B. The paper concludes that vowel insertion takes place in Ikhin when a phonetic sequence violates the phonetic rules of the language. This paper further confirms that this process is introduced in order to maintain the CV and V syllable structure of Ikhin language. Optimality theory is used in analyzing and presenting the data. Thus, using a constraint based theory on non-adjacency of two consonants, the paper applies obligatory contour principle (OCP) to clusters of consonants based on markedness constraint.

Keywords: *Edoid language, Ikhin, OCP, optimality theory, syllable structure*

Introduction

Ikhin is a member of the Edoid family's North Central branch (Oladimeji 2013). Eastern Kwa was the name given to a group of languages that included Edoid. They are now known as Benue-Congo (BC), along with the rest of Eastern Kwa, and are recognized as forming a putative West Benue-Congo (WBC) federation (Blench1989). Delta Edoid (DE), Southwestern Edoid (SWE), North Central Edoid (NCE), and Northwestern Edoid are the four coordinate branches of the Edoid community (NEW). Geographically, the Edoid languages spread from the Rivers and Bayelsa States in the eastern Niger Delta, across Delta and Edo States, to parts of Ondo and Kogi States (Elugbe 1989). Ikhin is spoken in the Owan East Local Government Area (Oladimeji and Opoola 2021). The speakers, who number in the thousands, live in Edo State's Owan East Local Government area, in the Northwestern part of the state (Oladimeji 2013). In Ikhin, consonant cluster is not allowed at the phonemic level. Thus, the language inserts vowel to break up the cluster of consonants. This study, therefore, investigates vowel insertion in Ikhin with a view to determining the inserted vowels.

Methodology

The analysis presented in this study is based on the quality of tape recorded text materials (traditional stories, conversations, descriptions and collection of words). The methodology adopted is both descriptive and analytical. Data were obtained from seven purposely selected native speakers in Ikhin town and one from Ibadan using the 1000 word list of the Summer Institute of Linguistics and the Ibadan word list of 400 basic items. The data were analysed using the speech filing system of the computerised speech laboratory. Optimality theory is used in analysing and presenting the data.

Previous Studies/Related Works

Literature on Ikhin language is rare. Folarin (1982) is a master's project and is the only extant linguistic study on this language. Apart from the very useful auditory and instrumental study of the sounds of this language and the identification of two basic tones high /H/ and low /L/, little is said about the various tonal and segmental processes in the language. However, related languages that have been worked on are Edo(Bini) (Amayo, 1976),(Adeniyi, 2008), Emai (Egbokhare, 1990) and Ghotuo (Elugbe, 1986). Other Scholars such as Oyebade (1998) and Abiodun (2007) have also worked on Yoruba language. Vowel insertion is found in the processes of nativisation of loan words into languages where clusters are not allowed. This is the case in most Bantu languages (which do not normally allow consonant clusters), as is shown below:

i)	terekere	<	[træktə]	'tractor'	(*setswana*)
ii)	sukulu	<	[skul]	'school	(*chichewa*)
iii)	peteroli	<	[petril]	'petrol'	(*luganda*)
iv)	isikolo	<	[skul]	'school'	(*isizulu*)
v)	basikeli	<	[baisikl]	'bicycle'	(*nyamwezi*)

Oyebade(1998) claims that vowel insertion is a very common phenomenon in the loan-word phonology of many African languages. He provides the following examples from Yoruba.

a.	i) b[red	⇢	búrédì	'bread'
	ii) sleit	⇢	síléètì	'slate'
	iii) breik	⇢	búréèkì	'brake'
	iv) bɛlt	⇢	bélîìtì	'belt'
	v) brʌs	⇢	búrɔ́ɔ̀sì	'brush'
b.	i) krein	⇢	kérénì	'crane'

ii) freim	⇢	férémù	'frame'
iii) treilə	⇢	térélà	'trailer'
iv) frans	⇢	faransé	'france'

With the above examples, he says sometimes Yoruba breaks the cluster by the introduction of an -U-epenthetic vowel, sometimes the cluster is broken with an epenthesis. Then again, under some particular condition, the cluster is broken by a vowel identical to the vowel after the cluster (Oyebade 1998:68). As is shown in the above languages, vowel insertion in Ikhin is triggered by the asymmetry between the morpheme and the syllable structures of Ikhin and English (where the words are burrowed). In most Edoid languages such as Esan and Emai, closed vowels such as [i] and [u] are inserted.

It is noteworthy however, that none of these scholars has made any reference to Ikhin phonological process such as vowel insertion.. This is, therefore, the first work on vowel insertion in Ikhin.

