

Hiatus Resolution in Yorùbá Revisited

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Abstract

Existing studies assume that Yorùbá is, to a large extent, a hiatus-resolving language perhaps because its basic or preferred syllable structure is CV and probably because the three phonological processes it deploys in resolving hiatus are also used cross-linguistically for the same purpose. However, empirical evidence suggests that this may not be the case. This study, therefore, re-examines the status and resolution of hiatus in Yorùbá with a view to establishing whether or not the phenomenon is relatively preferred in the language. The majority of the data were collected from 10 native speakers of the standard variety of Yorùbá who fall within the age range of 50 and 75 years; the rest were generated from existing sources and via researcher's introspection. Findings reveal that Yorùbá readily tolerates hiatus in its phonological grammar more than it resolves it. More so, using tonal and length diagnostics supported by perceptual evidence, the paper fundamentally argues that vowel assimilation does not consistently resolve hiatus in Yorùbá, contrary to existing claims; thus, what the language resorts to in most cases is heterosyllabification of the abutting vowels. The findings of this study intuitively suggest that Yorùbá belongs to the category of African languages that both permit and disallow vowel sequences in their grammars but Yorùbá permits such sequences more than it disprefers them.

Keywords: *Hiatus, deletion, assimilation, coalescence, heterosyllabification, Yorùbá*

1 Introduction

Cross-linguistically, the preferred or basic (hence, unmarked) syllable structure is CV – a syllable consisting of a Consonant as its onset followed by a Vowel as its nucleus (Itô, 1988, 1989; Prince & Smolensky, 1993; Ola, 1995a, 1995b; Kager, 1999; Salami, 2004). This invariably implies that languages generally have a proclivity for the [CV.CV.CV....] repeating prosodic pattern in such a way that syllabic parses which fail, or potentially fail, to be consistent with the pattern, particularly after morphological or syntactic concatenation, may be 'repaired' by certain phonological mechanisms. Specifically, the syllabic parse [CV.V], for example, obviously portrays a missing piece between the first and the second syllables and the missing piece is, ostensibly, a consonant. In the literature, such a conspicuous gap is technically called *hiatus*, usually defined as a sequence of two

adjacent vowels without an intervening consonant. Whether the adjacent vowels are the same by feature or different still remains a contentious issue. The consensus on this subject matter, however, is that VV sequence is a cross-linguistically marked structure due to languages' general preference for the CV syllable pattern. Whereas hiatus (i.e., VV sequence) is completely repudiated in several languages, some languages repair it in some contexts but leave it unrepaired in others, and other languages indiscriminately tolerate it within their entire system (Casali, 1996, 2011; Mutonga, 2017). By and large, most extant studies on hiatus are typological in that they are geared towards establishing whether the language tolerates it, repudiates it or makes both choices. By extension, the onus is on the analyst to establish which choice takes precedence over the other whenever they encounter a language in which hiatus is permitted in some contexts but jettisoned in other contexts.

Existing authoritative accounts, such as Awobuluyi (1978), Bamgbose (1990), and Owolabi (2011), have clearly established that hiatus (sequence of vowels) exists in Yorùbá, notwithstanding the fact that the language generally prefers the CV syllable pattern. By extension, many studies have shown that hiatus is repaired in the language through such processes as vowel deletion, vowel coalescence and vowel assimilation (Awobuluyi, 1985; Akinlabi & Oyebade, 1987; Ola, 1991; Orie & Pulleyblank, 2002; Abiodun, 2005; Orie, 2012; Ehineni, 2017; Oyinloye, 2021). Following existing findings, the implicit assumption is that, to a large extent, Yorùbá is a hiatus-resolving language perhaps because its basic or preferred syllable structure is CV and probably because the three phonological processes it deploys in resolving hiatus are also used cross-linguistically for the same purpose. On the contrary, this paper, using an array of empirical evidence, aims to argue that Yorùbá relatively prefers condoning hiatus to resolving it. Therefore, whenever two or more vowels come in contact either naturally or as a result of lexical concatenation and the sequence is preserved in the output form, what the language resorts to is heterosyllabification of the vowels in question. Furthermore, the study seeks to contend against vowel assimilation as a genuine tool for repairing hiatus in the language.

2 Literature review

2.1 Hiatus resolution strategies across languages

Languages that frown upon sequences of two abutting vowels conventionally employ a vast array of repair strategies in the form of phonological processes: eliding one of the vowels (deletion), turning one of the vowels to a glide (glide formation), reducing one of the vowels to a secondary feature on a preceding consonant (secondary articulation), turning the two vowels to a diphthong (diphthong formation or diphthongization), fusing or merging the two vowels into a monophthong (coalescence), introducing an epenthetic

consonant to break the sequence (insertion), or subjecting the two vowels to assimilation (Casali, 1996, 1997, 2011; Orie & Pulleyblank, 2002; Mudzingwa & Kadenge, 2011; Mutonga, 2017; Sande et al., 2019, among others). See examples (1) through (6) for empirical illustrations of the first six processes and (7) and (8) for the last one. It is necessary to add that, in a situation where none of these processes succeeds in breaking hiatus, languages resort to heterosyllabification. That is, they retain the sequences but parse the vowels into separate syllables.

(1) Vowel deletion in Èwùlù (Utulu, 2018, p. 4)

- | | | |
|-----------------|-----------|--------------|
| a. /té + ófé/ | [tó'fé] | 'cook soup' |
| b. /ḡá + éḡè/ | [ḡéḡè] | 'shoot gun' |
| c. /édḡá + óḡǎ/ | [édḡóḡǎ] | 'white sand' |
| d. /ìtè + ókwó/ | [ìtṵ'kwó] | 'hot pot' |

As demonstrated in (1), Èwùlù resolves vowel sequences by deleting the first of two vowels at a morphological boundary: between a verb and a noun (as in (a) & (b)) or between an adjective and a noun (as in (c) & (d)).

(2) Glide formation in Squliq Atayal (de Carvalho, 2015, p. 350)

- | | | |
|--------------|---------|--------------|
| a. /soja-i/ | [sjaɲ] | 'to like' |
| b. /mʔabi-a/ | [mʔbja] | 'to sleep' |
| c. /mnbu-a/ | [mnbwa] | 'to be sick' |
| d. /biru-an/ | [brwan] | 'to write' |

In (2a & b), the /V-V/ sequence in the input is resolved in the output by turning the high front unrounded vowel /i/ to the palatal glide [j] such that the sequence ends up being either [V-j] (as in (a)) or [j-V] (as in (b)). On the other hand, examples (2c & d) involve changing the high back rounded vowel /u/ to the bilabial glide [w] such that the underlying /V-V/ sequence becomes [w-V] in the surface form. Note that the discussion of other processes in the data, but not relevant to the discussion at issue has been ignored.

(3) Secondary articulation in Cindali (Mtenje-Mkochi, 2018, p. 330)

- | | | |
|-----------------|-------------------------|------------|
| a. /i-fi-eni/ | [iḡê:ni] | 'forehead' |
| b. /i-li-ongo/ | [iḡô:ngo] | 'breast' |
| c. /ú-mu-ana/ | [úm ^w a:na] | 'child' |
| d. /u-ku-énd-a/ | [uk ^w ê:nda] | 'to walk' |

Secondary articulation in Cindali, as shown in (3), is used as a hiatus avoidance mechanism and it is instantiated in the form of palatalization (as in (3a & b)) and labialization (as in (3c & d)). For (3a & b), vowel /i/ is transformed to a palatal consonant [j] which then shows up as a secondary feature on its preceding consonant in the output. On the other hand, in (3c & d), vowel /u/ becomes a bilabial consonant [w] and is eventually realized as a secondary feature on /m/ and /k/. Although other processes observable in the data are not relevant to the discussion here, it is important to state that Cindali appears to get rid of the first vowel in a V-V sequence using secondary articulation.

(4) Diphthongization in Ngiti (Lojenga, 1994, p. 90-91; as cited in Casali, 2011)

- | | | |
|---------------|-------------|--------------------|
| a. /abvo àji/ | [a.bvoà.ji] | ‘widow’ |
| b. /opi àji/ | [o.pià.ji] | ‘Lendu woman’ |
| c. /fà ópò/ | [fàó.pò] | ‘our food’ |
| d. /fòkú obi/ | [fò.kóó.ði] | ‘your (pl) knives’ |

According to Casali (2011), data (4) characterize a situation whereby a sequence of two vowels at a morphological boundary is realized as “a short complex vowel nucleus on one V timing slot”. In other words, the two vowels are turned into a diphthong in the output. The indication of syllable boundaries with the aid of full stops in the output forms makes the point clearer. For example, in (4a), the /o + à/ sequence in /abvo àji/ is realized as the diphthong [oà], thereby becoming the nucleus of the syllable – [.bvoà.] – in the entire word – [a.bvoà.ji] – which means *widow*. Since phonetically, a diphthong is a *single* transitional vowel, it implies that the VV structure in the input is rectified in the output by the formation of a complex V.

