

# NASAL VOWELS IN IKA IGBO

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Nasality distinguishes the Ika dialect from other Igbo dialects. This dialect has a high degree of nasality. This paper shows that, in addition to nasal consonants and nasalized consonants, Ika has eight nasal vowels. The existence of nasal vowels (established from the existence of minimal pairs constituted by these sounds) in this dialect makes it stand out among other Igbo dialects which only have nasal consonants and nasalized consonants. Furthermore, this study reveals that nasalization is systemic in Ika and is highly unpredictable. Therefore, these nasal vowels are not allophones of their oral counterparts but rather have phonemic status.

La nasalité distingue le dialecte Ika des autres dialectes Igbo en ce sens que ce dialecte a un haut degré de nasalité. Cet article montre qu'en plus des consonnes nasales et des consonnes nasalisées, le dialecte Ika a huit voyelles nasales. L'existence des voyelles nasales (établies sur la base des paires minimales) dans ce dialecte aide à le traiter différemment des autres dialectes Igbo qui n'ont que des consonnes nasales et des consonnes nasalisées. En outre, cet article démontre que la nasalisation fait partie du système de cette langue et est imprévisible. C'est pourquoi les voyelles nasales ne sont pas traitées comme des allophones des voyelles orales; elles jouissent bel et bien d'un statut phonologique.

## 0. INTRODUCTION

Nasalization features largely in some Igbo dialects like Umuahia, Owerri, Ngwa and most other Eastern Igbo dialects. The extent and manner of manifestation of this feature in the Ika dialect, however, clearly distinguish Ika from most other Igbo dialects. Whereas one may only find nasal consonants and nasalized consonants in these other dialects, the Ika dialect has nasal vowels in addition to these. Their presence or absence brings about meaning distinctions as is also seen in Yoruba, a Western Nigerian language. There is therefore a need to study the feature of nasalization in this dialect and establish if there are any allophonic reasons for their occurrence in Ika. This study sets out to achieve this goal.

Ika is a dialect of the Igbo language, which is of the (New) Benue - Congo subgroup of the Niger - Congo language family. Ika is mainly spoken in some of the Igbo-speaking parts of Delta State in Nigeria. In addition, it is spoken in Igbanke in Edo State. Ika-speaking towns of Delta State include Umunede, Agbor, Owere-Olubo, Akumazi, Igbodo, Otolokpo, Emuhu, Mbiri, and so on. This work is mainly based on the Umunede variety of Ika. However, there does not seem to be much variation in the nasal vowels existent in various Ika varieties. Williamson (1968:84), in her comparative word lists on Ika and Ukwuani, points out that both dialects, though regarded as dialects of Igbo, are different from other Igbo dialects on 'purely linguistic grounds'. The present work, confirms Williamson's assertion that Ika is linguistically different from other Igbo dialects. Ika has a large number of nasal vowels while most Igbo dialects do not have any at all. It has five basic nasal consonants just like most Igbo dialects but in addition, manifests nasalization to a degree much higher than other dialects of Igbo. Below is a chart of Igbo dialects drawn according to the grouping of Nwaozuzu (2008).