Theoretical Framework

Optimality theory, a constraint-based theory, is used in analysing and presenting the data. In 1968, Chomsky and Halle published the *Sound Pattern of English* (SPE), the basis for generative phonology. An important consequence of the influence of SPE on phonological theory was the downplaying of the syllable and the emphasis on segments.

In a course at the LSA Summer Institute in 1991, Alan Prince and Paul Smolensky developed optimality theory – an overall architecture for phonology, according to which languages choose a pronunciation of a word that best satisfies a list of constraints which are ordered by importance: all constraints, either highly or lowly ranked can be violated. However, violation must be minimal. Optimality theory is usually considered a development of generative grammar, which shares its focus on the investigation of universal principles, linguistic typology and language acquisition. The main idea of optimality theory, (OT) is that the observed surface forms of the language arise from the resolution of conflicts between grammatical constraints. These constraints are minimally violated by optimal candidates in that form that surfaces is the one which incurs the least serious violations, compared to a set of possible candidates. In optimality theory, rules are abandoned and the explanatory burden is placed entirely on constraints of universal grammar. OT assumes that grammars are a means to resolve conflicts between universal constraints (Kager 1999).

Principles of OT

Optimality theory is based on the following five fundamental principles which are presented in McCarthy and Prince (1994: 336).

(a) Universality: The central goal of a linguistic theory is to shed light on the core of grammatical principles that is common to all languages.

(b) Violability: Constraints are violable; but violation is minimal.

(c) Ranking: Universal constraints are ranked on a particular language basis; the notion of minimal violation is defined in terms of this ranking.

(d) Inclusiveness: The constraint hierarchy evaluates a set of candidate analyses that are admitted by very general considerations of structural well-formedness.

(e) Parallelism: Best satisfaction of the constraint hierarchy is computed over the whole hierarchy and the whole candidate set. There is no serial derivation and therefore, the output candidate is considered optimal.

Vowel insertion is one of the three syllable structure processes in Ikhin. Others are vowel elision and glide formation. Syllable structure constraints are a family of constraints borne out of the syllable structure preference of a natural language. These include:

(a) ONS: Every syllable must have an onset (except phrase-initially)

(b) NO CODA: It prohibits close syllables while maximising open syllables. It stipulates that syllables do not have Codas.

(c) HNUC: It stipulates that a higher sonority nucleus is more harmonic than one of lower sonority.

(d) NUC: Syllables have nuclei

Syllable Structure of Ikhin

Phonemically, Ikhin has two prominent syllable structures:

(i) T

V

(ii) T

CV

Note: T stands for tone; C for consonant; V for vowel

V Syllable structure

A syllable of this type consists only of a tone bearing unit, that is, a vowel. The vowel may occur in isolation or before a consonant, i.e. at word initial position. The V syllable structure type may also be found in medial and final position of word.

V in isolation. Examples are:

      i) /à/ 'their'

ii) /ɔ̀/ 'he'

(a) Word-initial position

Nouns in Ikhin have vowels as their prefix, thus the V type is found at the initial position.

i) /è-tò/ 'hair'

V-CV

ii) /u-do/ 'stone'

V-CV

iii) /ù-nù/ 'mouth'

V-CV

(b) Medial position

When words are joined together to form a compound word especially in the numerals, the V type is found between them.

      i)   /xɔ-kpáɔsùè/   'nineteen'

              CV-CV-V-CV-V

      ii)   /xɔ̀-ìvàɔsùè/   'eighteen'

              CV-V-CV-V-CV-V

(c)   Word Final Position

i)   /à-ɣaɛ̀/ 'knife'

      V-CV-V

ii)   /ɔ̀-pìà/ 'matchet'

      V-CV-V

CV syllable structure

The CV syllable structure appears to be the most common syllable structure, which is evident in the mono-syllabic verbs. Examples:

      i)   /dɛ̀/   'buy'

      ii)   /là/   'run'

      iii)   /lɛ̀/   'go'

iv)   /dè/   'fall'

Phonetic Syllable Structure Sequences

The syllable structures discussed are the underlying syllable structures. We can however,postulate phonetic syllable structures of type [cj] and [cw]

The [Cj] type occurs when the vowel /i/, a close front unrounded vowel, becomes [j], a palatal glide, between a consonant and another unidentical vowel. Examples:

i)   /ìβíà/   ⟶   [ìβjâ]   'children'
ii)   /ɔ̀sìè/   ⟶   [ɔ̀ʃje]   'friend'
iii) /àrìɔ̀/   ⟶   [àrjɔ̀]   'juju'
iv)   /vìɛ̀/   ⟶   [vjɛ̀]   'weep'

The [Cw] type also occurs when the vowel /u/ a close back rounded vowel changes to [w] a labial-velar glide whenever it occurs between a consonant and another unidentical vowel. Examples:

v) /ísàgùɔ̀/ ⟶ [ísàgwɔ̀]'groundnut'
vi)   /òguà/   ⟶   [ògwà]   'farm'

Ikhin syllable structure types are CV and V at the phonemic level. However, this CV an V sometimes have surface CCV structures due to creation of glides such [j] and [w].