If properly scrutinized, one would see that the plausibility of diphthongization being used to repair vowel sequences in example (4) appears questionable given the fact that the so-called ‘diphthongized vowel’ in (4a-c) bears two distinct tones (just as they were in their underlying forms), and this could be indicative of them belonging to separate syllables. That is, it could mean that the two tones imply two distinct vowels showing up; hence, the original sequence is still intact. Perhaps, the Ngiti case requires a reanalysis. This, however, is outside the scope of this paper.

(5) Vowel coalescence in Olutura (Etakwa et al., 2018, p. 67)

- | | | |
|----------------|-----------|---------------|
| a. /βa + itsa/ | [βetsa] | ‘They come’ |
| b. /βa + ira/ | [βe:ra] | ‘They kill’ |
| c. /ni + itsa/ | [ni:tʰsa] | ‘I am coming’ |
| d. /βu + ukha/ | [βu:xa] | ‘Wake up’ |

- | | | |
|----------------|----------|----------------|
| e. /ama + ena/ | [ame:na] | ‘holes’ |
| f. /eβi + ena/ | [eβi:na] | ‘court events’ |

Ignoring other processes, such as compensatory lengthening, data (5) show how two contiguous vowels are turned into a single vowel with the aid of coalescence: (5a & b) illustrate ‘vowel height coalescence’ in which a sequence of low and high vowels in the input shows up as a mid vowel in the output; (5c & d) portray ‘identity coalescence’ where two identical underlying vowels merge into a single vowel having the same quality as that of the two; and the last two sets of examples exhibit ‘single vowel replacement coalescence’ given the observation that the resulting vowel shares exactly the same quality with one of the two vowels being fused. For a more detailed and authoritative explanation on these instances of coalescence, readers are advised to consult Awobuluyi (1987).

(6) Consonant epenthesis in Ndau (Mutonga, 2017, p. 8)

- | | | |
|------------------------------|--------------------------|--|
| a. /wà-énzá n-á/ | [wàjénzáná] | ‘It did the same/It is of the same size’ |
| b. /tà-éréng-á/ | [tàjéréngá] | ‘We have read’ |
| c. /và-ón-á/ | [vàwóná] | ‘They see’ |
| d. /tà-ót ^s ír-á/ | [tàwót ^s írá] | ‘We have sneezed’ |

In Ndau, as revealed in (6), the palatal glide [j] is inserted between two vowels if V₂ is a coronal, for example, /e/, as seen in (a) and (b); in (c) and (d), on the other hand, the bilabial glide [w] is inserted if V₂ is labial, for example, /o/. Although Mutonga analyses the insertion process as a case of spreading of V₂’s place node to an empty C slot, it seems more plausible to characterize it as an insertion of a glide that is homorganic with V₂, at least for the sake of expository simplicity.

(7) Hiatus resolution by assimilation in Yorùbá (Orie & Pulleyblank, 2002)

- | | | |
|------------------|--------------|----------------------|
| a. /ɔmɔ ɛran/ | [ɔmɛɛrã] | ‘goat-kid’ |
| b. /owó egúngún/ | [owééégú] | ‘masquerade’s money’ |
| c. /kiri àgbàdo/ | [kírààgbàdo] | ‘hawk maize’ |
| d. /gbàgbé ɔmɔ/ | [gbàgbóɔmɔ] | ‘forget child’ |

(8) Hiatus resolution by assimilation in Olusuba (Sande et al., 2019)

- | | | |
|-----------------|-----------|----------------------------|
| a. /a-ma-owa/ | [amoowa] | ‘mushroom’ |
| b. /tu-na-et-a/ | [tuneeta] | ‘We will call (very soon)’ |
| c. /e-owok-a/ | [eewoka] | ‘It spills’ |
| d. /o-iw-a/ | [oowa] | ‘You steal’ |

In examples (7) and (8), underlying non-identical vowels at their respective morpheme boundaries are transformed to two identical vowels via assimilation. According to the authors of the two sets of examples, the hiatal configurations in the input are repaired in their respective output forms since the two identical vowels can be interpreted as a single vowel that is produced on a longer duration. One of the goals of this paper is to challenge this assumption and argue that the two resulting vowels are not truly identical. Thus, the sequence is not repaired, as it were. This argument is taken up in the next section.

2.2 On vowel assimilation as a hiatus repair strategy: a call for reflection

Of all the hiatus-rectifying mechanisms documented in the literature and briefly discussed above, vowel assimilation seems a bit controversial as far as I am concerned. The main issue boils down to whether or not vowel assimilation is a true hiatus breaker in languages that have been shown to utilize it. Answering this question would necessarily warrant a debate on what actually or best describes *hiatus* in phonology. First off, the various existing definitions of this phonological concept are worth considering. Vowel hiatus (or ‘hiatus’ for short) has been basically defined as “sequences of vowels that arise through morphological or syntactic concatenation” (Casali, 1996, p. 1), “a sequence of vowels across a syllable boundary” (Orie & Pulleyblank, 2002, p. 101), “a division between vowels belonging to different words or syllables” (Matthews, 2007, p. 175), “a sequence of adjacent vowels belonging to separate syllables” (Casali, 2011, p. 1434), or “a heterosyllabic sequence of adjacent vowels” (Mutonga, 2017, p. 1). Apparently, none of these five related definitions specifies whether the vowels constituting the sequence should have the same or contrastive featural (vocalic) specification; what is only clear is that they are contiguously heterosyllabic (i.e., belonging to separate syllables). Furthermore, in their account of vowel assimilation as a hiatus rectifier in Yorùbá, Orie and Pulleyblank (2002) draw the reader’s attention to a very vital observation made by a reviewer of their paper as regards the identity of *hiatus*. They remark:

A reviewer for this paper has noted that a dictionary definition of hiatus considers any heterosyllabic sequence of vowels not separated by a consonant as exhibiting hiatus, whether the vowels are the same or different. Hence, heterosyllabic vowels linked to a single feature set would constitute hiatus according to the dictionary definition. (113: footnote 14).

Responding to the reviewer’s comment, Orie and Pulleyblank emphasize that their use of ‘hiatus’ in their paper “refers more specifically to the resetting of articulators in two heterosyllabic vowels.” That is, their view of the concept is that of a sequence of two different vowels. Sande et al. (2019, p. 29) appear to be in alignment with Orie and

Pulleyblank's position, having defined hiatus as "a phonological phenomenon in which case two *dissimilar* [boldening is mine] vowels occur in a sequence without an insertion of any consonantal sound to break it". Outside the scope of descriptive definition, a theory-based conceptualisation of hiatus is also worthy of note. This takes us to a brief overview of the treatment of vowel assimilation as a hiatus breaker in the context of Optimality Theory (OT).

2.3 OT treatment of vowel assimilation as a hiatus breaker: a brief overview

Over the years, particularly ever since Casali (1996), most studies on hiatus resolution are carried out within OT, a constraint-oriented framework which proposes that every grammar is a network of universal, rankable but violable constraints. Within the OT paradigm, the universal constraint that categorically bans a VV sequence is usually formulated in most work as follows:

NO-HIATUS: Two adjacent vowels cannot be linked to (two) different sets of features.
(Orie & Pulleyblank, 2002; Pulleyblank, 2009; Orie, 2012, etc.)

The basic interpretation of NO-HIATUS is that, it is prohibited to have two contiguous vowels which are non-identical in their featural specifications. Therefore, a sequence of two identical vowels satisfies this constraint by default.

Orie and Pulleyblank's, Sande et al.'s, and OT's conceptualisation of *hiatus* shown above might have provided some clue about what the phenomenon actually entails: a sequence of two non-identical or dissimilar vowels. As an escape route, such a conceptualisation would make Orie and Pulleyblank's (2002) assimilation account stand. However, there are at least two issues that must be pointed out in respect of this account. Firstly, there are many instances in several languages where an underlying VV structure is a sequence of two similar vowels in all respects, yet in the surface structure, one of the vowels is either deleted, or both undergo coalescence, or they are separated by an epenthetic consonant, and so on. In a nutshell, the underlying sequence is broken in the surface form. One of these possibilities is illustrated in Yorùbá in (9), where two vowels at a morphological boundary in the underlying representation (UR) are vocally and tonally similar, yet one of them still gets deleted in the surface representation (SR).