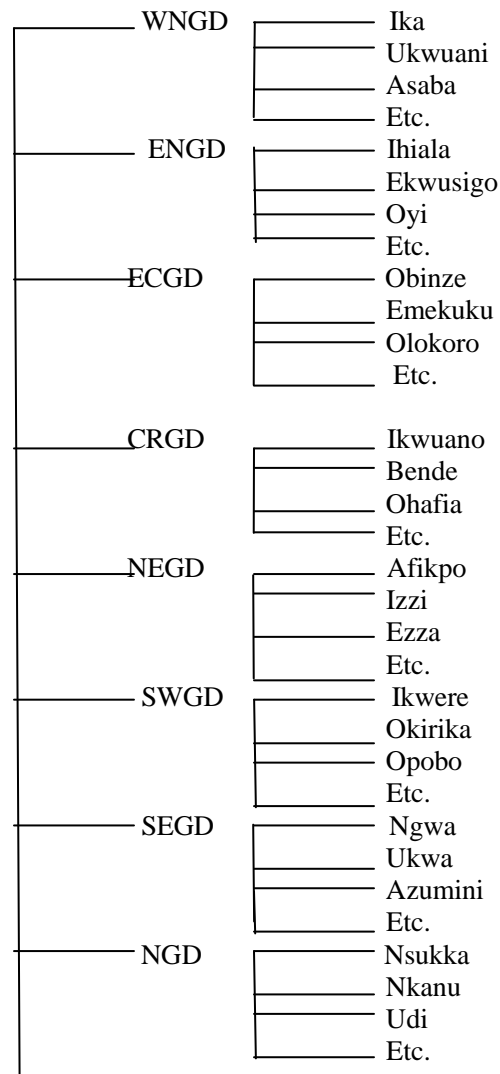


Fig. 1. The dialects of Igbo

The acronyms are interpreted as follows:

- WNGD - West Niger Group of Dialects
- ENGD - East Niger Group of Dialects
- ECGD - East Central Group of Dialects
- CRGD - Cross River Group of Dialects
- NEGD - North Eastern Group of Dialects
- SEGD - South Eastern Group of Dialects
- SWGD - South Western Group of Dialects
- NGD - Northern Group of Dialects

Of all the dialects of Igbo, Ika is the one spoken in areas bordering Edoid language areas. Ika seems to have vocalic characteristics similar to those of the Edoid languages. These languages make up a sub - branch of the (New) Benue Congo branch of the Niger Congo family of languages. Aziza (2005:1) mentioning Isoko and Degema as examples of Edoid languages, shows that the typical Edoid vowels are /a, i, e, ε, o, ɔ, u, ʊ, ə/. However, not all of these vowels exist in all the languages in question. Incidentally, Ika, though not an Edoid language, has all these vowels. It could be argued that this similarity results from language contact with the Edoid languages. This assertion may be established judging from the fact that Ika – speaking areas are bounded by areas where Edoid languages like Isoko and Urhobo are spoken.

The Ika vowels that, based on our knowledge of other Igbo dialects, should be oral but are pronounced with some degree of nasality in environments devoid of any nasal consonant we have classified as nasal vowels. On the other hand, oral sounds (including vowels), which gain nasality from adjacent nasal sounds in given words, are termed nasalized sounds.

## 1. STANDARD IGBO AND IKA VOCALIC SYSTEMS

In this section, we observe the vocalic systems of Standard Igbo and Ika.

### 1.1 STANDARD IGBO VOCALIC SYSTEM

The Standard Igbo vowels are as follows: /a, i, e, o, u, ɪ, ɔ and ʊ/. Similarly, as will be shown later, Ika has all these vowels except that in addition to these, it has /ɛ/ and /ə/. The Standard Igbo vowel chart appears below.

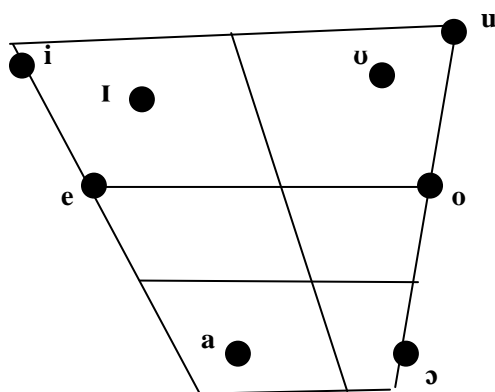


Fig. 2: Standard Igbo Vowel Chart

Most Igbo dialects have the same number of vowels as Standard Igbo. These can be found in such Igbo words as shown below.

- |       |       |      |        |          |
|-------|-------|------|--------|----------|
| (1) a | as in | áká  | /aka/  | hand     |
| (2) i | as in | ísí  | /isi/  | head     |
| (3) e | as in | élé  | /ele/  | antelope |
| (4) o | as in | ótù  | /otu/  | one      |
| (5) u | as in | úkwù | /ukwu/ | waist    |

- (6) **î** as in **ákpî** /akpî/ scorpion  
 (7) **ɔ** as in **ókà** /ɔka/ corn  
 (8) **ɹ** as in **úlò** /ulò/ - house

### 1.2 IKA VOCALIC SYSTEM

Apart from the issue of nasality, Ika and Standard Igbo vocalic systems share many similarities, differing more in the number of vowels than their qualities.

