Monophthongization in the Adaptation of Selected English Loanwords in Yorùbá: A Constraint-Based Analysis

Mayowa Emmanuel Oyinloye
University of Jos, Nigeria

Abstract

English loanwords are adapted in Yorùbá via various processes such as deletion, insertion, spirantization, and (de)voicing. This paper examined the category of English loanwords adaptation involving the process of monophthongization using Optimality Theory. The large chunks of the data analysed in the paper were obtained by observation and from the extant literature, and were then subjected to content analysis. The study discovered two broad patterns of monophthongization: simple and complex, the latter being further

Mayowa Emmanuel Oyinloye
Assistant Lecturer, Department of Linguistics and Nigerian Languages, University of Jos, Nigeria
Email: oyinloyemayowa70@gmail.com

divided into doubling and splitting. In simple monophthongization (e.g. *férémù* from 'frame'), the underlying diphthong in the loanword changes to a monophthong in the adapted form; in doubling monophthongization (e.g. *síléètì* from 'slate'), the underlying diphthong changes to a monophthong which is in turn doubled, analogous to compensatory lengthening in some languages; in splitting monophthongization (e.g. *fáìlì* from 'file'), the diphthong's two vowels are split into two monophthongs, resulting in nuclei of different syllables. The paper concluded that monophthongization is motivated by the fact that diphthongs are excluded from the Yorùbá phoneme inventory, hence English loanwords containing diphthongs are systematically nativized in Yorùbá on the basis of the ranking, *DIPH >> INTEG, which is expanded as: *DIPH, *CC, *CODA >> IDENT$_{[F]}$ >> Hiatus >> DEP, INTEG.

Keywords: English loanwords, monophthongization, Yorùbá, optimality theory

1. Introduction

Due to highly developed interaction among language communities, languages are often enriched by words taken over from other nations, the process known as *borrowing*. In this case, *borrowing* stands as a metaphor since there is no literal lending and no returning of words (Janulienė & Andriulaitytė 2019: 81).

Lexical borrowing, one of the obvious consequences of language contact, is a universal phenomenon owing to the fact that languages generally borrow words from other languages with which they come into contact. Borrowing is simply a process of taking lexical items from one language and incorporating them into another with or without modification. The lexical items are technically referred to as loanwords in the literature. When the lexical items spread among the members of the host community and start to be used regularly, they

become conventionalized over time (Kemmer 2013). One major way of conventionalizing loanwords is phonological adaptation in which the words are modified so as to conform to the preferred phonotactic structure of the borrowing language. More specifically, Nguyen & Dutta (2017: 69) state that "the phenomenon of phonological adaptation arises due to the segmental, phonotactic, supra-segmental, and morpho-phonological restrictions of the borrowing language." Interestingly, this is the norm with respect to the adaptation of words loaned from English (an Indo-European language native to England) into Yorùbá (a Niger-Congo language native to Nigeria), as shown in (1) below:

(1) | English Version | Yorùbá Version | Gloss |
|---|---|---|
| /bred/ | [búrɛ́dì] | bread |
| /frɪʤ/ | [fɪríìʤì] | fridge |
| /keg/ | [kɛ́ɛ̀gì] | keg |
| /tiː/ | [tíì] | tea |
| /fiːld/ | [fɪ̀ìdì] | field |

Generally, adaptation of English loanwords in Yorùbá is subject to phonological processes such as vowel insertion, consonant deletion, complex onset simplification, coda truncation, (de)voicing, spirantization, and monophthongization, which is the crux of the present study. In addition to the various extant works on loanwords adaptation (see Aloufi 2016, Damun 2016, Nguyen & Dutta 2017, Ghorbanpour et al. 2019), the existing literature is also replete with several studies on lexical borrowing in Yorùbá, many of which are carried out within the rule-based generative framework and a few within the constraint-based theory. However, to the best knowledge of the researcher, no attention, whether in the context of rule-based

model or constraint-based model, has been specifically paid to loanwords with diphthongs in the English source whose adapted correspondents in Yorùbá result in monophthongs, as in (2) below.

(2) | English Version | Yorùbá Version | Gloss |
|---|---|---|
| /freim/ | [férémù] | frame |
| /fail/ | [fáìlì] | file |
| /kəut/ | [kóòtù] | coat |
| /sleit/ | [síléètì] | slate |
| /rais/ | [ìrɛsì] | rice |

This process of adaptation (that is, monophthongization) demonstrates an interesting pattern as will be shown later in the study; hence a need for thorough scrutiny and systematic analysis. Thus, this paper examines how some selected English loanwords (the type given in (2)) are phonologically modified in Yorùbá within the framework of Optimality Theory, a grammatical model firmly built around the assumption that well-formedness of forms in language are product of interaction of formal grammatical principles known as constraints.

2. The Yorùbá Phonology in Brief

Following Arokoyo & Lagunju (2019: 4), "Yorùbá is one of the three major Nigerian languages spoken in South-western Nigeria." The other two are Igbo and Hausa. Yorùbá speaking states in Nigeria include Osun, Ekiti, Ondo, Lagos, Kwara, Oyo, Ogun and the western part of Kogi. According to Oyebade (2010: 228), the Yorùbá sound system comprises 18 consonants, 7 oral vowels and 5 nasal vowels. The consonants are: b, t, d, k, g, p [kp], gb, f, s, ṣ [ʃ], h, j [dʒ], m, n, r,

l, y [j], w. The oral vowels are: i, e, ẹ [ɛ], a, ọ [ɔ] o, u; While the nasal vowels are: in [ĩ], ẹn [ɛ̃], an [ã], ọn [ɔ̃], un [ũ]. With respect to the language's sound patterning, all its consonants can occur word-initially as well as all the vowels except [u], and the nasal vowels, although the vowel can occur in such position in some dialects of the language, e.g. Ìjẹ̀sà. There are no diphthongs in Yorùbá; Sequences of vowels in the language are pronounced as separate syllables.

The most salient phonological feature of the Yorùbá language is its use of tones. Yorùbá employs three register tonemes: high [´], low [`] and mid [‾] to mark semantic contrast between lexical items which have the same graphical representation, although the mid tone is not marked orthographically in the language. Thus, the same combination of vowels and consonants can have different meanings depending on the pitch of voice used in pronouncing them. There are two sets of tone-bearing units in the language: all the vowels (both oral and nasal) and the syllabic nasals [m] and [n].