(9)	UR	SR	
	/dʒɛ ɛran/	[dʒɛrã]	‘eat meat’
	/ta ata/	[tata]	‘spill pepper’
	/bɔ ɔba/	[bɔba]	‘worship the king’
	/rà àgbàdo/	[ràgbàdo]	‘buy maize’
	/tè èbà/	[tèbà]	‘make/prepare èbà’

The issue is, if indeed hiatus entails a sequence of two *dissimilar* vowels, one would therefore be tempted to infer that the UR forms satisfy the OT’s markedness constraint *NO-HIATUS* by default, a situation that is quite analogous to the assimilatory strategy discussed in Orie and Pulleyblank (2002) as well as in Sande et al. (2019). Assuming *NO-HIATUS* is satisfied by the forms in the UR column, why then does one of the vowels get deleted in the SR? Is it deleted to satisfy *NO-HIATUS* ‘again’, thereby creating a double standard situation, or to satisfy another constraint entirely? This somewhat complicated situation can be eliminated by simply assuming that hiatus is generally a sequence of two vowels, whether they are the same or different, and this is exactly the position taken in this paper. On this premise, the UR forms in (9) exhibit hiatal structures; hence, a violation of *NO-HIATUS*, while the SR forms do not. Drawing an analogy from the UR forms, vowel assimilation, which still produces two vowels in like manner, cannot be a legitimate strategy for undoing hiatus; thus, it is unamenable to the constraint *NO-HIATUS*. Crucially, it should be pointed out that both the UR and the SR forms are acceptable in the language, just that the latter have a higher frequency of usage due to their prevalence in rapid speech. This being the case, one could alternatively argue that the deletion process in (9) is not driven, in the strictest sense, by the need to satisfy *NO-HIATUS* but ultimately by such factors as communication convenience and euphony. This alternative analysis may, however, not be popular with OT practitioners. Anyway, I am not pursuing the issue further because it is outside the scope of this paper.

Secondly, one cannot be too sure if two similar vowels derived through the process of assimilation which is purportedly invoked to eliminate the so-called ‘unwanted’ vowel sequence, as demonstrated in (7) and (8) above, have not returned the situation to square one, perhaps even making it worse! That is, if $/V_1 + V_2/ \rightarrow \{[V_1 V_1], [V_2 V_2]\}$, isn’t it obvious that the two alternative outcomes on the right side of the arrow have unwelcomely created a pattern in the similitude of the one intended to be jettisoned in the first place? This is another reason why I am arguing that vowel assimilation does not obey the markedness constraint *NO-HIATUS*, contrary to Orie and Pulleyblank’s and Sande et al.’s proposal.

Independent of the two issues raised in the foregoing discussion, my position goes thus: If hiatus is generally used to refer to a sequence of two vowels regardless of what

their identity is, assimilation seems not to satisfactorily resolve the sequence because the process of assimilation ends up producing two phonetic vowels that would necessarily be heterosyllabic especially in a syllable-count language like Yorùbá; thereby incurring a violation of NO-HIATUS. Given this possibility, assimilation would imply returning the underlying VV structure to the status quo ante. On the other hand, even if we agree that *hiatus* specifically characterizes a sequence of two dissimilar vowels (as espoused by Orie & Pulleyblank, 2002 and Sande et al., 2019), assimilation would still not rectify it satisfactorily because, as will be shown later in this study, the two vowels derived by total assimilation are not absolutely similar, contrary to the general assumption in the literature. By and large, the general position of this paper is that vowel assimilation does not pass for a hiatus-resolution process, regardless of whether *hiatus* is a sequence of two similar vowels or a sequence of two dissimilar vowels. Nevertheless, this paper's specific conceptualization of *hiatus* is that of "any sequence of vowels".

All through (1) to (8), data from different languages have been presented to illustrate how hiatal configurations, which constitute illicit structures in most languages, are resolved by diverse means, ranging from eliding one of the vowels to subjecting them to assimilation. Although each resolution strategy is shown to independently operate in each language used for illustration, it does not mean that each of the languages utilizes only one strategy to rectify vowel sequences. In fact, a language may make use of two or more of them, but the preference of one over another within the same system is usually context-driven. In addition, studies have shown that it is equally possible for a language to disallow vowel sequences in certain morphological or morpho-syntactic configurations and leave the sequences untampered with in other environments. This is exactly the case in the language under investigation. Finally, out of all the hiatus-resolving processes discussed above, the most widely utilized is vowel elision (Casali, 1996). Interestingly, the typological discovery in connection with this process is that deleting the leftmost vowel (that is, V_1) in a $/V_1 V_2/$ sequence is more common and productive than doing so to its counterpart (Casali, 1996, 1997, 2011). The Èwùlù example in (1) aptly portrays this typological finding.

2.4 Previous studies on hiatus resolution in Yorùbá

There are a vast number of studies on, and related to, hiatus resolution in Yorùbá (e.g., Awobuluyi, 1978, 1985, 1987; Akinlabi & Oyebade, 1987; Pulleyblank, 1988, 2009; Bamgbose, 1990; Ola, 1991; Seidl, 2000; Orie & Pulleybank, 2002; Abiodun, 2005; Oyebade, 2010; Owolabi, 2011; Orie, 2012; Ehineni, 2017; and Oyinloye, 2020b, 2021a,

2021b, 2023). Taking all of these existing studies together, hiatus is repaired in Yorùbá by three distinct processes – vowel deletion, vowel coalescence, and vowel assimilation – although the majority of those studies concentrate more on the first process, probably because it is the most productive of the three in the language. The first two mechanisms are exemplified in (10) and (11) below; kindly refer back to example (7) for the illustration of the third one.

(10) Hiatus resolution in Yorùbá by vowel deletion (Owolabi, 2011, pp. 176-177)

a. /odʒú òde/	[odʒúde]	‘outside’
b. /ewé ɔ̀bè/	[ewébè]	‘vegetable’
c. /tɛ̀ ìwé/	[tèwé]	‘print book’
d. /ka ɛdʒa/	[kɛdʒa]	‘count fish’
e. /gbé odó/	[gbódó]	‘carry mortar’

In (10a-c), the first of the two vowels in a sequence is retained while the second is deleted; in (10d & e), however, it is the second vowel that survives. What the data show is that Yorùbá invariably frowns upon vowel hiatus such that whenever such a configuration shows up during morphemic concatenation, the obvious strategy is to jettison one of the two abutting vowels.

(11) Hiatus resolution in Yorùbá by vowel coalescence (Awobuluyi, 1987, p. 10)

a. /ibi isũ/	[ibũsũ]	‘bed’
b. /ogũ èdʒì/	[ogódʒì]	‘forty’
c. /ogũ èta/	[ɔ̀góta]	‘sixty’
d. /a rí ogbó/	[arúgbó]	‘an old person’
e. /dá ɔ̀kpé/	[dúkpé]	‘give thanks’

As shown in example (11), another tool used in Yorùbá to undo hiatus is vowel coalescence, a phonological change in which two contiguous vowels in the input are merged into a distinct unitary vowel in the output. In his typological research, Awobuluyi (1987) conceptualises the type of coalescence exemplified in (11) as *coalescence by polarisation*, whereby the feature [-round] or [-high] specified for each second of the two contiguous vowels in the input is reversed or polarised. In specific terms, the feature [-round] specified for each second input vowel in (11a-c) ends up being polarised to [+round] in the resulting vowel – [u, o, ɔ̀] – whereas the feature [-high] specified for each second input vowel in (11d & e) is reversed to [+high] in the derived vowel – [u].

Given examples (7), (10) and (11), the implicit assumption on hiatus resolution in Yorùbá is that vowel sequence is a marked feature of the language’s phonology following,

at least, the fact that the three strategies employed in the language to repair it are cross-linguistic mechanisms found to be used for the same purpose in many other languages. Similarly, most OT-based studies associated in one way or another with hiatus in Yorùbá treat *NO-HIATUS* as a highly ranked constraint, so high that it is not dominated by any constraint in their analysis (e.g., Orie & Pulleyblank, 2002; Pulleyblank, 2009; Orie, 2012; Ehineni, 2017; Oyinloye, 2021a & b, 2023), thus presuming that the language, to a very large extent, disfavors sequences of vowels without an intervening consonant. However, abundant empirical examples of hiatal configurations in Yorùbá provided throughout the result section of this paper are an apparent indication that this is not the case.

3 Methodology

The majority of the data analysed in this study were obtained from 10 selected native speakers of Yorùbá who fall within the age range of 50 and 75 years. Although Yorùbá has many dialects, the standard variety which is used for formal and educational purposes and assumed to be mutually intelligible to all of its speakers in the South-West region of Nigeria is the one analysed in this study. The 10 informants, selected with the aid of purposive sampling technique, speak different dialects of the language: 2 informants, aged 55 and 74, speak the Òyó dialect (Oyo State); 3 informants, aged 62, 65 and 75, speak the Ìgbómìnà dialect (Kwara State); 3 informants, aged 50, 58 and 70, speak the Ìjèbú dialect (Ogun State); and 2 informants, aged 53 and 69, speak the Ìjẹ̀sà dialect (Osun State). The fact is, not all native speakers of Yorùbá understand one another when they interact in their respective dialects. However, the 10 language consultants were carefully selected because the standard variety is mutually intelligible to all of them. This was discovered through a preliminary test requiring them to converse with one another for about 30 minutes using the standard variety. They were also asked to write a short story of their choice using the standard variety and a good number of them performed admirably well – they demonstrated a high level of written proficiency in the variety. Since the researcher is also intuitively conversant with the standard variety, it was easy to ascertain that all the subjects speak and understand it.