Vowel Insertion

Having established the syllable structure types, we deem it necessary to address the maintenance of these structures in vowel insertion.

Again, depending on the kind of sound that is inserted, we can have consonant or vowel insertion. This is a process that also takes place because in a certain environment, a phonetic sequence is either difficult to pronounce or violates the phonetic rules of the language and then a vowel is introduced to break up the unacceptable consonant clusters while a glide or a consonant can be inserted to separate sequences of vowels that would be difficult to pronounce in succession with hiatus.

Below is the formalised representation of an insertion process:

ø   ⟶   X/A – B

In Ikhin, nouns begin with a vowel while this morpheme structure condition is optional in English (Oladimeji 2010). Also, consonant cluster is not allowed in Ikhin at the phonemic level while English allows sequence of at most four

consonants without any intervening vowel. Thus in Ikhin, vowel insertion takes place to break up cluster of consonants for ease of pronunciation and to rectify unacceptable syllable structures represented by words loaned from English.

Prothesis, insertion at the beginning of words, is motivated strictly by morpheme structure considerations while epenthesis insertion elsewhere, is motivated by a violation of syllabic structure (Egbkohare 1990).

The inserted vowel

High vowels [i] and [u] are the inserted vowels in Ikhin as is the case in Esan and Emai. Below are a few examples:

(a) (i) itísà 'teacher'

    (ii) ìgíresì 'grace'

    (iii) ìréĺùwè 'railway'

    (iv) ìdíráívà 'driver'

    (v) ísìlétì 'slate'

    (vi) ìgàràwà 'pail'

    (vii) ítɛ̀lìfónu 'telephone'

(b) (i) ìbúrɛ́dì 'bread'

    (ii) ísíkû 'school'

    (iii) ìbúlú 'blue'

    (iv) ìbɔ̂lù 'ball'

    (v) ìʃɔbù 'shop'

The above examples show that [u] occurs as the epenthetic vowel after labial consonants, and after other consonants in the environment of a rounded vowel while [i] occurs as the prothetic vowel and as the epenthetic vowel in non-labial environment. This process is not limited to Edoid languages alone, it has also been observed in Yoruba (PuIleyblankl988). At this juncture, we must identify which of the two vowels is actually inserted and which one is a variant of the other.

Examining the word /ísìkû/ 'school' we will observe that [i] rather than [u] is inserted at the medial position while in a language such as Emai (Egbokhare 1990) [u] rather than [i] is inserted at the medial position to avoid consonant clusters. Also the occurrence of [u] in the environment of labial is as a result of the assimilation rule which spreads the labial feature of a tautosyllabic consonant or a vowel occurring in an adjacent syllable on to the inserted vowel [i].

Other evidence of postulating [i] as the inserted vowel in Ikhin is found in partial reduplication as shown below:

i) /bà/ 'plait'   /bíbá/   'always planting'

ii) /kù/ 'pour   /kìkù/ 'always pouring'

In the above, the inputs are monosyllabic verbs. In the disyllabic forms, the consonant is reduplicated and vowel [i] is inserted between the reduplicated consonant and the verb stem. Stated in optimality theoretic terms, vowel insertion involves a violation of faithfulness: the inserted vowel has no counterpart in the input. This violation of faithfulness is due to dominant syllable well-formedness constraints. The epenthetic output [búrɛ́dì] 'bread' contains vowels [u] and [i] that have no input counterparts, a violation of faithfulness.
Thus, epenthesis involves a resolution of conflict at the expense of faithfulness: the costs of inserting a (non-underlying) segment are less than those of imperfect syllable structure .

In optimality theory, vowel insertion is driven by an imperfect match between input segments and the syllable template. Vowel insertion involves a violation of faithfulness: the output diverges from the input by the presence of an epenthetic segment, one that is not triggered by lexical representation. The faithfulness constraint militating against epenthesis is DEPENDENCY - Io (or DEP: Io)

DEP: Io

Output segments must have input correspondents (no epenthesis).