Several scholars have extensively analyzed and described the syllable structure and typology of the Yorùbá language. Just like others, Bámgbóṣé (1990) and Owólabí (2011) identify three types of syllable structure in the language: (i) a syllable composed of a single Vowel (V); (ii) a syllable consisting of a Consonant and a Vowel (CV); and (iii) a syllable having a nasal consonant as its peak or nucleus (N). The following examples are used to illustrate these three syllable patterns:

(3)   adé (= a – dé)   'crown'
           V   CV

       èédú (= è – é – dú)   'charcoal'
            V   V   CV

garawa (= ga – ra – wa)   'bucket'
            CV CV CV

gbò̀ngbò (= gbò – ǹ – gbò)   'root'
                CV   N   CV

Bámgbóṣé (= Bá – m – gbó – ṣé)   'personal name'
                    CV   N   CV   CV

Like several other scholars, both afore-cited authors establish the fact that tone is the determinant factor in ascertaining the number of syllables contained in a Yorùbá word. Owólabí (2011: 137) succinctly asserts that the number of tones in a word will determine the number of syllables the word is composed of. For instance, a word in which only one tone is realized is monosyllabic; Whereas a word having two tonal specifications is bisyllabic, etc., as exemplified below:

(4)   gé (one tone (high) = one syllable)   'to cut'
        bàtà (two tones (Low-Low) = two syllables)   'shoe'
        koríko (three tones (Mid-High-Mid) = three syllables)   'grass'

Similarly, Bámgbóṣé (1990: 26) says that the difference between the syllabic nasal consonants (represented by the symbol 'N') and the canonical nasal consonants in the language is that the former bear tone and the latter do not. Furthermore, Owólabí (2011: 139) observes that no syllable terminates in a consonant in Yorùbá, and no syllable structure which allows onset in the language has more than one onset consonant. In other words, Yorùbá operates only open syllable typology and disallows complex onset consonant in its grammar.

3. Previous Studies on English Loanwords in Yorùbá

Consequent upon its contact with English through colonization, Yorùbá has, over the years, borrowed, and is still borrowing, due to constant technological innovations, many lexical items from English. The borrowed expressions from English are normally adapted to the phonological patterns of Yorùbá because the two languages have different syllable structures: The former entertains the complex type while the latter, the simple type. The phenomenon of conventionalizing or nativizing the borrowed expressions has generated keen interest from scholars in the recent time, among which are Bámgbóṣé (1990), Kenstowicz (2006), Oyebade (2008), Owólabí (2011), Taiwo & Adeniyi (2011), Komolafe (2014), Bamisaye & Ojo (2015), Oyinloye (2015), and Sanusi et al. (2016).

Bámgbóṣé (1990), in his study of the phonological adaptation of English loanwords in Yorùbá, maintains that Yorùbá makes recourse to a number of repair strategies such as vowel substitution, consonant substitution, vowel insertion, consonant deletion, glide formation, vowel nasalization and tonal specification depending on the structure of the lexical items. The strategies are triggered so as to make the borrowed expressions sound like Yorùbá native expressions, and the adaptation is conditioned either by perception or by orthography. On a final note, the study makes reference to certain loans which, even after undergoing some process of nativization, still fail to conform to the syllable structure of the Yorùbá language. Such recalcitrant cases are commonly used among the Yorùbá educated elite.

Kenstowicz's (2006) study of tonal adaptation of English loanwords in Yorùbá is quite revealing. The work avails itself of the need to determine the extent to which the Yorùbá tonal adaptations take account of the English F0 contours. Since English lacks lexical

tones in its sound inventory, an otherwise salient feature in Yorùbá, in order to sound like a Yorùbá word, any borrowed word must conform to the CV syllable template and be assigned a tonal specification in the language. With respect to organic (that is, non-epenthetic) syllables, the study establishes that the stressed syllable of the English source is adapted with a High tone; The final syllable of the English source is adapted with a Low tone; The pretonic syllables are predominantly adapted with a Mid tone but occasionally a Low tone; And the Yorùbá MHL tonal pattern corresponds to the English rise+fall citation contour H*L%. The adaptation of words whose final vowel bears the main stress in English takes the following pattern: In addition to being adapted with a High tone, the final vowel is doubled, hence the resultant vowels become heterosyllabic, the first bearing a High tone and the second a Low tone; But in cases where vowel doubling is not entertained, the vowel is usually adapted with a High tone. As for trisyllabic English loanwords that are adapted with a final epenthetic syllable, it is submitted that the stressed syllable of the English source is adapted with a High tone whereas the penultimate syllable corresponding to the English final syllable systematically takes a Low tone.

Owólabí (2011) did an extensively descriptive work on the phenomena under investigation. He categorizes the loanwords in Yorùbá into two on the basis of how foreign words are conventionally incorporated into the lexicon of a borrowing language. These are loanwords with perceptual assimilation and loanwords with orthographical assimilation. Specifically, Owólabí analyses two forms of English loanwords in Yorùbá with respect to their adaptation process: those having consonant clusters and those having closed syllables. Since Yorùbá does not permit consonant clusters in its phonotactics, loanwords with a cluster of two consonants are repaired

by vowel insertion or consonant deletion as the case may be; Whereas loanwords with a cluster of three or more consonants usually undergo re-syllabification, vowel insertion, or consonant deletion. Since the language also frowns at closed syllables, for loanwords with codas, Yorùbá resorts to either epenthesizing a vowel after the coda or deleting it.

Bamisaye & Ojo (2015) investigate the nativization of English consonant structure in the word-initial and word-final positions by Yorùbá-English bilinguals. Arising from their findings, they argue that whenever an English word is borrowed into Yorùbá, it usually undergoes phonotactic adjustments in order to conform to the syllable canon of the language because the two languages have different syllable templates. Such adjustments are triggered by processes such as vowel epenthesis, vowel doubling, consonant deletion, consonant substitution, consonant preservation, nasalization, re-syllabification and syllable extension, although their findings reveal that the most frequently used strategy to repair illicit syllable structures in Yorùbá vis-à-vis loanword adaptation is vowel epenthesis. The study supports the previous studies' proposal that borrowed word phonology maximally produces an adapted form that is perceived by the recipient language speakers as most similar to the foreign source pronunciation. In this light, the study concludes that the modifications English loanwords undergo in Yorùbá are not unconnected with perceptual similarity, implying that the adapted words are not too different from the original forms irrespective of the adjustments they have undergone.