All the subjects had their primary, secondary and university education in the South-West region of Nigeria; the person with the lowest academic qualification among them has a Bachelor's degree, and 3 of them studied the Yorùbá language up to the Master's degree level. Similarly, they claimed to have had educational contact with the standard Yorùbá at one time or the other during their academic pursuits, either as a subject to be learned or as an instructional material. All of these factors are indicative of the fact that the 10 informants

possess a high level of proficiency in the standard Yorùbá, including the fact that it was the variety they grew up speaking before being gradually exposed to their respective dialects. Additionally, there is a balance in terms of gender distribution of the consultants: they comprise 5 females and 5 males.

To determine the degree of resolution of hiatal structures in the language, the selected consultants were given a simple elicitation task. A researcher-designed wordlist of 50 lexical items and compound words in Yorùbá which contain hiatal configurations was given to 5 of them to render verbally both in isolation and in certain sentential contexts. Each of them was given 10 items or tokens to pronounce. In isolation, 36 hiatal items were left unresolved while 14 were resolved. Within sentences however, 16 were resolved by deletion, 13 by assimilation, and 3 by coalescence whereas 18 were left unresolved. Although this result seems to show that hiatus is resolved more in connected speech, my argument in this paper against assimilation as an authentic tool for repairing hiatus in Yorùbá would imply that 31 (13 + 18) out of the 50 tokens were unresolved, which implies that retention of hiatal structures takes precedence over repairing them in the language. (Please, refer to section 4.2 for my argument on assimilation). Furthermore, all the 10 informants were asked to tell a number of indigenous narratives in Yorùbá, recount personal life experiences and narrate a few anecdotes. The choice of this mode of data collection was motivated by the need to have access to a large body of Yorùbá data which would allow vowel sequences to be represented in large numbers. The individual responses of the subjects were tape-recorded, and all instances of hiatal configurations observed in the corpus were diligently extracted, carefully transcribed and systematically classified into different categories.

For the vowel assimilation cases, I conducted a perceptual test in which 10 hiatal tokens were selected: 5 tokens in which the two abutting vowels exhibit contrasting tonal configurations (e.g., *aráalé*, *iléèwé*, and *ɔgbéénú*) and 5 tokens in which they have identical tonal features (e.g., *ɔmooko* and *ìjànèèkó*). Out of the 10 subjects used for the study, I chose 5 of them to perform the task. I asked them to produce the 5 tokens three times each. They were made to perform the pronunciation task without being informed about its ultimate goal, which was to determine whether or not the two adjacent vowels were produced with the same duration. Using a multimedia digital voice recorder (RP3), the recording was done in a serene environment that was devoid of noise. From the 5 speakers' performance on all the tokens, I perceived that they consistently produced the first vowel in the sequence on a slightly longer duration than the second. The exercise was repeated and the same result was obtained.

Apart from the consultation method, some data were also obtained from a few Yorùbá literary texts including existing work on Yorùbá hiatus since the present study is a re-examination of the phenomenon itself. Being a native speaker of Yorùbá, the researcher, albeit on a very few occasions, also resorted to introspection for collection of some data. It is crucial to state that all the data designated for analysis were systematically integrated in the course of analyzing them. That is, they were not analysed separately considering the fact that they all emanate from the same variety and also exhibit similar patterns of hiatal configurations which constitute the primary target of the inquiry. However, for the sake of analytical clarity coupled with the descriptive nature of the study, the data were classified into appropriate categories according to their various contexts of occurrence. For example, hiatal structures which occur in reduplicative contexts were grouped together to the exclusion of those which are found in ideophonic contexts. Similarly, where necessary, secondary sources of data were duly acknowledged.

The breakdown of the entire corpus is as follows. A total number of 247 hiatus tokens were extracted from all the three methods (consultation, textual and introspective) that were used for data collection but 154 were randomly picked and presented for analysis in this study for reasons of space. The various sets of data analysed in this study consist of 3 different categories: words (101 tokens), compounds/phrases (43 tokens), and sentences (10 tokens). Out of the 154 tokens, 97 were obtained via consultation, 47 from texts, and 10 by introspection. This means that data elicited from the 10 selected speakers have the highest percentage.

Since the standard Yorùbá is the focus of the paper, issues relating to dialectal variation with respect to the optionality or otherwise of the operation of the three hiatus resolution strategies in the language are ignored. Nevertheless, it is crucial to state that the optionality of their operation in some contexts in the standard version is not tied to dialectal diversity; rather, it is part of its general phonological facts. Of course, there may be one or more other dialects in which the operation of such processes is optional even though they obligatorily apply in the standard variety. But as I said earlier, this paper focuses only on the standard Yorùbá in which there is abundant evidence showing that hiatus is repaired in some constructions but retained in others. Finally, the selected data were analysed within a purely descriptive purview.

4 Results

4.1 In defence of Yorùbá's preference for hiatus

This paper is written to project two principal theses: (i) vowel hiatus is a core feature of Yorùbá phonology; it is much more tolerated in the language than it is repaired; and (ii) vowel assimilation is generally not a true hiatus breaker, using Yorùbá as a case study. In support of the claim that Yorùbá freely and considerably allows hiatus in its grammar, empirical evidence is presented in (12) and (13).

(12) Hiatus involving non-identical vowels

(a) Reduplicated forms

- i. kíákíá 'quickly'
- ii. díèdíè 'slowly'
- iii. láílái 'never'
- iv. bàìbàì 'faintly'
- v. súésúé 'used for describing guilt-like demeanor'
- vi. dìèdìè 'sluggishly'
- vii. ṣíóṣíó 'used for describing experience of excessive cold'
- viii. tiétíé 'lazily/reluctantly'
- ix. fíofíó 'used for describing extreme tallness'
- x. kóíkóí 'used for describing dour countenance'

(b) Negativization

- i. àìlọ 'not going'
- ii. àìsùn 'not sleeping'
- iii. àìmu 'not drinking'
- iv. àìsàré 'not running'
- v. àìjẹ 'not eating'
- vi. àìwá 'not coming'
- vii. àìsubú 'not falling'
- viii. àìkú 'immortality'

(c) Others

- i. kái! 'Stop that!'
- ii. ṣíò! 'exclamatory remark for "rubbish/nonsense"'
- iii. pàì 'onomatopoetic word for a sudden cut (e.g., of rope)'
- iv. wàì 'onomatopoetic word for flogging'
- v. díè 'small'
- vi. kíún 'little/minute'
- vii. kíá 'quick'

(13) Hiatus involving identical vowels

(a) Reduplicated forms with ‘inexhaustive’ reading (Ogunkeye, 2005a, p. 654)¹

- | | |
|-------------------|--------------------------------------|
| i. àbùùbùtán | ‘inexhaustible’ |
| ii. àmòòmòtán | ‘not fully known’ |
| iii. àṣeèṣetán | ‘doing without finishing’ |
| iv. àjẹ̀ẹ̀jetán | ‘eating without finishing’ |
| v. àkọ̀ọ̀kọ̀tán | ‘writing without finishing’ |
| vi. àgbààgbátán | ‘kicking/sweeping without finishing’ |
| vii. àṣeèṣegbé | ‘doing without serious consequences’ |
| viii. àgbààgbàtán | ‘inexhaustive receipt’ |

(b) Reduplicated forms involving numerals with ‘all-inclusive’ reading

- | | |
|------------------|-------------|
| i. méjéèjì | ‘both’ |
| ii. mètẹ̀ẹ̀ta | ‘all three’ |
| iii. méré̀ẹ̀rin | ‘all four’ |
| iv. márààrún | ‘all five’ |
| v. méfẹ̀ẹ̀fà | ‘all six’ |
| vi. méjẹ̀ẹ̀je | ‘all seven’ |
| vii. méjẹ̀ẹ̀jọ | ‘all eight’ |
| viii. mèsẹ̀ẹ̀sán | ‘all nine’ |
| viii. mẹ̀wẹ̀ẹ̀wá | ‘all ten’ |

(c) Triplicated ideophones (adapted from Ogunkeye, 2005b, p. 664)

- | | |
|----------------|------------------------------|
| i. sùúsùùsùú | ‘of several things perching’ |
| ii. sọ́ósòòsòó | ‘of landing very quickly’ |
| iii. péépèèpèé | ‘short bits’ |
| iv. páápààpàá | ‘in quick succession’ |
| v. kéékèèkèé | ‘small things’ |

