

IGBO VOWEL HARMONY: SEGMENTAL AND AUTO-SEGMENTAL APPROACHES

By

Joshua Azubuike Nweke

*Department of Linguistics and African Languages,
University of Benin,
Benin City.*

Abstract

The aim of carrying out investigation into this phonological feature in generative phonology is to find out how Igbo vowel segments co-occur among themselves based on their two symmetrical divisions eiou and aiou which bear the distinctive feature +ATR and -ATR respectively. Secondly to find out how successful the proposal of auto-segmental account of Igbo vowel harmony could be established. Based on these two mentioned objectives, the model of this phonological framework is based on purely segmental and auto-segmental approaches. The paper is divided into five sections: (1). Introduction, (2). Segmental approach to Igbo vowel harmony, (3). Exceptions of vowel harmony rule in Igbo language, (4). Proposal of auto-segmental account of Igbo vowel harmony, (5). Conclusion and references.

There are three major types of vowel harmony in the universe. They are horizontal, labial and palatal vowel harmonies. These three harmonies have general characteristics. It is noted that almost all the major Nigerian languages belong to the horizontal vowel harmony system. There are certain factors that ensure the development of vowel harmony. Among these factors is vocalicity which established the fact that the less sonorous vowels assimilate easily than the more sonorous ones, while the more sonorous vowels give more resistance to assimilation of vowels. It is clear that the study of vowel harmony cannot be divorced from the study of vowel assimilation. Contiguity is another factor which characterizes language which helps to develop vowel harmony. The more contiguous vowel is, the more likely assimilation will occur. Contiguity is one of the general harmonizing properties of the vowel harmony which tends to establish correlation between dimensions of vowel harmony. The more correlation established among the dimensional vowels, the faster the harmony. Phonetic distance tends to play an important imprint towards vowel harmonic development. The lesser the phonetic distance between two opposing members of potential vowels, the more prone they will be to harmonize while the further the phonetic distance, the less prone they will be harmonized. Dimensional hierarchy is not common on the Nigerian languages. This could only be found in Igbo language where bi-dimensional vowels harmony, neutral vowels are observed especially in vowel Harmony with asymmetrical dimension. In such vowel harmonies, the unrounded low central vowel “a” serves as neutral vowel, but in Nigerian languages, neutral vowels “ɪ” and “u” are observed in Yoruba language which was obtained by merging the close and open vowel i and I into a high level “ɪ” and “u” and “u” into another high vowel “u” thereby eliminating the differences between open and close vowels. It is also observed that out of the Nigerian languages, Igbo language in addition undergoes oral nasal harmony.

Segmental Approach to Igbo Vowel Harmony

Vowel harmony is the process in which all the vowels that belong to the same group in Igbo language co-occur among themselves. Igbo belongs to horizontal vowel harmonic language. It comprises of eight distinctive vowels eiou, aiou which are divided into two exclusive classes which harmonize among themselves. According to Williamson (1966:67):

In these dialects, there is a vowel harmony system where eight vowels fall into two sets of four, the set being mutually exclusive within the word except in the case of compound verbs or of verbs with certain suffixes or borrowed words. They are commonly represented in the following arrangement, where the odd number vowels form one set (here referred as the odd) and the even numbered vowels form another set (here referred to as even).

Front	Back
1 I	5 u
2 i	6 ɯ
3 e	7 o
4 a	8 ɔ

Thus with odd vowels occur íkpé (case), ígbò (Igbo), ílú (proverb), úcè (thought), Ófé (soup), Òkpú (hat) with even vowels àsí (bead), Ójí (colanut), Útà (bow), Ómà (good), Ùdò (rope).

Williamson made a mistake when she referred the vowel group “aiou” as even vowels and group “eiou” as odd vowels. Reverse is the case, Igbo vowels are divided into two major mutual exclusive groups. Group “aiou” are odd vowels. They are also referred to as light vowels, and group “a” while group eiou are known as even vowels, heavy vowels and “e” group. The heavy and even vowels “eiou” occur with advanced tongue root (+ATR) while the light and odd vowels “aiou” occur with retracted tongue root (-ATR). The vowel segments in +ATR group /eiou/ harmonize among themselves while those in the -ATR class /aiou/ harmonize among themselves also during simple word formation especially in the formation of simple nouns.