Oyinloye's (2015) constraint-based study of English loanwords in Yorùbá recognizes three broad categories of the phenomena: those with closed syllables, those with consonant clusters, and those containing both features. Echoing the sentiments in the previous studies, Oyinloye asserts that before foreign lexical items are admitted

into the lexicon of Yorùbá, they usually undergo phonological modification in order to fulfill the restriction often placed on segments sequence by the language's phonotactics. It is argued in the study that the adaptation of English borrowed expressions in Yorùbá is generally governed by satisfaction of a constraint hierarchy rather than application of phonological rules. In the light of this position, the study establishes that *CODA and *COMPLEX are two highly ranked constraints which every optimal adapted form must satisfy even at the expense of running afoul of *SUBST and DEP-I,O. This is motivated by the fact that Yorùbá disallows closed syllables and consonant clusters in its grammar. The study therefore concludes that the constraint-based model is best at handling the study of phonological adaptation of English loanwords in Yorùbá especially considering the fact that the grammar of a language is a ranking of conflicting constraints. The present study aligns with this position.

4. Theoretical Framework

The theoretical framework adopted for this study is Optimality Theory (OT), a grammatical model of generative grammar proposed by Prince & Smolensky (1993) and subsequently expounded by McCarthy & Prince (1995), Kager (1999), McCarthy (2002, 2008), and a host of others. OT is a constraint-oriented linguistic theory which proposes that the observed forms of language arise from (or are a product of) optimal satisfaction of conflicting constraints. The cardinal principle around which the theory revolves is that every grammar is a system of conflicting constraints; The constraints are linguistically universal but grammars systematically differ from one another by virtue of ranking of the constraints. Although much of the

interest in OT has been associated with its use in phonology, the aspect of grammar to which the theory was first applied (see Prince & Smolensky 1993); OT is also relevant to other areas of linguistic analysis such as morphology, syntax and semantics.

OT shares some similarities with other theories of generative grammar with respect to its focus on universal principles, linguistic typology and language acquisition (Kager 1999). However, OT's approach to phonological analysis radically differs from other approaches, such as Generative Phonology (SPE), Autosegmental Phonology and Lexical Phonology, because while OT uses constraints, the other models employ rules. According to McCarthy (2008: 1), "Rewrite rules can explain lots of phenomena, but they do a poor job of explaining how phonological systems fit together." In contrast, with the aid of constraints that are universal, OT achieves the goal of synchronizing the description of individual languages with language typology. Although it is a development of generative grammar, OT is not derivative, rather it is comparative: It compares candidates in a set with respect to a given input by applying a hierarchy of violable constraints (McCarthy 2002). Unlike the rule-based models in which rules are inviolate, OT assumes that constraints are violable only that violation must be kept to the barest minimum. Thus, the candidate which fares better on the hierarchy by virtue of incurring minimal violation(s) is the optimal candidate.

Using syllabification of intervocalic consonant in Yorùbá to illustrate how OT works, let us consider the following analysis:

(5)   /kpàkúté/ → [kpà.kú.té]   'trap'

Tableau 1. *CODA >> ONSET >> *V#

/kpàkúté/	*CODA	ONSET	*V#
→ a. kpà.kú.té			*
b. kpàk.ú.té	*W	*W	*

In Tableau 1, the syllabification of [k] as a coda to the first syllable by candidate (b) incurs a fatal violation of *CODA. This implies that an intervocalic consonant in the language must be syllabified as an onset to the following syllable rather than as a coda to the first. It could also be observed that candidate (b) violates the next higher-ranked constraint ONSET. For this reason, it loses out to candidate (a). Note that the winner is not flawless itself: It violates the last constraint, *V#. However, the violation could not prevent it from winning because the constraint is lowly ranked. This justifies OT's claim that violation is permitted but must be minimal.

Comparing the winner [kpà.kú.té] with two other candidate analyses, *[kpà.kút.é] and *[kpà.kté], expands the analysis as follows:

Tableau 2. *CODA, *COMP-ONS, MAX >> ONSET

/kpàkúté/	*CODA	*COMP- ONS	MAX	ONSET
→ a. kpà.kú.té				
b. kpà.kút.é	*W			*W
c. kpà.kté		*W	*W	

Candidate (b) syllabifies the supposed onset of the final syllable as a coda to the second syllable. This leads to a fatal violation of *CODA, a constraint that favours the winner in Tableau 2. The third candidate incurs two fatal violations: Deleting the supposed nucleus of the

second syllable flouts MAX (a faithfulness constraint which frowns at deletion of input segment in the output) and such move forces the emergence of a complex onset for the final syllable—hence, a violation of *COMP-ONS. The first candidate wins for an obvious reason: It satisfies all the constraints in Tableau 2.

From the foregoing, one could deduce that the major goal of OT's approach to phonological analysis is to determine the hierarchies that produce optimal forms and explain why such forms are preferred to others in a given grammar. In this connection, the tenets of the theory are employed in this paper to analyse why Yorùbá prefers some adapted borrowed lexical items to others as far as English loanwords with diphthongs which are monophthongized in Yorùbá are concerned.

5. Data Presentation and Analysis

In English (Received Pronunciation), there are eight diphthongs, as exemplified in (6).

(6)　　/eɪ/: aim, say, name
　　　/aɪ/: right, lie, buy
　　　/ɔɪ/: buoy, soil, coy
　　　/aʊ/: fowl, now, shout
　　　/əʊ/: toe, phone, road
　　　/ɪə/: near, fear, beer
　　　/eə/: hair, bare, rare
　　　/ʊə/: sure, lure, pure

In contrast, diphthongs are excluded from the phoneme inventory of Yorùbá, neither does the language attest long vowels as it is in

English. Rather the closest corresponding possibility to the English diphthongs and long vowels in Yorùbá is a sequence of two or more identical vowels, as shown in (7).

(7)   òórò̩   'morning'
       aláàánú   'the merciful'
       o̩do̩o̩dún   'annually'
       àáké   'axe'
       eégún   'masquerade'

   As Owólabí (2011: 152) has succinctly noted, whenever a foreign word is allowed into Yorùbá, the consonants and vowels of the word must be substituted with Yorùbá consonants and vowels as and when necessary. This is exactly the move with English loanwords consisting of diphthongs and other segmental materials which normally undergo a process of monophthongization in a bid to become nativized into the Yorùbá lexicon. The process of changing an underlying dipththong to a monophthong in a spoken utterance is called monophthongization. Virtually all the English dipththongs can be monophthongized in Yorùbá. The well-formedness of the adapted forms is governed by an interaction of certain conflicting constraints. The subsequent sub-sections take care of the analysis of the selected English loanwords for this paper. It is important to state here that the large chunks of the randomly selected data analyzed in this section were obtained by observation and from the extant literature on the phenomenon under investigation while the rest were supplied by the researcher, being a native speaker of the language.

5.1. Monophthongization of /eɪ/

   Loanwords with /eɪ/ exhibit both simple and complex processes of

monophthongization. By simple monophthongization, the underlying diphthong /eɪ/ in the English source becomes the monophthong [e] in the Yorùbá adapted form. The complex type is a case of doubling in that after the diphthong is changed to a monophthong, the monophthong is then doubled, thereby resulting in two identical but heterosyllabic nuclei. This phenomenon is analogous to the process of compensatory lengthening in some languages. The data in (8) and (9), respectively, illustrate the foregoing descriptive generalizations.