(d) Others

- | | |
|---------------|-----------------------|
| i. tààrà | ‘straight’ |
| ii. wọ́órọ́ | ‘quietly’ |
| iii. àgbààgbà | ‘in groups of elders’ |
| iv. àánú | ‘mercy’ |
| v. náà | ‘the’ |
| vi. yíí | ‘this’ |
| vii. àárín | ‘middle’ |
| viii. èélá | ‘skin disease’ |

¹ Whereas examples 13a(i) – (vii) were reproduced, albeit adapted, from Ogunkeye (2005a), example 13a(viii) was added to the set by the researcher.

ix. ifékúfèè	‘lust’
x. òórùn	‘smell’
xi. òòrùn	‘sun’
xii. bèè ni	‘yes’
xiii. bèè kó	‘no’
xiv. ọ́lọpàá	‘police’
xv. mẹwàá	‘ten’
xvi. tòọlétòọlé	‘bed-wetter’
xvii. ògbólógbòó	‘of a ripe old age’
xviii. fòò	‘ideophonic word for extreme redness/fair complexion’

Examples (12 & 13) show that the distribution of hiatus in Yorùbá is multi-contextual and multi-positional in that it can be found in various morphological constructions (reduplication, numerals, ideophones, etc.) and in diverse structural positions (word-initial, word-medial, and word-final). The data also indicate that both sequences of similar vowels and dissimilar vowels constitute hiatal instantiations in the language, with the former having a higher frequency of distribution.

Furthermore, there are many simple words in Yorùbá whose underlying structure does not entertain hiatus but whose phonetic realization results in a VV sequence via intervocalic consonant deletion with or without vowel assimilation, as shown in (14a) and (14b), respectively. In all of these cases, the fact that a consonant is deleted to realize a VV sequence is proof that Yorùbá tolerates hiatus much more than it gets rid of it.

(14a) Intervocalic consonant deletion with vowel assimilation

UR		SR	
i. /egũgũ/	eũgũ	[eegũ]	‘bone’
ii. /àkìtǎ/	àitǎ	[ààtǎ]	‘dunghill’
iii. /òwúrò/	òúrò	[òòrò]	‘morning’
iv. /òtító/	òító	[òótó]	‘truth’
v. /egũgũ/	eũgũ	[eégũ]	‘masquerade’
vi. /èdúdú/	èúdú	[èédú]	‘charcoal’
vii. /àkíké/	àíké	[àáké]	‘axe’
viii. /agogo/	aogo	[aago]	‘bell’
ix. /òrìfà/	òìfà	[òòfà]	‘idol’
x. /jorùbá/ jòùbá		[joòbá]	‘the Yorùbá language’

(b) Intervocalic consonant deletion without vowel assimilation

UR	SR	
i. /ɖʒòwó/	[ɖʒòó]	‘please’
ii. /eǵí/	[eǵ]	‘teeth’

iii. /ɛ̃jĩ/ [ɛ̃ĩ] ‘back’

Note that both the UR and the SR forms in each data item in (14a & b) are well-formed in Yorùbá – the former is peculiar to careful speech while the latter is found mostly in rapid, connected speech. Additionally, it is crucial to emphasize that, for data (14a), vowel assimilation takes place for the sake of euphony, not to resolve the ensuing hiatal structure after deleting the intervocalic consonant (cf. the intermediate level). If not, those forms whose hiatal structure is retained after consonant deletion and without vowel assimilation, as in data (14b), would not have existed in the language in the first place. Thus, one could speculate that Yorùbá speakers deliberately delete the intervocalic consonant because they find it more convenient to pronounce sequences of (identical) vowels than to produce a recursive CV prosodic structure. Although this is a mere speculation, it smacks of some sort of sensibility. If not, why would the speakers transform an underlyingly unmarked CV structure (e.g., *ḍḡwó* ‘please’) to a surfacely marked VV sequence – *ḍḡóó*?

Also, the fact that certain Yorùbá syntactic expressions whose underlying form does not entertain hiatus end up with such a feature when they are phonetically rendered is another strong piece of evidence based on which one can argue that the language has a propensity for sequences of (identical) vowels in its phonological grammar. Let us consider such cases in (15).

- (15) a. Kì ñ ḍḡalè → Kì í ḍḡalè
 NEGPROG steal
 ‘He/She does not steal’²
- b. Wǔ kì ñ jèkà → Wǔ kì í jèkà
 they NEG PROG do-wickedness
 ‘They do not do evil’
- c. Ȯrò tí ñ túlé → Ȯrò tí í túlé
 wordthat PROG scatter-house
 ‘Discussion/Talk that causes domestic mayhem’
- d. A kò ló → A ò ló
 we NEG go
 ‘We did not go’
- e. Wǔ kò mò → Wǔ ò mò
 they NEG know
 ‘They did not know’

² NEG = Negator/negation marker; PROG = Progressive marker

f. Adǵá	rè	→	Adǵá è/Adǵé è		
dog	his/her				
'his/her dog'					
g. oní	àáké	→	aláàáké		
owner of	axe				
'owner of axe'					
h. Àwa	yóò	lò	→ A óò lò/ Àwa ó lò		
we	will	go			
'We will go'					
i. oní	àánú	→	aláàánú		
owner of	mercy				
'the merciful'					
j. A	kì í	je	bé	è	→ A ì í je bé è
we	NEG	do	like	that	
'We do not behave like that'					

In (15a-c), the progressive marker *ní* in the underlying form is transformed to vowel *í* in the phonetic form (the expression on the right side of the arrow), thereby leading to a sequence of two identical vowels. Similarly, in (15d-f), the deletion of a consonant in the phonetic form naturally creates a VV structure. Finally, the transformation in examples (15g-j) produces a sequence of three vowels. The vowel sequence in the surface form in all the examples suggests that Yorùbá relatively prefers hiatus to repudiating it.

In furtherance of this paper’s argument that Yorùbá freely accommodates hiatus, it is apposite to juxtapose data (16), (17), and (18).

	UR	SR	
(16)	a. ta atatata		‘sell pepper’
	b. rà àgbàdo	ràgbàdo	‘buy maize’
	c. bọ ọba	bọba	‘deify the king’
	d. fọ ọkò	fọkò	‘wash car’
	e. sè èkuru	sèkuru	‘cook èkuru’
(17)	a. ibi ìsù	ibùsù	‘bed’
	b. ibi ìgbé	ibùgbé	‘place of residence’
	c. ibi ìdó	ibùdó	‘place of settlement’
	d. ìdžé-kí-ìdžé	ìdžékúdžé	‘unwholesome food’
	e. ìjfe-kí-ìjfe	ìjekújfe	‘sexual immorality’
(18)	a. ará ayé	aráayé	‘earthly people’
	b. ọmọ ọba	ọmọọba	‘prince(ss)’
	c. eré egéle	eréegéle	‘rough or dangerous play’
	d. etí ikú	etíikú	‘disobedience’

e. *eni ìtǎ* *eniitǎ* ‘a person of history’

Ignoring their tonal specifications, identical vowels abut at morpheme boundary in the above three data sets. However, the output forms demonstrate different patterns: deletion takes place in (16); coalescence operates in (17); while the vowel sequences are retained in (18). The point here is, one would have expected the forms in (18a-c) which mirror data (16) with respect to the types of vowels in contiguity to undergo deletion, and the forms in (18d & e) which mirror data (17) for the same reason to undergo coalescence, since it appears that those are the two basic choices the language has to make whenever such types of identical vowels are juxtaposed at morpheme boundary. The retention of sequences of the same set of vowels in (18) shows that Yorùbá readily tolerates hiatus in several other contexts irrespective of the types of vowels forming the sequences. It is important to add that getting rid of the sequences via deletion or coalescence is, in most cases, a matter of the speaker’s choice; hence, the two processes are not always restricted to fast or connected speech. As a matter of fact, the sentential forms in (19) are occasionally produced by Yorùbá speakers in connected speech.

- (19) a. *Mo ra àgbàdo lánàá* ‘I bought maize yesterday’
 b. *Bólá se èkuru dúdú* ‘Bólá cooked black *èkuru*’
 c. *Ibi ìsǔ mi dára* ‘My bed is good’

Loanword adaptation provides another justification for the proposal that hiatus is at the core of Yorùbá phonology. The prevalent process used for integrating loanwords, particularly of English origin, in Yorùbá is vowel epenthesis; others include consonant deletion, sound substitution, spirantization, (de)voicing, and stress-to-tone adaptation. It goes without saying that there is a very large body of literature on the phonological integration of loanwords in Yorùbá, and the consensus in those studies is that Yorùbá modifies the ‘foreign’ linguistic forms to make them conform to the preferred syllable structure or phonotactic constraints of the language. For example, a vowel is inserted to break consonant clusters and open closed syllables if found in loanwords because such phonological structures are non-extant in the native words of the language.