Syllabic Structure and Vowel Harmony in Igbo

Igbo has an open syllabic structure because every Igbo word ends in vowels. It has no consonant cluster. ~~Igbo Vowel Harmony: Segmental And~~ ~~It is arranged according to the following syllabic structure VCV, CV, CVCV, CVCVCV, CVCVCVCV, VCVCV, VCVCVCV etc.~~ One important thing to note in all these formations is that there is harmony among vowels in the same class. Let us examine the following words based on the word formations below where “V” stands for vowel and “C” stands for consonants and see the harmonizing aspect of each class.

ODD VOWEL (-ATR) GROUP “A” “AIOU”	EVEN VOWEL (+ATR) GROUP “E” “EIOU”
Ónwú (death)	ókwú (speech/talk)
àsí (lies)	élū (top, up)
Úlò (house)	éwú (goat)
àkpà (bag)	Ósísí (tree/stick)
Òkúkò (fowl)	Ógólógó (long, tall)
átúrú (sheep)	éríméí (food)
ábúzù (cricket)	Órírí (feast)
Ọkpụkpụ (bone)	Ókpórókò (stock fish)
Ókpùrùkpù (lump)	égò (money)
àbàdà (abada cloth)	ézè (king)
Ózúzú (training)	ézē (teeth)
áhíhíá (grasses)	ègwúsí (melon)
Ákpúkpá (scabies)	Ólùlù (pit)
bjá(come)	Gòtè (buy)

Gaa (go)	Gbùté (cut out)
Sàcháá (wash)	Bèté (cut off)
Bùtá (uproot)	Ríé (eat)
Zùtá (buy)	Rìwé (eat on)
Gbàwá (runaway)	kpòtéwé (collect)
Bàtáwá (come in)	Gbúpù (cut out)
Àzúzú (catarrh)	
Ánú (meat)	Mèé (do)
Àzù (fish)	Sìé (cook)
Ákwà (egg)	Fèé (fly)
Ákwúkwó (book)	Gbúbìté (cut out)
Nyùá (excrete)	Jèé (go)
Tútúà (pick up)	Nyèwé (give)

From the words listed above, all words harmonize according to their vowel classes. It is also observed that both prefix and suffix simple words must harmonize with vowels in the verb root.

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Harmonizing of Vowels Pronouns of Igbo

It is interesting to state here that six Igbo vowels are pronouns. E and A are impersonal pronouns, while i, ì, o, ọ are personal pronouns. i/ì belong to third person singular. These vowel pronouns must harmonize with verbs whose vowels belong to their class in the formation of sentences. For example, the following simple Igbo sentences show that each vowel pronoun harmonizes with the verb it takes according to the rule of vowel harmony e.g.

Ó	rìrì	(he ate)
Ó	jèrè	(he went)
Ò	chùrù	(he/she fetches)
À	gbàrà	(something was kicked)
É	chùrù	(one fetched)
Ó	gbútùrù	(he cut down)
Ó	nyùrú	(he excreted)
Í	tàrà	(you chewed)
Í	jòrò	(you are ugly)
Í	tòrò	(you are tall)

Supporting the pronominal harmonization above, Kay Williamson (1966:67) stated as follows; “the inseparable pronoun conventionally written as separate words harmonize with the verb root that follows e.g. Ó mere (he did) and Ọ maara (he knows)”.

Igbo language undergoes vowel reduplication which harmonizes according to its classes of vowel e.g. bùé (carry), sìé (cook), zùá (train), miá (germinate), mèé (do), sèé (draw), gbàá (run), bàá (enter), fèé (fly), zàá (sweep). In Igbo language also, the prefix i/ì which is attached to the verb root to form infinitive must harmonize according to their classes. e.g.