(8)   Simple Monophthongization

English Version	Yorùbá Version	Gloss
/freɪm/	[férémù]	frame
/teɪbl/	[tébù]/[tábìlì]	table
/kreɪn/	[kérénì]	crane
/reɪdiəʊ/	[rédíò]	radio
/steɪʃən/	[téʃɔ̀̃]	station
/peɪnt/	[péǹtì]	paint
/feɪnt/	[féǹtì]	faint
/treɪlə/	[tírélà]	trailer
/tʃeɪndʒ/	[ʃéǹdʒì]	change
/teɪlə/	[télɔ̀]	tailor

(9)   Complex (doubling) Monophthongization

English Version	Yorùbá Version	Gloss
/sleɪt/	[síléètì]	slate
/feɪl/	[féèlì]	fail
/feɪk/	[féèkì]	fake
/eɪdz/	[éèdì]	AIDS
/keɪk/	[kéèkì]	cake
/geɪm/	[géèmù]	game
/bleɪd/	[búléèdì]	blade
/beɪl/	[béèlì]	bail
/tʃeɪn/	[ʃéènì]	chain

The generalizations about the data in (8) and (9) are schematized in (10a & b) and the schemata are collapsed in (10c).

(10)   a. /eɪ/ → [e]   (simple monophthongization)
       b. /eɪ/ → e → [e.e] (complex (doubling) monophthongization)
       c. /eɪ/ → {[e], [e.e]}

Yorùbá resorts to monophthongization because diphthongs do not exist in its sound inventory. Such move is licensed by a highly ranked constraint which bans diphthongs, as defined in (11).

(11)   NO-DIPHTHONG (*DIPH): Assign one violation mark for every output that contains a diphthong.

This markedness constraint is in direct conflict with a faithfulness constraint which requires the input diphthong to remain so in the output. This constraint, known as INTEGRITY-IO, is defined in (12).

(12)   INTEGRITY-IO (INTEG): Assign are violation mark for every output which changes an input diphthong into a monophthong.

It could also be observed in data (8) and (9) that the process of monophthongization interacts with vowel epenthesis and consonant substitution in order to produce well-formed adapted English loanwords in Yorùbá. These two additional processes are motivated by two factors. First, since Yorùbá generally bans consonant clusters and closed syllables, it resorts to vowel epenthesis to repair such illicit structures. Second, since some English consonants, e.g. /tʃ/, are not attested in Yorùbá, the logical choice is to substitute them with the nearest sounds in the language. Although both moves (epenthesis and substitution) run afoul of DEP and IDENT$_{[C]}$ respectively, they are triggered to satisfy *CC and *CODA, two highly ranked constraints in Yorùbá. These four constraints are defined in (13) below.

(13)   a. DEPENDENCY-IO (DEP): Assign one violation mark for every epenthetic segment in the output which does not have a correspondent in the input.

b. IDENTITY-IO$_{[Consonant]}$ (IDENT$_{[C]}$): Assign one violation mark for every output consonant which is not identical with the corresponding input consonant.

c. NO-CONSONANT CLUSTER (*CC): Assign one violation mark for every cluster of consonants in the output.

d. NO-CODA (*CODA): Assign one violation mark for every coda consonant in the output.

Finally, doubling monophthongization violates a markedness constraint which disallows hiatus. This constraint is defined in (14).

(14)   NO-HIATUS (*Hiatus/*VV): Assign one violation mark for every sequence of vowels without an intervening consonant in the output.

In the light of the foregoing discussion, it is expedient to factor out the ranking that produces the optimal candidates with respect to adapted loanwords with diphthong /eɪ/. The conflict between *DIPH and INTEG is resolved by the ranking in (15); *CC and *CODA must dominate both IDENT$_{[C]}$ and DEP as shown in (16); and *Hiatus must be ranked below *DIPH, *CC and *CODA as shown in (17). The final ranking is presented in (18).

(15)   *DIPH >> INTEG

(16)   *CC, * CODA >> IDENT$_{[C]}$ >> DEP

(17)   *DIPH, *CC, *CODA >> *Hiatus

(18)   *DIPH, *CC, *CODA >> IDENT$_{[C]}$ >> *Hiatus
        >> DEP, INTEG.

Picking the first item, /freɪm/ → [férémù], from data (8), the analysis is presented in Tableau 3.

Tableau 3. *DIPH, *CC, *CODA >> DEP, INTEG

/freɪm/	*DIPH	*CC	*CODA	DEP	INTEG
→ a. férémù				**	*
b. freɪm	*!	*	*		
c. freɪmù	*!	*		*	
d. férém			*!	*	*
e. féreɪm	*!		*	*	
f. féreɪmù	*!			**	
g. frémù		*!		*	*

All the candidates except (a) violate at least one of the three undominated constraints—*DIPH, *CC, *CODA. For this reason, they all lose to candidate (a), notwithstanding the fact that the candidate itself violates the two lowly ranked constraints—DEP and INTEG.

Tableau 4 presents the analysis of the last item in data (9): /tʃeɪn/ → [ʃéènì].

Tableau 4. *DIPH, *CODA >> IDENT[C] >> *Hiatus >> DEP, INTEG

/tʃeɪn/	*DIPH	*CODA	IDENT[C]	*Hiatus	DEP	INTEG
→ a. ʃéènì			*	*	*	*
b. tʃeɪn	*!	*				
c. tʃeɪnì	*!				*	
d. ʃeɪn	*!	*	*			
e. ʃeɪnì	*!		*		*	
f. tʃéèn		*!		*		*

Candidates (b)-(e) incur fatal violations of *DIPH for allowing the diphthong /eɪ/; candidate (f) also incurs a fatal violation of *CODA for ending in a consonant. The competition between candidate (a) and the rest is uniquely decided by the two higher-ranking constraints *DIPH and *CODA. Hence, consideration of other constraints in the Tableau becomes irrelevant. Having satisfied the two higher-ranking constraints, (a) logically emerges as the optimal candidate, that is, the observable adapted form of the English loanword /tʃeɪn/ 'chain'.

Given the ranking in Tableau 4, there is a possible candidate not represented in the Tableau which knocks out the winner. This candidate is *[tʃéènì], as shown in Tableau 5 below.