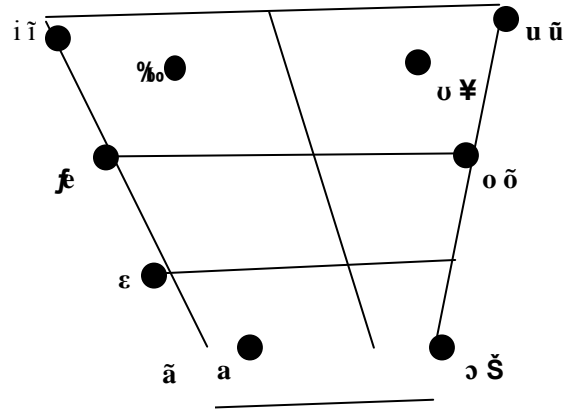


Fig.3: Ika Vowel Chart showing the oral and nasal vowels

In the chart above, the nasal counterpart of /a/ is realised at the same point as the oral one. The gap between them is only due to inadequate space to place them together.

Ika oral vowels are shown below in some words. Notice that some of the Ika vocabulary differs to a large degree from that of Standard Igbo. The Standard Igbo words for the Ika words below, outlined consecutively, are: **ala**, **elu**, **ite**, **olu**, **ute**, **akukò**, **onyà**, **apata** and **ukwu**.

- (9) **a** as in **àh** /ah/ ground  
 (10) **e** as in **élú** /elu/ up  
 (11) **i** as in **ìtè** /ite/ pot  
 (12) **o** as in **ólú** /olu/ neck  
 (13) **u** as in **úté** /ute/ mat  
 (14) **i** as in **ìà** /ita/ story  
 (15) **ɛ** as in **e te** /ɛtɛ/ sore  
 (16) **ɔ** as in **óru** /ɔru/ laps  
 (17) **ɹ** as in **u kwu** /okwu/ feet

In addition to these oral vowels, Ika also has schwa /ə/ which is an allophone used for shortening such vowels as /u, e, a/ and others. The nasal vowels will be discussed in the section below.

## 2. NASALIZATION

According to Katamba (1989:93) the perfect synchronisation of velic closure along with other articulatory parameters like phonation, place and manner of articulation results in the distinction between oral and nasal sounds. He gives a vivid description of the production of oral sounds - the velum is raised right up against the back of the wall of the nasal cavity such that air does not have access into the nasal cavity thus the air stream escapes only through the oral cavity. He therefore stresses that any leakage of air through the velum will cause some nasalization. Consequently, vocalic nasalization takes place when a vowel sound is pronounced with some degree of nasality. A nasalized vowel occurs adjacent to a nasal consonant while a nasal vowel occurs in an environment devoid of a nasal consonant.

Vowel nasalization may or may not feature in a language. However, it does feature in a good number of languages. Vowels that can be nasalized vary from one language to the other. Nasalization can be either phonemic (inherent) or phonetic. In other words, it can occur in languages as an individual characteristic of vowels or as a form of assimilation in the environment of nasals.

Also, Yoruba, a Western Nigerian language, has seven vowels - /i u e o ε ɔ a/. It has the following nasal vowels - / **f** **ĩ**, **Ń** and **ũ** / Bamgboshe (1966:7). The existence of /**ã**/ is said to be controversial as it has been shown that it is not phonemically contrastive but rather is in free variation with / **Ń** . A set of minimal pairs involving one of these vowels can be seen below.

- (18) **rú**            /ru/            to carry  
 (19) **rún**           /rũ/            to smell

In Yoruba, nasality is shown orthographically by the use of **n** (put adjacent to the nasal vowel).