Oyinloye (2020a) is strictly devoted to the discussion of how a special class of English loanwords – those that contain diphthongs – are nativized in Yorùbá. In the given study, it is established that such forms are integrated into the language courtesy of the process of *monophthongization*, because diphthongs are not recognized in the vowel inventory of the language. The most interesting feature of such category of loanwords is that after their

modification, the majority of them surface with hiatal configurations. Consider a few examples of such words in (20), reproduced from Oyinloye (2020a).

(20) Monophthongization in Yorùbá

English	Yorùbá	Gloss
a. /faɪl/	[fáìlì]	file
b. /ʃʊə/	[ʃúà]	sure
c. /ɔɪl/	[óìlì]	oil
d. /laʊd/	[láòdù]	loud
e. /gɪə/	[dʒíà]	gear
f. /kəʊt/	[kóòtù]	coat
g. /fəʊn/	[fóònù]	phone
h. /slɛt/	[sílèètì]	slate
i. /bleɪd/	[búléèdì]	blade
j. /bəʊlt/	[bóòtù]	bolt

In (20a-e), the adaptation results in sequences of non-identical vowels through a process Oyinloye (2020a) refers to as *splitting monophthongization* whereby the underlying diphthong (in the English form) is decomposed into two monophthong nuclei. Similarly, examples (20f-j) show that the nativization process, which the same author refers to as *doubling monophthongization*, leads to the emergence of sequences of two identical vowels but with contrasting tonal melodies. Notice also that all other necessary processes are in place: for example, vowels are inserted to split consonant clusters (as in 20h & i) and undo closed syllables (as in 20a, c, d, f, & g); one of the two coda consonants is deleted (as in 20j); and there is onset substitution (as in 20e). In the entire data (20), the consistent transformation is the change of non-hiatal underlying forms to surface forms containing hiatal structures. The fact that foreign items which originally lack vowel sequences are modified to exhibit such a phonological feature in Yorùbá implies that the language has a proclivity for hiatus in its phonological system.

4.2 Vowel assimilation as a hiatus resolution strategy in Yorùbá: a reanalysis

Having discussed a series of evidence in defence of Yorùbá's relative preference for vowel hiatus, the next task is to justify why vowel assimilation is not a true hiatus-resolution method in the language. Before delving into the argument, let us consider the following data on nominal compounds and a type of reduplication which Oyinloye (2020b) characterises as *foot copying* reduplicative pattern to illustrate vowel assimilation in Yorùbá. The vowels in question are bolded for easy identification.

(21) Hiatal structure in nominal compounds

UR	SR	
a. /ará ilé/	[aráalé]	‘family member’
b. /ará ìlú/	[aráàlú]	‘community member’
c. /ará oko/	[aróoko]	‘a barbaric person’
d. /ará ɔd̪ʒà/	[aróɔd̪ʒà]	‘market member’
e. /ará òrũ/	[aróòrũ]	‘heavenly member’
f. /gbogbo ìgbà/	[gbogboògbà]	‘every time’
g. /àgbá ɛmu/	[àgbéɛmu]	‘palmwine reservoir’
h. /ɔgbé inú/	[ɔgbéɛnú]	‘ulcer’
i. /ìfẹ̀ ìlú/	[ìfèèlú]	‘community tradition’
j. /ilé ìwé/	[ilèèwé]	‘school’

(22) Hiatal structure in reduplication (Oyinloye, 2020b)

Base	Reduplication	Output	
a. oḡũ month	<u>oḡũ</u> -oḡũ	oḡ oo ḡũ	‘every month’
b. ɔd̪ú year	<u>ɔd̪ú</u> -ɔd̪ú	ɔd̪ɔd̪ú	‘every year’
c. alé night	<u>alé</u> -alé	alaalé	‘every night’
d. ɔ̀sè week	<u>ɔ̀sè</u> -ɔ̀sè	ɔ̀sɔ̀sè	‘every week’
e. oḋʒúmó day	<u>oḋʒú</u> -oḋʒúmó	oḋʒ oo ḋʒúmó	‘every day’
f. òwúrò morning	<u>òwú</u> -òwúrò	òwòòwúrò	‘every morning’
g. ìròlé evening	<u>ìrò</u> -ìròlé	ìrììròlé	‘every evening’
h. etílẹ̀	<u>etí</u> -etílẹ̀	eteetílẹ̀	‘every house edge’

Given (21), sequences of dissimilar vowels at morpheme boundary in the UR are modified to become identical in the SR, whereas in (22) the final vowel of the reduplicant (the underlined portion in the second column) fully assimilates to the initial vowel of the base, in terms of featural and tonal composition. The position of this paper is that the hiatal structure in the UR in (21) and the reduplication column in (22) is reinstated in the SR and the output, respectively, through the process of vowel assimilation. This argument becomes tenable if recourse is made to the prosodic properties of the vowels resulting from the process. The prosodic properties in this context refer to the pitch height (tone) with which

the vowels are produced and the duration (length) of their production. I discuss these one after the other below.

Within the ambit of the proposal presented in Orie and Pulleyblank (2002) and Sande et al. (2019), one would have otherwise argued that, since the resulting vowels are identical, the original hiatal structure in the UR and the reduplication column has been repaired through the same process – assimilation. However, when one considers the tonal properties of the two vowels in each item in (21), it would appear that vowel assimilation is not a true hiatus breaker. High, mid, and low tones are contrastive tones in Yorùbá, and tones constitute inherent phonetic properties of vowels in the language (that is, every vowel in a word is produced with its distinct tone). Therefore, it is plausible to argue that two vowels with identical segmental features but different tonal specifications, as exemplified in the SR in example (21), do not have identical phonetic contents, at least by virtue of being produced with different pitch heights. For example, the phonetic quality of the high-toned vowel [á] in *aráàlú* ‘community member’ (see item (21b)) is obviously different from that of the adjacent low-toned vowel [à] in the same word. In other words, the two vowels are not categorically identical; hence, it is safe to submit that the hiatal feature has more or less been reinstated, rather than being expunged. By extension, canonical sequences of identical vowels that are produced on different pitch heights, as illustrated in example (23), should naturally be analysed as hiatal.

- (23)
- | | |
|----------------|-----------------|
| a. onírúurú | ‘miscellaneous’ |
| b. yǐí | ‘this’ |
| c. náà | ‘the’ |
| d. lánàá | ‘yesterday’ |
| e. ọlópàá | ‘policeman’ |
| f. pàápàá jùlọ | ‘especially’ |
| g. bẹẹ bẹẹ lọ | ‘and so on’ |
| h. mǐràn | ‘another’ |
| i. àánú | ‘mercy’ |
| j. yóò/máa | ‘will’ |

On the other hand, if the two vowels resulting from assimilation are identical both segmentally and tonally, as in example (22) above as well as example (24) below, a similar puzzle is whether or not they are still separate vowels.

- (24)
- | | | |
|----------------|------------|----------------------|
| a. /ɔmɔ oko/ | [ɔmooko] | ‘a barbaric’ |
| b. /àgbà ìlú/ | [àgbààlú] | ‘an elder statesman’ |
| c. /ìjànà èkó/ | [ìjànèèkó] | ‘Eko junction’ |

d. /òrò àná/ [òrààná] ‘yesterday’s discussion’

Still, my opinion is that the two vowels are not totally identical. I draw evidence from the duration involved in their articulation, based on the perceptual test which I conducted (see the methodology for the detailed description of the test). The result depicts that Yorùbá native speakers are perceived to consistently produce the first vowel with a slightly longer duration than the second vowel in the sequence. If truly the first vowel is slightly longer than the second, it suffices to infer that the two vowels resulting from the process of assimilation are not absolutely identical after all, regardless of their tonal specifications. Of course, this submission could be further entrenched by an acoustic investigation which I leave for future research.

A final remark about vowel assimilation in Yorùbá is that most (if not all) of the empirical instances of the process are optional. This is consistent with Bamgbose’s (1990, p. 53) submission: It appears that all cases of assimilation in Yorùbá are optional because we may use an expression in which assimilation exists or one in which it does not. Building on this observation, I argue that assimilating the target vowels is tied to such factors as the speaker’s choice, ease of pronunciation (or euphony), and connected speech rather than the need to satisfy a certain syllable-/morpheme-structure constraint in the language. For instance, both options in (25) are well-formed, although the latter tends to be much more common in fast speech.

- | | | | | |
|------|----------------|---|------------|-----------------------|
| (25) | a. [abé igi] | ~ | [abéɛgi] | ‘under the tree’ |
| | b. [ilé ìwé] | ~ | [iléèwé] | ‘school’ |
| | c. [ɔmo àlè] | ~ | [ɔmaàlè] | ‘a bastard’ |
| | d. [báwo ni] | ~ | [bóo ni] | ‘How far?’ |
| | e. [ìwà ìbàjé] | ~ | [ìwààbàjé] | ‘unethical behaviour’ |

In a similar vein, there are cases whereby neither assimilation nor deletion (nor even coalescence) is invoked to repair vowel sequences whether or not the constructions in which they are found are said in fast, connected speech. A few examples of such words are presented in (26).