Tableau 5. Wrong Choice: Insufficient Constraints

/tʃeɪn/	*DIPH	*CODA	IDENT[C]	*Hiatus	DEP	INTEG
a. ʃéènì			*	*	*	*
→ b. *tʃéèní (?)				*	*	*

It could be observed that both candidates satisfy the two higher-ranking constraints and violate the last three constraints. The faithfulness constraint IDENT[C] favours the ill-formed candidate (b) and rules out the putative winner (that is, candidate (a)). Although the ranking supports *[tʃéènì] and rules out [ʃéènì] and also, one could occasionally hear the form *[tʃéènì] in the speech of some Yorùbá native speakers most especially the educated elite, the correct or actual output form of /tʃeɪn/ in Yorùbá is [ʃéènì]. This is because the onset in the competing candidate *[tʃéènì] is not attested in the entire grammar of the standard Yorùbá. This segmental dis-preference is also theoretically motivated in the context of OT: It is governed by a highly ranked intra-segmental markedness constraint which bans a voiceless

palato-alveolar affricate. Consider the definition of this constraint in (19).

(19)   *AFFRICATE/VOICELESS, CORONAL (*AFFR/[–voi, +cor]):
Assign one violation mark for every affricate that is specified for the features [–voice] and [+coronal].

This markedness constraint dominates the faithfulness constraint IDENT[C]. Given this ranking, [ʃéènì] knocks out *[tʃéènì]. Refer to Tableau 6 below for the analysis.

Tableau 6. *AFFR/[–voi, +cor] >> IDENT[C] >> *Hiatus >> DEP, INTEG

/tʃeɪn/	*AFFR/[**–voi, +cor**]	IDENT[C]	*Hiatus	DEP	INTEG
→ a. ʃéènì		*	*	*	*
b. tʃéènì	*!		*	*	*

5.2. Monophthongization of /aɪ/

Similar to the pattern observed in the case of /eɪ/, loanwords with /aɪ/ also undergo both simple and complex processes of monophthongization, although in a slightly different way. For the simple process, /aɪ/ could result into either [a], [i] or [ɛ]. For the complex process, /aɪ/ is directly split into two heterosyllabic monophthongs, that is, [a.i]. Data (20a & b) concretize this observation:

(20) a. Simple Monophthongization

English Version	Yorùbá Version	Gloss
/praɪməri/	[kp**á**márì]	primary
/plaɪə/	[kpíl**á**jà]	plier
/pærədaɪs/	[kpárád**í**sè]	paradise
/baɪbəl/	[b**í**bélì]	Bible
/raɪs/	[ìrɛ̀sì]	rice
/draɪvə/	[dírɛ̀bà]	driver

  b. Complex (splitting) Monophthongization

English Version	Yorùbá Version	Gloss
/faɪl/	[f**áì**lì]	file
/faɪn/	[f**áĩ̀**nì]	fine (punishment)
/braɪb/	[búr**áì**bù]	bribe
/baɪbəl/	[b**áí**bù]	Bible
/taɪð/	[t**áì**tì]	title
/maɪl/	[m**áì**lì]	mile
/paɪlət/	[kp**áí**lɔ̀tì]	pilot
/raɪs/	[r**áì**sì]	rice
/saɪt/	[s**áì**tì]	site

The patterns of monophthongization in (20a & b) are schematized in (21a & b) below, and collapsed in (21c).

(21) a. /aɪ/ → {[a], [i], [ɛ]}   (simple monophthongization)
    b. /aɪ/ → [a.i]   (complex (splitting) monopthongiization)
    c. /aɪ/ → {[a], [i], [ɛ], [a.i]}

Given the ranking proposed earlier in (18), Tableaux 7 and 8 present the analyses of examples (22) and (23), respectively.

(22) /draɪvə/ → [dírɛ́bà] 'driver'

Tableau 7. *DIPH, *CC >> IDENT$_{[F]}$ >> DEP, INTEG

/draɪvə/	*DIPH	*CC	IDENT$_{[F]}$	DEP	INTEG
→ a. dírɛ́bà			**	*	*
b. draɪvə	*!	*			
c. drɛ́bà		*!	**		*
d. draɪfà	*!	*	**		

Notice that the previous faithfulness constraint IDENT$_{[C]}$ has been replaced with IDENT$_{[F]}$. The latter is a family of constraints requiring corresponding input and output segments to be identical in terms of a specific feature [F]. Looking at the optimal candidate, one could observe that two input segments (/v/ and /ə/) change to [b] and [a], respectively. Instead of introducing a new but related constraint, e.g. IDENT$_{[V]}$, in addition to IDENT$_{[C]}$, it is better to collapse the two into IDENT$_{[F]}$, the [F] specification referring to both consonant and vowel. Thus, candidates (a), (c) and (d) violate IDENT$_{[F]}$ twice. Observe that candidates (b), (c) and (d) incur at least one fatal violation of *DIPH and *CC. Since the two constraints are highly ranked, the three candidates lose the competition to candidate (a) which satisfies them.

(23) /faɪl/ → [fáìlì] 'file'

Tableau 8. *DIPH, *CODA >> *Hiatus >> DEP, INTEG

/faɪl/	*DIPH	*CODA	*Hiatus	DEP	INTEG
→ a. fáɪlì			*	*	*
b. faɪl	*!	*			
c. fáɪl		*!	*		

The perfectly faithful candidate (b) runs afoul of *DIPH and *CODA for entertaining a diphthong and a final consonant, respectively. The last candidate, although obeys *DIPH, is also guilty of violating *CODA. Candidate (a) changes the underlying diphthong to a splitting monophthong in order to satisfy *DIPH, and inserts a vowel to open the closed syllable so as to satisfy *CODA. Notwithstanding its violations of the other three constraints, candidate (a) is picked as the optimal candidate because it fares better on the hierarchy than its fellow competitors.

5.3. Monophthongization of /ɔɪ/

Loanwords with /ɔɪ/ exhibit only the complex (splitting) process of monophthongization. The adapted correspondents in Yorùbá end up having the underlying diphthong directly split into two heterosyllabic monophthongs, as schematized in (24) below:

(24) /ɔɪ/ → [ɔ.i]

Data (25) illustrate the schema in (24).

(25)

English Version	Yorùbá Version	Gloss
/ɔɪl/	[ɔ́ìlì]	oil
/bɔɪl/	[bɔ́ìlì]	boil
/tɔɪ/	[tɔ́ì]	toy
/kɔɪl/	[kɔ́ìlì]	coil
/pɔɪnt/	[pɔ́ĩ̀tì]	point
/dʒɔɪnt/	[dʒɔ́ĩ̀tì]	joint

Observe that the second monophthong is nasalized in the last two items in (25) because of the influence of the following nasal consonant. We pick the last item for analysis. The ranking is also derived from the one proposed in (18).