Prefix	Verb root	Infinitive	
Í	tí	ítí	(to beat)
Í	mé	Ímē	(to do)
Í	zè	Ízè	(to fear)
Í	dé	ídē	(to write)
Í	rópù	írōpù	(to uproot)

Í	gbá	Ígbā	(to kick)
Í	nyụ	Ínyū	(to excrete)
Í	zùtá	ízūtā	(to buy)
Í	má	Ímā	(to know)

Even in the formation of Igbo gerund, harmonization takes place e.g. Òbúbé (crying), Òrírí (eating), Òrírí (climbing), Òzùzù (training), Òzìzà (sweeping), Òdídé (writing), Òkìkè (creating), Òkpúkpó (calling). From the examples enumerated above so far, one can understand at a glance that Igbo is a language strictly observing vowel harmony rule.

Igbo Vowel Harmony: Segmental And...

Exception of Vowel Harmony Rules in Igbo Language

There are areas where vowel harmony rules are violated in Igbo language. These areas are:

a. Loan or Borrowed Words:

Sometimes Igbo language does not adhere to vowel harmony rule in loan or borrowed words from another language. Let us examine the following borrowed words from different languages and see whether they adhere to vowel harmony condition in Igbo language syllable structure.

Akpati	box	(Yoruba)
Agidi	corn food	(Yoruba)
Àsháwó	prostitute	(Yoruba)
Sájìn	sergeant	(English)
Sójà	soldier	(English)
ìchàfú	chiffon	(French)
osikápá	(chinkafa rice)	(Hausa)
Òbàsì	(abasi God)	(Efik)

The above words either borrowed or coined from words obtained in different languages and introduced into Igbo language vocabularies violate vowel harmony condition. Language universal (1973:53) explained the reason for the vowel harmony violation in the following language;

In most cases, loan words constitute exception to the rule of vowel harmony, stretching the point perhaps this could be construed as a sociolinguistic manifestation of the principle of interference with vowel harmony due to relative non-contiguity between the two different speech communities.

b. Compound Words or Compounding:

Compound words or compounding are words which are formed by combining two simple words to form one word in Igbo languages. These are words formed through morphological indigenous resources. Words from different vowel classes can combine to form compound words and such words can never harmonize. Let us examine the formation of the following proper nouns in Igbo language and with their violation of vowel harmony rules.

a.	Àdá (First daughter)	+	Òbí Compound	→	Àdáóbí First daughter of a family or compound.
b.	Àdá (1 st Daughter)	+	Ézè (King)	→	Àdáèzè First Daughter of a King

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c.	Ífé	+	Ómá	→	Íféómá
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	Things		good		good things
d.	ÍsÍ Head	+	àkú wealth	→	Ísìàkú head of wealth
e.	Èké Market day	+	ńmā good	→	Èkéńmā good market day

These proper names of people in Igbo language never harmonize due to vowel class differences of the two simple words combined.

Other areas of vowel harmony violation in Igbo language are proper names formed by the process of desentencionalization to form word in Igbo. Desentencionalization is the process of transforming a sentence into a word to form sentential word. Most of Igbo proper names are formed through this process. It is one of the words obtained through indigenous morphological resources. The reason for the vowel harmony violation is clear. This is because the simple words that make up the sentence may come from different class of vowels e.g.

f.	Ázú bú íké God is power	→	Ázúbúíké those backing one makes him powerful
g.	Nkè m dírí m Own my be for me	→	Nkèmdírím let my own be for me
h.	Chí dì èbéré God is merciful	→	Chídìèbéré God is merciful

Another area where vowel harmony violation takes place is in the formation of compound verbs. Igbo verbs undergo a lot of inflection and as such undergo a lot of suffixation also. Such suffixes may prevent vowel harmony from taking place e.g.