Most, if not all Edoid languages like Bini, Urhobo, Degema, Isoko have nasal vowels. These will be discussed in subsequent sections.

### 2.1 NASAL AND NASALIZED SOUNDS IN IGBO: PREVIOUS ACCOUNTS

Ika has the same number of nasal consonants as exists in other Igbo dialects. These are /**m, n, ŋ, ɲw, ɲ**/. In addition to these nasal consonants, Ika has nasal vowels. In comparing five Igbo dialects – Orlu, Owerri, Ohuhu, Onitsha and Ukwuali – Armstrong (1967:11) reveals that only Ukwuali has the nasalized vowel /**ã**/, which is only seen in the word, **ka**□**kaĩ**- /**ka**□**ika**□**ɪ**/ ‘gin’. While this confirms Williamson’s assertion that Ika and Ukwuali are linguistically different from other Igbo dialects, the fact that the nasalized vowel is not contrastive in Ukwuali means that it is not a phoneme. This therefore appears to single Ika out as the only Igbo dialect, so far, which manifests vowel nasalization. The spelling used by Manfredi (1982) in the presentation of the data used in his work on the Ika dialect, portrays his acknowledgement that Ika manifests nasal vowels. The sentence below is drawn from his data.

- (20) **gi emiken ugbo**. – Yam is fat on the farm.

The above data is in the Agbor variety of Ika.

Though Manfredi’s work does not centre on nasality, it can be observed that he uses the letter **n** in the second word to indicate that the last vowel of that word is

nasalized. This is also the orthographic way of showing nasality in Yoruba as we have already pointed out.

### 2.1.1 Nasal Consonants and nasalized fricatives

Most Igbo dialects have five nasal consonants *-m, n, ŋ, ŋw, ɲ*/ as already outlined above. However, many inland East dialects have inherently nasalized fricatives. Oluikpe (1979) shows that Ngwa dialect is highly nasalized and that this feature is more distinctive than aspiration. He points out that the following nasalized fricatives feature in the dialect - /*f̃* /*ʃ̃* /*z̃* /*ṽ* /*h̃*/. In addition, the dialect has an inherently nasalized post- alveolar approximant, /*ɹ̃*/. These nasalized sounds, in addition to the nasalized fricative, /*ʒ̃*/ exist in many Igbo dialects spoken in areas bordering the inland east – Owerri, Umuahia, Mbaitoli, Mbaise and so on. However, Agu (2001) suggests that degrees of nasalization could vary across dialects. In his comparative study of Owerri, Arochukwu and Ndizuogu dialects, he discovered that nasalization is more distinctive in Owerri dialect than in the other two.

### 2.1.2 Nasalized vowels

Anyanwu (1998) shows that the only environment where there can be nasalization of vowels in Igbo is in the production of ‘fortis’ plosives which are produced with a relatively strong amount of muscular energy and breath force. This results in the following vowel being simultaneously aspirated and nasalized. She goes on to show that by contrast, lenis plosives are produced with a lesser degree of muscular effort and breath force. Consequently, there is neither aspiration nor nasalization on the following vowel. She spells out the fact that apart from this instance the Igbo language has no nasalized vowels in isolation. Although her assertion that the Igbo language does not manifest vowel nasalization in isolation (she probably means without the influence of a nasal or nasalized sound) is correct, it is not only in the production of fortis plosives that vowel nasalization takes place. Nasalized fricatives and the post alveolar fricatives also trigger nasality in contiguous vowels. Ikekeonwu (1986:296) cites Hyman (1972) to have proposed that there could have been nasal vowels in some Igbo dialects like Owerri. He used this argument to explain the origin of nasalized continuants and aspirated stops in Igbo. One may infer that Ika could be one of those Igbo dialects which had proto vocalic nasal quality and probably retained it.

### 2.1.3 Nasal vowels in neighbouring Edoid

Edoid languages like Bini and Urhobo have nasal vowels. Aziza (2005:1) points out that Urhobo, a language spoken in the Delta area of Nigeria, has the following vowels:

/i, e, ɛ, a, o, ɔ, and u/.