- (26) a. /orí òkè/ → [orí òkè]³ ‘mountain top’

³ Oyeade (2010, p. 232) analyses /orí òkè/ as [orókè] ‘topmost’ in which V₁ deletion takes place. It is important to point out, however, that such a form is hardly ever heard in the speech of native speakers of the standard Yorùbá. Alternatively, the derived form [orókè] might be conceived as having a

b. /orí omi/	→	[orí omi]	‘on the surface of water’
c. /ogú ɔdú/	→	[ogú ɔdú]	‘twenty years’
d. /ilé ajé/	→	[ilé ajé]	‘the world’
e. /aʃɔ ɛbí/	→	[aʃɔ ɛbí]	‘family attire meant for a special occasion’
f. /òkú òrũ/	→	[òkú òrũ]	‘heavenly ghost’

The fact that the sequential vowels in (26) are not subject to assimilation, deletion, or coalescence implies that Yorùbá has a greater propensity for condoning hiatus than resolving it. The immediate method the language employs in dealing with the hiatal structure in such cases is parsing the vowels into separate syllables, a process popularly known in the literature as *heterosyllabification*. This is illustrated in (27) below.

(27) Syllable Parsing in Yorùbá: heterosyllabification of adjacent vowels

a. /orí omi/	[o.rí.o.mi]	‘on the surface of water’
b. /ilé ajé/	[i.lé.a.jé]	‘the world’
c. /ɔmɔ oko/	[ɔ.mo.o.ko]	‘a barbaric’
d. /àgbà ìlú/	[à.gbà.à.lú]	‘an elder statesman’
e. /aʃɔ ɛbí/	[a.ʃɔ.ɛ.bí]	‘family attire meant for a special occasion’
f. /mḗwàá/	[mḗ.wà.á]	‘ten’

As indicated by the syllable boundaries in (27), sequences of vowels which are left unresolved in the surface structure are normally parsed into separate syllables. This shows that Yorùbá exhibits a strong tendency toward heterosyllabification at the expense of resolving vowel hiatus.

As shown in the array of data presented so far, it is crystal clear that all cases of hiatus resolution in Yorùbá are restricted to inter-morphemic context or word boundaries (refer back to examples (9-11)) whereas its allowance or retention is seen both in intra-morphemic (i.e., at the lexical level) and inter-morphemic (i.e., at the post-lexical level) contexts (refer back to examples (12-15)). In the two tables below, I provide a summary of their contexts of distribution.⁴

semantic interpretation ‘topmost’ that is different from that of the faithfully parsed form [orìòkè] ‘mountain top’. Thus, [orókè] and [orìòkè] might actually be two separate surface forms.

⁴ I am very grateful to one reviewer of this paper who suggested the idea of having a table which clearly shows where hiatus is allowed and where it is disallowed in Yorùbá, including the strategies used for resolving it.

Table 1: Hiatus allowance in Yorùbá

Position of occurrence	Context of occurrence	
	Intra-morphemic	Across morphemes/words
Word-initial	(a) àìsàn ‘sickness’ (b) oókọ ‘name’ (c) èédú ‘charcoal’	(a) A ò lọ/A à lọ ‘We did not go’ (b) Ẹ ó lọ/Ẹ ẹ lọ ‘You will go’ (c) A ì í ẹẹ bẹ ẹ/A à á ẹẹ bẹ ẹ ‘We don’t do or behave like that’
Word-medial	(a) ráúrúú ‘completely (burnt)’ (b) wọ́ọ́rọ́ ‘quietly’ (c) fáìlì ‘file’ (borrowed word)	(a) ilèèwé ‘school’ (b) ọgbẹ́ẹnú ‘ulcer’ (c) aláàánú ‘the merciful’
Word-final	(a) yìò/yóò ‘will’ (b) kái ‘Stop that!’ (c) wọ̀bià ‘greed’	(a) Wọ̀n pẹ ọ ‘They called you’ (b) Ẹẹ bẹ ẹ ‘Do like that’ (c) Mo rí ọ ‘I saw you’

Table 2: Hiatus avoidance in Yorùbá

Position of occurrence	Context of occurrence (only across morphemes/words)	Resolution strategy
Word-medial	(a) /od́zú òdè/ [od́úde] ‘outside’ (b) /ewé ọ̀bè/ [ewé̀bè] ‘vegetable’ (c) /tẹ̀ ìwé/ [tẹ̀wé] ‘print book’	Vowel deletion
	(a) /ìbì ìsù/ [ìbùsù] ‘bed’ (b) /ogú éta/ [ogóta] ‘sixty’ (c) /dá ọ̀kpé/ [dúkpé] ‘give thanks’	Vowel coalescence

In Table 1, VV sequences are permitted in Yorùbá in the two contexts and in all of the three word-positions. However, in Table 2, hiatus can be resolved only in word-medial position, as well as only across morphemes or words. The distributional frequency aptly suggests that the language relatively places a premium on hiatal configurations in its grammar.

5 Discussion

In the extant literature, e.g., Casali (1996), Mudzingwa and Kadenge (2011), as well as Mutonga (2017), the popular assumption is that hiatus largely arises from morphological and/or morpho-syntactic concatenation (i.e., when two morphemic or lexical constituents are combined), implying that it is very rare for it to occur intra-morphemically or within a word. Similarly, Orie and Pulleyblank (2002, p. 101: footnote 2) state that “Hiatus resolution within words is obligatory in Yoruba, while across word boundaries it depends

on phrasing.” However, the abundant examples presented in this paper demonstrate that a single morpheme or word can constitute the domain of hiatus. That is, simple words in which hiatus is retained rather than resolved. In fact, virtually all of such cases in the language are forms whose underlying structure does not entertain hiatus but whose phonetic realization results in a VV sequence through intervocalic consonant deletion with or without vowel assimilation.

On deletion and coalescence as hiatus-resolving tools in Yorùbá, one reviewer of this paper suggested the possibility of considering how cases of what looks like deletion can also be analyzed as coalescence in the spirit of Wheeler (2005). According to the reviewer, since Yorùbá seemingly displays both strategies, a more encompassing analysis can unify them in the language as well, just as has been shown in other languages.⁵ While this is tenable on theoretical grounds, it is not so on empirical grounds. Empirically speaking, in a language like Ibiza Catalan, on which Wheeler’s OT-based proposal is based, the empirical basis is consonant cluster reduction, and not vowel hiatus resolution, which, strictly speaking, is the focus of this paper. As a background, consonant clusters are generally banned in Yorùbá on the one hand, and the competition between deletion and coalescence in the language exists only between vowels on the other hand – consonants cannot undergo coalescence; they can only be deleted in appropriate phonological contexts. Hence, Wheeler’s position is incompatible with the Yorùbá case for two reasons: (i) the empirical contexts in both languages are different; and (ii) more generally, not all phonological processes can apply the same way across languages even when the contexts are the same. In the case at hand, not only are the contexts different, but the processes also do not operate the same way in the two languages.

Furthermore, Wheeler’s coalescence proposal for Ibiza Catalan is categorically tied to theoretical considerations (within the confines of OT) without any empirical implications. In fact, the author themselves unequivocally claims that there is no any empirical consequence of the choice between the representation which displays *affrication with coalescence*, that with *no affrication or coalescence* or that with *affrication without coalescence* or, in the extreme case, of the choice between structures which display *coalescence and breaking* before a vowel-initial word in the language (Wheeler, 2005, p. 77). Taking a clue from Wheeler’s proposal, one could pursue the same argument in

⁵ Indeed, I am very grateful to the reviewer for encouraging me to compare Wheeler’s (2005) proposal with what actually obtains in Yorùbá, as this eventually led me to remember a paper that had already dealt with the same issue within the purview of the same theoretical apparatus.

Yorùbá from a theoretical standpoint (i.e., within the OT paradigm). Interestingly, there is an existing work in which the issue has been thoroughly addressed – Oyinloye (2023; see pp. 77-81 in particular). As Oyinloye (2023, p. 79) puts it, “In optimality-theoretic parlance, the point of convergence between cases of deletion and those of coalescence in Yorùbá...is reflected in the motivation to satisfy the markedness constraint NO-HIATUS. That is, both processes are invoked to get rid of the hiatal configuration instantiated by the presence of two contiguous vowels.” This clearly shows that the similarity between deletion and coalescence is largely theory-based; they are separate processes as far as empirical facts are concerned. By and large, instances of vowel deletion are not analyzable as vowel coalescence, and vice versa, in Yorùbá because both processes have been shown to operate independently as well as in their unique morphological and morpho-syntactic contexts.