Rìwé + suffix	nú	→	rìwénú
Eat	on		eat on
Mé + suffix	rírí	→	mérírí
Do	must		must do
Sí + suffix	rírí	→	sírírí
Cook	must		must cook
Gbú + suffix	rírí	→	Gbúrírí
Kill	must		must kill
Sìé + suffix	lá	→	sìélá
Cook	has		has cooked
Mèé + suffix	lári	→	mèélári
Do	had		had done

Here all the verbs above came from open class +ATR “eiou” while all their suffixes came from -ATR class “aiou” which makes vowel harmonization impossible.

The use of negative suffix “ghị” in Igbo when combined with verbs in the +ATR class of “eiou” violate or impinge vowel harmonization. This is because the vowel ‘i’ in the negative suffix “ghị” meaning “did not” belongs to the -ATR class “aiou” for example:

Affirmative

Negative

Rìé (eat)	éríghí (did not eat)
Mèé (do)	Éméghí (did not eat)
Sìé (cook)	ésíghí (did not cook)
Gbùé (kill)	égbúlá (don't kill)

Likewise negative suffix lá/là meaning (don't) will not harmonize with the verbs containing +ATR class vowel “eiou” e.g.

Rìé	érílá
Eat	don't eat
Gbùé	égbúlá
Kill	don't kill
Bèé	ébélá
Cry	don't cry
Sìé	ésílá
Cook	don't cook

They will only harmonize with the verbs whose vowels are from –ATR classes as in “aiou” e.g

rjá	árìghì
Climb	do not climb
mìá	ámìlà
Germinate	don't germinate

From the above examples given, one can see that Igbo language has a lot of exception in the observation of vowel harmony rules in her morphological arrangements.

Proposal of Auto-Segmental Account of Igbo Vowel Harmony

In auto-segmental account of Igbo vowel harmony, the eight Igbo vowels can undergo two major types of distinctive feature properties. The first is the unrounded front tier I, i, e, a and rounded back tier o, ɔ, u, ɔ̄.

In Igbo language, the front vowels are unrounded while the back vowels are rounded. In Igbo vowel harmony, other marked properties such as high and low are visible e.g. [+ high] = i e o u and [- high] or [+ low] = “a, i, ɔ, ɔ̄”

So Igbo vowels can exhibit the following marked properties;

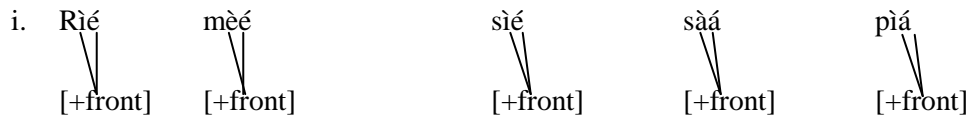
[+ Front]	=	i i e a
[+ Back]	=	o ɔ u ɔ̄
[+ High]	=	i e o u
[+ Low]	=	a i ɔ ɔ̄

These properties of Igbo vowel segments are independent tiers which can spread auto-segmentally. The auto-segmental account according to Goldsmith (1976), deals with how any of these tiers spread to influence Igbo language vowels morphologically or syntactically.

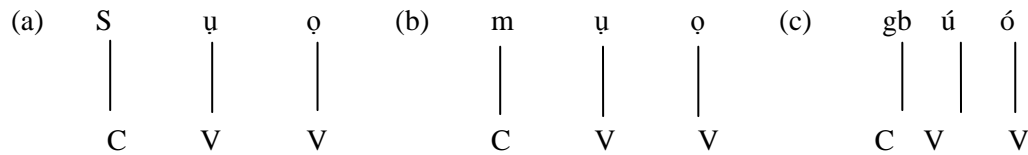
In the morphological aspect, Igbo vowels can be accounted for auto-segmentally. Any of these vowels tier can spread across the vowel segments in some words. For example, let us examine the following words;