Tableau 9. *DIPH, *CC, *CODA >> *Hiatus >> DEP, INTEG

/dʒɔɪnt/	*DIPH	*CC	*CODA	*Hiatus	DEP	INTEG
→ a. dʒɔ́ĩ̀tì				*	*	*
b. dʒɔɪnt	*!	*	*			
c. dʒɔ́ĩ̀t		*!	*	*		*

In Tableau 9, candidate (b) violates the three undominated markedness constraints, hence it is ruled out as a potential winner. Candidate (c) is also ruled out for violating two of the three higher-ranking constraints. Therefore, candidate (a) emerges as the winner, that is, the actual adapted form of /dʒɔɪnt/ 'joint'.

5.4. Monophthongization of /aʊ/

The loanwords in this category undergo both the simple and complex processes. The simple process involves /aʊ/ changing to [a],

or sometimes to [ã] before a nasal consonant. However, there is an exception (the last item) where /aʊ/ changes to [ɔ]. The complex process is a case of splitting whereby /aʊ/ splits into [a] and [ʊ] with the latter in turn changing to [o]. These generalizations are schematized in (26) and are justified by the data in (27).

(26) a. /aʊ/   →   [a], [ã]}   (simple process)
      b. /aʊ/   →   a.ʊ   →   [a.o]   (complex process)
      c. /aʊ/   →   {[a], [ã], [a.o]}

(27) a. | English Version | Yorùbá Version | Gloss |
      |---|---|---|
      | /baʊnsə/ | [bã́ńsà] | bouncer |
      | /raʊnd/ | [rã́ǹdì] | round |
      | /flaʊə/ | [fúláwà] | flower |
      | /paʊə/ | [páwà] | power |
      | /əraʊnd/ | [àrã́ǹdì] | around |
      | /baʊns/ | [bã́ǹsì] | bounce |
      | /traʊzə/ | [túrɔ́sà] | trouser |

      b. | English Version | Yorùbá Version | Gloss |
      |---|---|---|
      | /skaʊt/ | [síkáòtù] | scout |
      | /staʊt/ | [sítáòtù] | stout |
      | /blaʊs/ | [búláòsì] | blouse |
      | /taʊt/ | [táòtù] | tout |
      | /saʊə/ | [sáòtù] | south |
      | /paʊdə/ | [páòdà] | powder |
      | /paʊtʃ/ | *[páòtʃì] | pouch |
      | /laʊd/ | [láòdù] | loud |

We pick the first item in (27a) for analysis by comparing the actual

output form with a fully faithful candidate. Consider Tableau 10.

Tableau 10. *DIPH >> IDENT[V] >> DEP, INTEG

/baʊnsə/	*DIPH	IDENT[V]	DEP	INTEG
→ a. bɑ́ńsà		*		*
b. baʊnsə	*!			

The most highly ranked constraint in the hierarchy is *DIPH, and it uniquely determines the outcome between the two competing candidates. Failure to change the diphthong to a monophthong forces candidate (b) to violate *DIPH, hence it is knocked out of contention. Expectedly, candidate (a) wins. Notice that the winner is not impeccable itself: It violates IDENT[V] and INTEG. The choice of the first candidate as the winner entrenches OT's claim that candidate with fewer or minimal violations stands a better chance of winning, and that well-formedness is ultimately governed by a strict domination of some markedness constraint over some faithfulness constraint.

For the data in (27b), we pick the last item to justify the hierarchy utilized hitherto. The analysis is shown in Tableau 11.

Tableau 11. *DIPH, *CODA >> *Hiatus >> DEP, INTEG

/laʊd/	*DIPH	*CODA	*Hiatus	DEP	INTEG
→ a. láòdù			*	*	*
b. laʊd	*!	*			

The fully faithful candidate (that is, (b)) incurs fatal violations of the two undominated constraints in the Tableau for having a diphthong and a word-final consonant. For this reason, it loses to candidate (a).

5.5. Monophthongization of /əʊ/

Loanwords with /əʊ/ exhibit both the simple process of monophthongization and the complex pattern which is manifested as doubling. The diphthong consistently changes either to [o], [ɔ] or [o.o], as revealed in (28a & b).

(28)   a.   Simple Monophthongization

English Version	Yorùbá Version	Gloss
/baɪrəʊ/	[báírò]/[bírò]	biro
/reɪdiəʊ/	[rédíò]	radio
/səʊldʒə/	[sódʒà]	soldier
/məʊtə/	[mɔ́tò]	motor
/fəʊtəʊ/	[fɔ́tò]	photo
/kɪləʊ/	[kílò]	kilo(gram)
/wɪndəʊ/	[wíńdò]	window
/mɪləʊ/	[mílò]	milo
/pɪləʊ/	[pílò]	pillow
/ləʊgəʊ/	[lógò]	logo(gram)

b. Complex (doubling) Monophthongization

English Version	Yorùbá Version	Gloss
/fəʊn/	[fóònù]	phone
/rəʊm/	[róòmù]	Rome
/rəʊl/	[róòlù]	roll
/gəʊld/	[góòlù]	gold
/ləʊd/	[lóòdù]	load (verb)
/gləʊb/	[gílóòbù]	globe
/fəʊm/	[fóòmù]	foam
/bəʊlt/	[bóòtù]	bolt
/stəʊv/	[sítóòfù]	stove
/glu:kəʊs/	[gúlúkóòsì]	glucose

The generalization about the pattern of monophthongization in (28a) is schematized in (29a); that of (28b) is schematized in (29b); while the schemata are conjoined in (29c), respectively.

(29)   a. /əʊ/ → {[o], [ɔ]}   (simple monophthongization)
        b. /əʊ/ → o → [o.o]   (complex monophthongization)
        c. /əʊ/ → {[o], [ɔ], [o.o]}

Tableaux 12 and 13 present the analyses of 'radio' and 'glucose'.

Tableau 12. *DIPH >> *Hiatus >> INTEG

/reɪdiəʊ/	*DIPH	*Hiatus	INTEG
→ a. rédíò		*	**
b. reɪdiəʊ	*!	*	
c. rédíəʊ	*!	*	*
d. reɪdíô	*!	*	*

It is apparent that the constraint which settles the competition between candidate (a) and the rest is *DIPH. While candidate (a) satisfies it, others violate it. Being an undominated constraint, any violation of it is fatal. Thus, candidate (a) is chosen as the optimal candidate.