All the seven vowels, as shown by Aziza, can be nasalized both inherently and phonetically. Urhobo is an Edoid language. Similarly, Isoko, another Edoid language, has nine vowels:

/i u e o ɛ ɔ a ɛ u/

All nine vowels can be nasalized. Ladefoged (1968:33) establishes that Bini language, spoken in Nigeria, has nasal vowels. It has the following vowels which can all be nasalized:

/i u e o ɔ a ɛ/

Degema, an Edoid language, has ten vowels and all can be nasalized. It therefore appears that most Edoid languages have all their vowels nasalized. Consequently, we can form two hypotheses about Ika – firstly, the nasal vowels in Ika may have resulted from language contact with Edoid. The second hypothesis is that, as in Edoid, it is possible that all Ika vowels can be nasalized. Further research is needed to establish that.

It is worthwhile to look at the phonological rule for vocalic nasality as specified in Edoid languages by Elugbe (1982:110). This is necessary because of our earlier suggestion that Ika vowel nasality may be a manifestation of the influence of Edoid languages, some of which are spoken in areas bordering Ika – speaking towns. He posits that of all the proto – vowels in Proto Edoid (PE), only /e/ and /o/ have no counterparts that could be classified as nasalized. This could explain why there are few examples of minimal pairs involving /o□/ in Ika. Tracing the origin of nasal vowels in PE languages, Elugbe and Williamson (1977) show that it may have resulted from an early proto – Edoid structure in which the “C<sup>2</sup>” was a velar nasal. However, Elugbe (1980) suggests that this second consonant could have been an alveolar nasal – N – that was never realised as a segment but as a feature of nasalization on vowels. He gives the following derivational process:

[ CVNV] derived from / CVCV/

The second C is a nasal though it is not realised as a segment.

While we may not claim that Ika can conveniently fit into this structure, the likelihood that Ika vowel nasality is in the form of an unrealised nasal segment is very high.

We would therefore prefer to trace Ika vowel nasality to Edoid influence rather than infer that it is an Igbo dialect retaining proto – vowel nasality. The former is more plausible since no Igbo dialect has retained vowel nasality while the Edoid languages still exhibit it.

### 3. NASAL AND NASALIZED SOUNDS IN IKA

Here, we discuss the nasal and nasalized sounds existent in Ika. These include consonants and vowels.

#### 3.1 NASAL CONSONANTS

Most Igbo dialects manifest neither vocalic nor consonantal nasalization. Nevertheless, all Igbo dialects, including Standard Igbo, have nasal consonants as can be shown below.

(20)	/m/	voiced	bilabial nasal	as in	<b>mé</b>	/me/	do
(21)	/n/	voiced	alveolar nasal	as in	<b>nŌ</b>	/nu/	hear
(22)	/ɲ/	voiced	palatal nasal	as in	<b>ányŌ</b>	/ɲu/	pumpkin
(23)	/ŋ/	voiced	velar nasal	as in	<b>ñŌ</b>	/ŋu/	drink
(24)	/ŋw/	voiced	labialized velar nasal	as in	<b>ŋwá</b>	/ɔŋwa/	oon/month

In addition, in most Igbo dialects, vowel nasalization can be observed in some vowels that succeed nasal consonants in a word. In Standard Igbo, the extent and effect of nasalization are similar to that found in English where the nasal consonants

usually transfer nasality to surrounding sounds. These few instances involve very low degree of nasality and no change in meaning.

(25) **ǫñu** □ /**ɔŋʒ** joy

In the example above, the velar nasal emits nasality to the following vowel. Although nasalization in most Igbo dialects is from left to right (progressive), in Ika, nasal vowels, (they usually occur word – finally) effect nasalization on preceding consonants. In such cases, nasality spreads from right to left (regressive). Plosives do not allow nasality to spread from a nasal consonant or vowel to an oral vowel. This can be observed from the following Ika examples:

(26) **n** □ **ka** □ /**ŋka**/ old age

(27) **n** □ **du** □ /**ndu**/ life

(28) **n** □ **ta** □ /**nta**/ baby

In the three words above, the plosives block the vowels from receiving any nasality from the nasal consonants.