Rìé	eat
Sìé	cook
Mèé	do
Gbùó	kill

Sàá wash
 Sùó pound
 Pìá flog

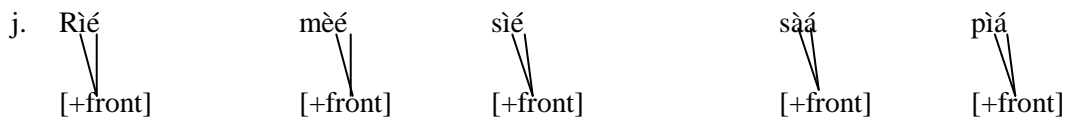
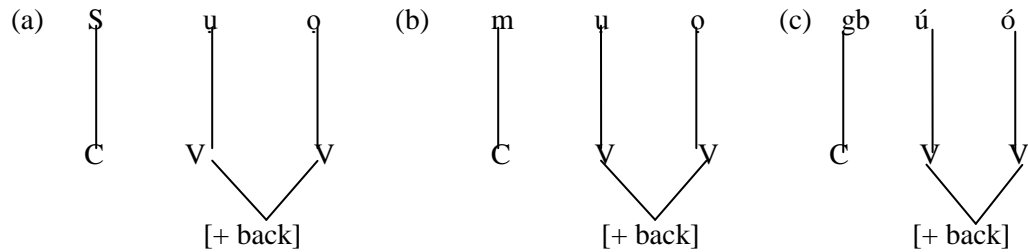


Likewise in the following words like sọ, mọ, gbúó, they can be accounted for auto-segmentally.

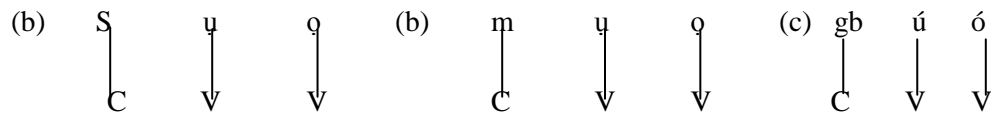


In the auto-segmental account spreading of the segments in the words (abc) started with the vowel segment [+ back] which affected other segments e.g.

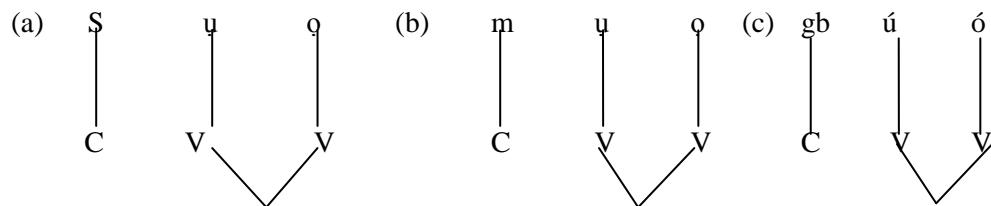
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[+ back]

[+ back]

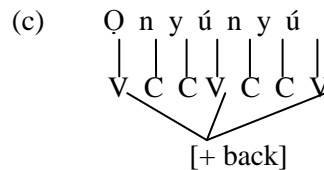
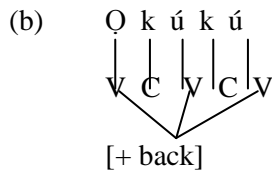
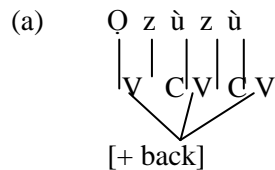
[+ back]

Secondly, in thorough examination of the following gerundive words,

- Ògbúbú (killing)
- Òzùzù (training)
- Òkúkú (planting)
- Ònyúnú (excreting)
- Ògbúgbó (vomiting)
- Ogúgo (buying)