This constraint is violated by an output segment that has no correspondent in the input. Such a violation is incurred by inserted vowels [u] and [i] in the examples from Yoruba. This violation is shown in a diagram below. It indicates corresponding segments through vertical lines.

Violation of DEP: Io in [burɛdi]

Fig.8   Input   b r ɛ d
           Output   b u r ɛ d i

The above shows that the input contains no segments corresponding to [u] and [i].

Constraints of Vowel Insertion

Following from our discussion of vowel insertion in Ikhin and stated in optimality theoretic terms, our account of the relevant constraints of vowel insertion is presented below:

- i) HV: For syllable well-formedness, high vowels are inserted
- ii) DEP: Output segments must have input correspondents (All segments must be underlying)
- iii) If, THEN: If [u] then labial and round vowel environment, If [i] then non-labial environment.
- iv) Prot S: The universal prothetic segment is [i]

This tableau reveals the interactions of these constraints in Ikhin

Tableau 1

	Candidates	HV	Prots	If then	DEP
Tableau /greis/ →	i) à.gá.re͡.sǐ	*!	*	*	*
	ii) ì.gú.re͡.sì			*!	*
	iii) ì.gí.re͡.sì				*
Tableau /ʃap/ →	i) è.ʃá.bà	*!			
	ii) ì.ʃɔ͡.bà			*!	*
	iii) i.ʃo.bu				*

Obligatory Contour Principle (OCP) in Syllable Structure Maintenance

The insertion process discussed above can equally be captured by the Obligatory Contour Principle (OCP) which prohibits adjacent identical segments. Our focus in this study is vowel insertion, therefore, the application of OCP to glide formation will not be discussed. In Ikhin, under no condition should a consonant occur adjacent to another consonant. This constraint accounts for vowel insertion in order to maintain the syllable structure well-formedness.

In our account of OCP's effects on consonants, we will not restrict ourselves to absolute identity of segments. Our intent is to apply the OCP to cluster of consonants based on markedness constraint respectively.

Using this principle implies that there is an additional constraint. That additional constraint is OCP.

OCP - Two consonants cannot be adjacent

Apart from the relevant constraints on the insertion of vowels, we need another constraint that actually forbids sequence of two consonants. Invoking OCP to explain reasons for vowel insertion therefore presupposes another tableau showing hierarchy of the competing constraints of diverse nature.

Given the fact that the inserted vowels have no input features to be faithful to, their future content is delegated to markedness constraints. As an output constraint, the OCP, in vowel insertion, triggers the change because the input itself violates the OCP.

Tableau 2
Tableau OCP >> HV>>Prot-s >> If then >> DEP

	Candidates	OCP	HV	Prot-s	If then	DEP
/greis/ →⃗	i) à.g .rɛ̂.sǐ	*!	*	*	*	*
	ii) ì.gà.rɛ̂.sì		*!			*
	iii) ì.gí.rɛ̂.sì					*
/brɛd/ →⃗	i) ì.br.ɛ◻.dì	*!				
	ii) ì.bà.rɛ◻.dì		*!			
	iii) ì.bú.rɛ◻.dì					*

The above tableau shows that obligatory contour principle is the most fatally violated. The hierarchy of the constraints is as follows: OCP » HV » Prots »If then »
DEP.

i)   **OCP:** Two consonants cannot occur in sequence. It is awkward to pronounce two consonants next to each other in Ikhin. Inserting vowel is a way of keeping the two consonants apart,

ii)   HV: Only high vowels are inserted,

iii)   Prots: The Universal Prothelic Segment is [i]

iv)   If then: If |u| then labial and round vowel environment. If |i| then non-labial environment

v) DEP: ALL segments must be underlying.

It is for the reasons mentioned above that we intend to postulate /i/ as the inserted vowel in Ikhin and which becomes [u] in the environment of a labial consonant or a rounded vowel.

This process can be formalized thus:

Example:

      a. ø ⇢   i ⇢ u
      by insertion   by labial harmony
      b. 'school':   skul ⇢ ɨsìkú   ísùkû

Conclusion

In this paper, I presented vowel insertion as one of the syllable structure processes in Ikhin. I established two syllable structure types; CV and V, indicating that Ikhin operates an open syllable structure. I established that vowel insertion is introduced in order to maintain the CV and V syllable structure of Ikhin. The study observed that vowel insertion in Ikhin takes place to break up cluster of consonants for ease of pronunciation and to rectify unacceptable syllable structures represented by words loaned from English. The study confirmed that high vowels [i] and [u] are the inserted vowels. Vowel insertion is discussed and presented via optimality theory.

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