Tableau 13. *DIPH, *CC, *CODA >> IDENT[V] >> *Hiatus >> DEP, INTEG

/gluːkəʊs/	*DIPH	*CC	*CODA	IDENT[V]	*Hiatus	DEP	INTEG
→ a. gúlúkóòsì				*	*	**	*
b. gluːkəʊs	*!	*	*				
c. glúkóòsì		*!		*	*	*	*

Candidate (b) fatally violates the three higher-ranking markedness constraints, that is, *DIPH, *CC and *CODA; While candidate (c) violates the higher-ranking constraint which bans consonant clusters (*CC). Although candidate (a) also violates some constraints in the Tableau, its satisfaction of the three undominated constraint motivates its choice as the optimal candidate.

5.6. Monophthongization of /ɪə/ and /eə/

The English loanwords with /ɪə/ and /eə/ both exhibit the complex pattern of monophthongization. What differentiates them from others is that they have the same phonetic realization in that they are both systematically split into [i.a]. Consider the schematic representation below:

(30)   a. /ɪə/   →   ɪ.ə   →   [i.a]
       b. /eə/   →   e.ə   →   [i.a]
       c. {/ɪə/, /eə/}   →   [i.a]

The data in (31a & b) below respectively illustrate the generalization in (30a & b) above.

(31) a.

English Version	Yorùbá Version	Gloss
/bɪə/	[bíà]	beer
/klɪə/	[kílíà]	clear
/gɪə/	[dʒíà]	gear
/dɪə/	[dìá]	dear
/stɪərɪŋ/	[síárĩ̀]	steering
/bræzɪə/	[bèrèsíà]	brassiere

b.

English Version	Yorùbá Version	Gloss
/ʧeə/	[ʃĩà]	chair
/ʃeə/	[ʃĩà]	share
/keə/	[kíà]	care
/feə/	[fĩà]	fair
/reə/	[ríà]	rare

I assume that the reason why both diphthongs are phonetically realized the same way in the Yorùbá forms cannot be unconnected with the erroneous assumption by the Yorùbá native speakers that both diphthongs are produced the same way in English. Adaptation of foreign lexical items in a borrowing language is mostly on the basis of perceptual experience. It is assumed that whenever Yorùbá speakers listen to the speech of the English speakers, what they perceive is the same phonetic rendition of /ɪə/ and /eə/. Thus, loanwords containing them are adapted with the same pattern of monophthongization thereby resulting in similar output. Even when the Yorùbá speakers speak English, they barely make a phonetic distinction between the two diphthongs. In actual fact however, /ɪə/ and /eə/ are two different phonemes in English. Although the final phases of the two diphthongs have the same vowel quality, namely [ə], they are pronounced in slightly different ways. The analyses of 'brassiere' and 'chair' are presented in Tableaux 14 and 15.

Tableau 14. *DIPH, *CC >> IDENT_{[F]} >>*Hiatus >> DEP, INTEG

/bræ zɪə/	*DIPH	*CC	IDENT_{[F]}	*Hiatus	DEP	INTEG
→ a. bèrèsîà			**	*	*	*
b. bræ zɪa	*!	*				
c. brèsîà		*!	**	*		*

Candidates (b) and (c) fatally violate *DIPH and * CC: (b) violates the two for preserving the diphthong and entertaining consonant cluster at the onset position; (c) violates *CC for a similar reason, that is, by allowing onset cluster. Notice also that both candidates (a) and (c) violate the next high-ranking constraint IDENT_{[F]} at two points owing to realizing non-identical corresponding [è] and [s] with the

input's /æ/ and /z/, respectively. Consideration of other constraints is irrelevant since *DIPH and *CC uniquely determine the outcome. Therefore, the first candidate is the optimal.

Tableau 15. *DIPH, *AFFR/$_{[–voi, +cor]}$ >> IDENT$_{[C]}$ >> *Hiatus >> INTEG

/ʧeə/	*DIPH	*AFFR/$_{[–voi, +cor]}$	IDENT$_{[C]}$	*Hiatus	INTEG
→ a. ʃâ			*	*	*
b. ʧeə	*!	*			

There are two higher-ranking markedness constraints in the above Tableau. These are *DIPH and *AFFR/$_{[–voi, +cor]}$. The second candidate violates them, hence it loses to the first candidate. Although the optimal candidate itself violates the other three constraints in one way or the other, it still emerges as the winner because the constraints in question are lowly ranked in the hierarchy. This again corroborates OT's tenet that constraint violation is possible or permitted, only that it must be minimal.

5.7. Monophthongization of /ʊə/

Loanwords with /ʊə/ are the rarest in Yorùbá perhaps due to the fact that the diphthong does not have copious lexical realizations in English itself as the other seven. The only available data as far as this research is concerned are given in (32).

(32) | English Version | Yorùbá Version | Gloss |
| --- | --- | --- |
| /ʃʊə/ | [ʃúɔ̀] | sure |
| /mænjʊə/ | [mànúɔ̀] | manure |
| /mætʃʊə/ | *[màtʃúɔ̀] | mature |
| /pʊə/ | [píɔ̀] | pure |
| /kʊə/ | [kíɔ̀] | cure |

The first three items in (32) clearly show that the diphthong is realized as [ú.ɔ̀]. The last two items exhibit a slightly different outcome in that /ʊə/ is realized as [í.ɔ̀]. Observe that the third adapted form is asterisked. Although this is the form that is observed in the speech of Yoruba-English bilinguals, it is ill-formed in Yorùbá because the intervocalic affricate is not attested in the language's phoneme inventory. On the basis of the data presented in (32), the following generalization suffices: The diphthong /ʊə/ is monophthongized into two heterosyllabic nuclei, either as [ú.ɔ̀] or as [í.ɔ̀]. The schematic representations are given in (33a & b) and the two schemata are conjoined in (33c).

(33)   a.   /ʊə/   →   ʊ.ə   →   [ú.ɔ̀]
       b.   /ʊə/   →   ʊ.ə   →   [í.ɔ̀]
       c.   /ʊə/   →   {[ú.ɔ̀], [í.ɔ]}

Tableau 16 consists of the ranking and the candidate analyses with respect to the form 'sure'.

Tableau 16. *DIPH >> *Hiatus >> INTEG

/ʃʊə/	*DIPH	*Hiatus	INTEG
→ a. ʃúɔ̀		*	*
b. ʃʊə	*!		

The highest-ranking constraint uniquely settles the competition between the two candidate analyses. The need to obey INTEG forces *[ʃʊə] to violate *DIPH. However, *DIPH is undominated in Yorùbá because diphthongs have no place in its grammar. This is why [ʃúɔ̀] emerges as the winner, as it splits the diphthong into two heterosyllabic monophthongs.