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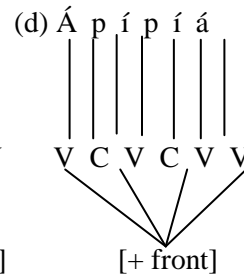
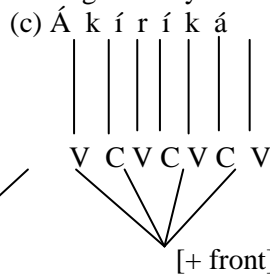
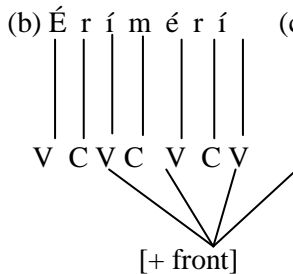
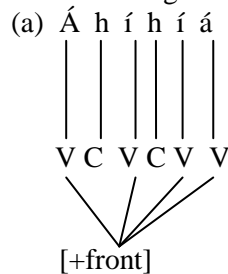
an auto-segmental account can be given since the first segment of each of the words is [+ back] tier, there is a tendency for this tier to make an automatic spreading across all the vowel segments of each word and affect all segments generally e.g.



Likewise, in the following words such as:

- Áhíhíá grass
- Érímérí food
- Ákíríká thatch
- Ápípíá whip
- Árúrú ant

The following words can be accounted for auto-segmentally.



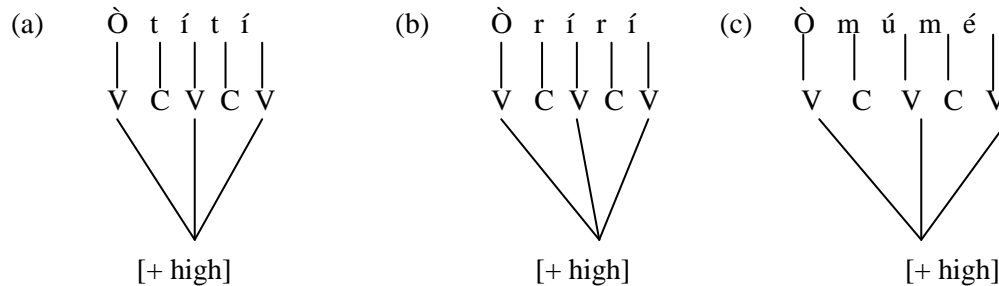
According to Goldsmith (1996), those [+ front] segmental tier vowels that each word has carried out automatic spreading to other segments with every word and therefore influenced the word with [+ front] tier.

From the data above, the rounded equipollent vowel segment can exhibit [+ front] property. Some Igbo vowel segments can spread left to right direction to influence other segments as shown above. Let us still look into some of these words:

- Òtítí (beating)
- Ònyúpà (cranky)
- Òkpótíkītīkī (sickler)
- Òrírí (feast)

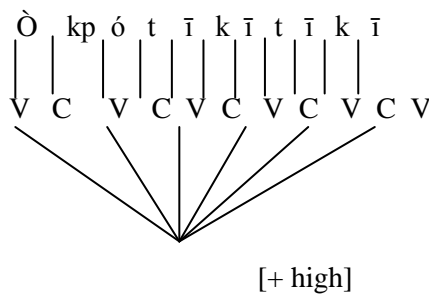
Òmúmé (doing)
 Áchámákwú (influential)
 Let us account for these words auto-segmental.

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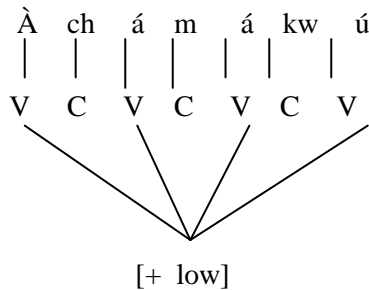


Here, there is automatic spreading of the first segment “O” which is [+ high] to other vowel segments in each word thereby making other vowel segments in each word to have [+ high] segment.

In other words, such as Òkpótíkīkī, it also exhibit [+ high] tier vowel property after spreading.



In àchámákwú, an auto-segmental account can make the first low vowel segment to spread automatically across other vowel segments e.g.



Here every segment within the word has assumed [+ low] tier properties.

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Combination of +ATR (EIOU) and –ATR (AỊQỤ) Groups in Vowel Harmony Process

Let us examine the following words;

- (a) Mètú Touch
- (b) Chábìté Cutout

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