More importantly, the “deletion versus coalescence” squabble in Yorùbá has been well documented in the literature. A few scholars, notably Bamgboṣe (1966, 1990) and Owolabi (2011), maintain that Yorùbá does not display vowel coalescence in its phonological grammar, and thus propose that the known cases of this process in the language can be uniformly analyzed as instances of vowel deletion or, very rarely, vowel assimilation. Because of their excessive reliance on dialectal inferences at the expense of apparent synchronic evidence inherent in the standard variety of Yorùbá, their position is adjudged to be controversial and unconvincing. Consequently, it has been strongly rejected, both directly and indirectly, by many scholars such as Awobuluyi (1985, 1987), Pulleyblank (2009), Ehineni (2017), Oyebade (2010, 2018), Oyinloye (2021a, 2023), and Ajíbóyè (2024), all of whom have convincingly argued that both processes operate independently in Yorùbá, the position which is also upheld in this paper. Interested readers are advised to compare the arguments in Awobuluyi (1987, pp. 10-12, as well as footnotes 5 and 7 of the same work) and Bamgboṣe (1990, pp. 65-70), which are two authoritative accounts of the divergent views at issue.

The result derived from this study’s perceptual test with respect to vowel assimilation is analogically correlational to earlier findings in the literature about the two short vowels making up a diphthong. It has been reported that the vowels are not produced with the same phonetic duration, in addition to the general fact that they are made up of different qualities. For example, as regards English diphthongs, Roach (2009, p. 17) submits that, “In terms of length, diphthongs are similar to the long vowels (...). Perhaps the most important thing to remember about all the diphthongs is that the first part is much longer (...) than the second part (...).” Similarly, Casali (2011, p. 1435) reports that, in

Ngiti, the first vowel in a sequence that results from the process of diphthongization is shorter in duration than the second vowel. Taking these earlier submissions on English and Ngiti diphthongs and the present study's perceptual result on vowel sequences which result from assimilation in Yorùbá together, it could be inferred that two or more vowels in a sequence are different segments, notwithstanding their segmental and/or prosodic constitutions.

Overall, the tonal and the length (duration of the sequential vowels when pronounced) diagnostics used in this study serve to entrench this paper's proposal that vowel assimilation does not consistently repair hiatus. Orie and Pulleyblank (2002, p. 113: footnote 13) had claimed that, "(...) at the phonetic level, sequences of identical vowels appear to be produced with a slight rearticulation. That is, in a sequence like [. . . e.e. . .], there appear to be two phonetic targets, not one." Although the authors opined that this idea required further investigation, their exposition explicitly suggests that two vowels derived by (total) assimilation are not identical in the truest sense; hence, vowel assimilation cannot be said to legitimately resolve hiatus even though the authors did not openly admit to this. Let us even assume that they are truly identical. In a particular portion of the same study, Orie and Pulleyblank assert that "...derived 'long' vowels [in Yorùbá] are heterosyllabic sequences" (p. 106: footnote 8), with the term 'long' in this context referring to two identical vowels. Again, if it is true that they are heterosyllabic, it thus implies that vowel assimilation does not really repair the sequence since two vowels are still pronounced and heard, together with their tonal affiliations, in the surface representation. Therefore, I propose that vowel assimilation is a default phonological mechanism employed in Yorùbá and in other similar languages to *reinstate* hiatus rather than repair it. Rather than claiming that the structure is jettisoned by assimilation, the most desirable analysis is to posit that the two vowels making up the structure are heterosyllabified, in which case they "reappear" in the surface form – when the words in question are phonetically rendered.

As suggested by one reviewer of this paper, one could alternatively treat the VV sequence that results from assimilation as a sequence of two identical vowels rather than a single long vowel, with the "two phonetic targets" referring to perhaps intensity or amplitude, not necessarily tongue position. In my own view, Orie and Pulleyblank's use of the phrase "two phonetic targets" in the given context refers to tongue position, more so if one pays a careful attention to the expression "...sequences of identical vowels appear to be produced with a slight rearticulation", with emphasis on the word "rearticulation". If the basic term "articulation" is a function of the activities of the speech organs (the tongue in this case), then "rearticulation" would necessarily imply repeated (or double) tongue

positioning in the vocal tract, and no two vowels can reflect a hundred-percent identical tongue positioning (articulation). Even if we take the “two phonetic targets” to mean intensity or amplitude, the assimilation account is still less convincing given the fact that two vowels produced at a different intensity, for example, cannot be said to be absolutely identical; for if they were truly identical, they would be produced exactly with the same amplitude, intensity, or anything in-between. Well, a further investigation of vowel assimilation using acoustic tools, which is beyond the scope of this paper, may help to lay this argument to rest – that is, whether or not the VV sequence that derives from assimilation is a concatenation of two vowels that are absolutely identical. Nevertheless, the point being made in this paper is that the two output vowels arising from assimilation do not indicate loss of hiatus because hiatus is conceptually a sequence of two vowels, regardless of whether or not they are identical, and since they are two vowels, they can only be heterosyllabified.

Finally, in a pilot phonetic study on vowel deletion in Yorùbá conducted by Danis (2020), it is argued that the vowel that survives after its contiguous neighbouring vowel has been deleted is slightly but significantly longer than a ‘normal’ short vowel which does not participate in a deletion process. On this premise, the author tentatively concludes that vowel deletion in Yorùbá provokes compensatory lengthening (CL) of the surviving vowel. Subscribing to the traditional account of CL within the confines of the moraic theory, Danis posits that the deleted vowel leaves behind its mora which is then re-affiliated with the remnant vowel in the form of lengthening. Put differently, the remnant vowel becomes phonetically lengthened with the help of the stranded mora that was originally associated with the deleted vowel. Consequently, the surviving vowel is said to bear two moras (not one!), at least by virtue of being lengthened. If this novel proposal is valid, it then calls into doubt the validity of the existing assumption that vowel deletion, in addition to vowel assimilation, is an authentic hiatus-repair tool in Yorùbá.

In my own thinking, Danis’s proposal, albeit somewhat speculative in nature, opens up a possibility of re-analysing the lengthened remnant vowel as a sequence of two identical vowels which is perfectly analogous to the usual case in Yorùbá. Because the language does not make vowel length distinctions in its entire phonological system, it treats all purported cases of long vowels as sequences of two (or, sometimes, though very rare, three) identical vowels. Interestingly, this analytical possibility further entrenches the present study’s preceding argument that sequences of identical vowels in Yorùbá, whether derived by assimilation or ‘naturally’ present in a particular lexical or post-lexical domain, do not convincingly depict the absence of hiatus. If the authenticity of vowel deletion as a

hiatus-repair process in Yorùbá is also disputable, then, one may tentatively, or speculatively at best, argue that the only genuine process used in Yorùbá to undo hiatus is coalescence. I leave this hypothesis open for future research.

Given the strands of evidence presented in the foregoing analysis, one could easily infer that the popular OT's markedness constraint *NO-HIATUS*, which previous studies have treated as highly ranked in Yorùbá, is actually violable in the language's grammar. To my knowledge, the only OT-based analysis of Yorùbá in which *NO-HIATUS* is dominated is Oyinloye (2020a); all others that I have seen, e.g., Orie and Pulleyblank (2002), Pulleyblank (2009), Orie (2012), Ehineni (2017), and Oyinloye (2020b, 2021a, 2021b, 2023), rank it so highly that it is not dominated by any other constraints deployed in their analysis. Considering the fact that *NO-HIATUS* would necessarily be violated by all the forms exhibiting sequences of heterosyllabic vowels in Yorùbá, coupled with the observation that the frequency of occurrence of such forms is very high in the language, it therefore implies that the constraint occupies a low-ranking status in the phonology of the language.

6 Conclusion

The data presented in this study suggest that hiatus is widely attested in standard Yorùbá and that the language tolerates it in many phonological environments. Furthermore, the analysis indicates that vowel assimilation does not consistently eliminate vowel adjacency in all contexts. Most strikingly, rather than subjecting the hiatal configuration to deletion, coalescence, or assimilation, Yorùbá resorts to heterosyllabification of the vowels. In forms where hiatus is resolved in the language, the motivation for the repair is more of phonetic arbitrariness rather than of phonological significance. For example, claiming that Yorùbá repairs hiatus via vowel elision and coalescence to target the universally unmarked CV syllable structure would make a wrong generalisation because onsets are not obligatory in the language. Based on the empirical evidence presented in this paper, Yorùbá typologically belongs to the class of languages that both permit and disallow hiatus on the one hand, and those which tolerate it more than they resolve it on the other hand. On the whole, the evidence supports the view that Yorùbá exhibits a strong tendency toward heterosyllabification in hiatal contexts.

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