5.8. Summary of Findings

It has been empirically proved in this paper that all the eight English diphthongs can be monophthongized in Yorùbá. This is motivated by the fact that Yorùbá does not have diphthongs in its inventory of phonemes. Thus, the language makes recourse to either simple monophthongization, doubling monophthongization or splitting monophthongization, or a combination of them depending on the diphthong in question. The process of monophthongization in the adaption of English loanwords containing diphthongs in Yorùbá operates in tandem with some other processes such as vowel epenthesis, consonant deletion and segmental substitution. Both the doubling and splitting patterns of monophthongization normally result in hiatal configuration, hence a motivation for the ranking: *DIPH >> *Hiatus, in Yorùbá. Above all, the ranking proposed in (18) which produces the optimal adapted forms of the selected English loanwords speaks volume of typological findings in languages: Well-formedness

is ultimately governed by a strict domination of markedness constraints over their faithfulness counterparts. The summary of the monophthongization pattern is provided in the Table below:

Table 1. Monophthongization Pattern in Yorùbá

English Diphthongs	Yorùbá Corresponding Monophthongs		
	Simple	Doubling	Splitting
/eɪ/	[e]	[e.e]	–
/aɪ/	[a], [i], [ɛ]	–	[a.i]
/ɔɪ/	–	–	[ɔ.i]
/aʊ/	[a], [ã]	–	[a.o]
/əʊ/	[o], [ɔ]	[o.o]	–
/ɪə/	–	–	[i.a]
/eə/	–	–	[i.a]
/ʊə/	–	–	[u.ɔ], [i.ɔ]

In Table 1 above, the closing diphthongs (/eɪ/, /aɪ/, /ɔɪ/, /aʊ/, /əʊ/) are monophthongized via either the simple, doubling or splitting pattern; The centering diphthongs (/ɪə/, /eə/, /ʊə/), on the other hand, undergo only the splitting pattern. Also, there are instances where a diphthong may undergo both the simple and doubling, or simple and splitting patterns; But no diphthong can undergo both the doubling and splitting patterns.

6. Conclusion

This paper has carried out a descriptive study of how English loanwords containing diphthongs are adapted in Yorùbá using OT as its analytical tool. In OT, faithfulness constraints frown at any kind of change (segmental, featural and structural) of the input elements in the output whereas markedness constraints' major source of ensuring well-formedness of the output is change. This theoretical tension is evident in the adaptation of the selected English loanwords for this study: The faithfulness constraint INTEG requires the diphthong in the input to remain unchanged in the output whereas the markedness constraint *DIPH dis-prefers the diphthong. Since Yorùbá's phoneme inventory is devoid of diphthongs, all cases of diphthongs in the loanwords are monophthongized either in a simple way in which the diphthong changes to a single monophthong; Or in a complex way in which the diphthong first of all changes to a monophthong and is then doubled as identical heterosyllabic nuclei, or is directly split into two heterosyllabic monophthong nuclei. Given this generalization, it suffices to conclude that English loanwords containing diphthongs are systematically nativized in Yorùbá on the basis of the ranking, *DIPH >> INTEG, which is expanded as: *DIPH, *CC, *CODA >> IDENT$_{[F]}$ >> Hiatus >> DEP, INTEG.

References

Aloufi, A. 2016. The Phonology of English Loanwords in UHA. Ph.D. Thesis, University of Sussex.

Arokoyo, B. & O. Lagunju. 2019. A Lexicostatistics Comparison of Standard Yorùbá, Àkúrẹ́ and Ìkàrẹ́ Àkókó Dialects. *Journal of Universal Language* 20.2, 1-27.

Bámgbóṣé, A. 1990. *Fonọlọjì àti gírámà Yorùbá*. Ibadan: University Press.

Bamisaye, T. & G. Ojo. 2015. Phonotactic Adjustments in Yoruba Adaptation of English Syllable Structures. *Open Journal of Modern Linguistics* 5.4, 379-388.

Damun, D. 2016. The Rephonologization of Hausa Loanwords from English: An Optimality Theory Analysis. M.A. Thesis, University of the Witwatersrand.

Ghorbanpour, A. et al. 2019. Loanword Syllable Adaptation in Persian: An Optimality-Theoretic Account. *Journal of Universal Language* 20.2, 95-127.

Janulienė, A. & J. Andriulaitytė. 2019. On English IT Field Borrowings in Modern Russian. *Sustainable Multilingualism* 8, 81-100.

Kager, R. 1999. *Optimality Theory*. Cambridge: CUP.

Kemmer, S. 2013. Loanwords: Major Periods of Borrowings in the History of English. Available at <https://www.ruf.rice.edu/~kemmer/Words/loanwords.html>.

Kenstowicz, M. 2006. Tone Loans: The Adaptation of English Loanwords into Yoruba. *Selected Proceedings of the 35th Annual Conference on African Linguistics* 136-146. Somerville, MA: Cascadilla Proceedings Project.

Komolafe, O. 2014. Borrowing Devices in Yorùbà Terminography.

International Journal of Humanities and Social Science 4.8, 49-55.

McCarthy, J. 2002. *A Thematic Guide to Optimality Theory*. Cambridge: CUP.

McCarthy, J. 2008. *Doing Optimality Theory: Applying Theory to Data*. Oxford: John Wiley & Son.

McCarthy, J. & A. Prince. 1995. Faithfulness and Reduplicative Identity. In J. Beckman et al. (eds.), *University of Massachusetts Occasional Papers in Linguistics* 18, 249-384. Amherst, MA: GLSA Publications.

Nguyen, H. & H. Dutta. 2017. The Adaptation of French Consonant Clusters in Vietnamese Phonology: An OT Account. *Journal of Universal Language* 18.1, 69-103.

Owólabí, K. 2011. *Ijinle Itupale, Ede Yorubà 1: Fonẹtiiki àti Fonọlọji*. Ibadan: Universal Akada Books.

Oyebade, F. 2008. *A Course in Phonology*. Ijebu-Ode: Shebiotimo Publications.

Oyebade, F. 2010. Yorùbá Phonology. In O. Yusuf (ed.), *Basic Linguistics for Nigerian Languages* 228-246. Ijebu-Ode, Nigeria: Shebiotimo Publications.

Oyinloye, M. 2015. A Constraint-Based Analysis of English Loanwords in Yorùbá. M.A. Thesis, University of Ilorin.

Prince, A. & P. Smolensky. 1993. Optimality Theory: Constraint Interaction in Generative Grammar. Manuscript, Rutgers University.

Sanusi, I. et al. 2016. A Constraint-Based Analysis of English Loanwords in Yoruba. *ALÓRE: Ilorin Journal of the Humanities* 25, 208-228.

Taiwo, O. & K. Adeniyi. 2011. Emergence of Non-Conforming Syllables in Yoruba. *Ago-Iwoye Journal of Languages and Literary Studies* 2, 111-120.