However, just like in any Igbo dialect, Ika nasal consonants transfer nasality to contiguous vowels in environments where they directly precede the vowels. This is seen below.

(29) **ɛ** □ **ñu** □ /**ɛŋʒ** bee

(30) **ñó** /**ŋõ**/ buy

(31) **ɛ** □ **mõ** /**ɛmʒ** laughter

(32) **ɛ** □ **nwe** □ /**ɛŋwf** monkey

Interestingly, we observe that nasal consonant clusters do not trigger vowel nasalization in Ika. This is shown below.

(33) **n** □ **nú** /**nnu**/ salt

(34) **n** □ **né** /**nne**/ mother

(35) **m** □ **me** □ /**mmɛ**/ me (with emphasis)

It appears that because of the concentration of nasality on the clusters, little or no transfer is made to the oral vowel. The first nasals in the clusters are syllabic and so are pronounced with a lot of energy and this limits the spread of nasality.

### 3.2 NASALIZED CONSONANTS

While Standard Igbo and most other dialects do not manifest consonantal nasalization, this feature exists in some Igbo dialects, particularly in the dialects of the Inland East. Such dialects include Orlu, Owerri, Ngwa, Umuahia et cetera. Ochiuwa (1996:34) reports the existence of nasalized consonants in Oloko dialect spoken in Umuahia area. He shows that the fricatives and the post-alveolar approximant are the sounds most frequently nasalized. In addition, Oluikpe (1979:196) points out that Ngwa is a heavily nasalizing dialect. He reports that 83% of its fricatives are nasalized and that these nasalized consonants are distinctive. The nasality of these consonants



usually spreads to succeeding vowels. Thus the direction of nasal influence in these Igbo dialects is from left to right (progressive assimilation).

#### Examples

- (36) **sa** □                    /**ṣã** /      wash  
 (37) **hõ**                    /**h̃** /      roast  
 (38) **hié**                    /**hĩe** /      sleep  
 (39) **fõ**                    /**f̃** /      see  
 (40) **zõ**                    /**z̃** /      train  
 (41) **rõ**                    /**r̃** /      work (verb)

Ika also manifests consonant nasalization which mainly involves the fricatives and the post – alveolar approximant. Here, the nasalized consonants transfer nasality to the adjoining vowels from left to right. Thus in Ika there are both progressive and regressive assimilation of nasality. The former is triggered by nasal consonants while the latter is triggered by nasal vowels. Regressive assimilation features in Ika because the dialect has nasal vowels.

Examples of Ika consonant nasalization are shown below.

- (42) **fo** □                    /**fõ** /      gossip, stroll  
 (43) **ifo** □ **ro** □                    /**ifõ.ro** /      light  
 (44) **o** □ **fi**                    /**ofĩ** /      fluted pumpkin  
 (45) **f̃h** □                    /**f̃h̃** /      strike  
 (46) **õ** □                    /**õ̃** /      work  
 (47) **a** □ **kwa** □ **ra** □                    /**akwa.rã** / vein; plant root  
 (48) **mí**! **rí**                    /**mĩ.rí** /      water

### 3.3 NASAL VOWELS

In Ika, there exists both inherent and phonetic nasalization of vowels. In this paper, the focus is on inherent vowel nasalization. The nasal vowels are mostly inherently nasalized. There are some cases in Ika where nasal vowels contrast with their oral counterparts thus resulting in differences in meaning. Such contrasting nasal vowels constitute individual phonemes because they form minimal pairs. This inference is drawn because the substitution of such nasal vowels with their oral counterparts in given environments, results in changes in meaning. To substantiate this claim we provide some minimal pairs below. It can be observed that the words in the examples do not have fricatives and the post – alveolar approximant, /ɹ/. This is because these sounds are most frequently inherently nasalized in many Inland East dialects as well as in Ika. Therefore, to remove any doubt as to whether the vowels adjoining such nasalized fricatives are inherently nasalized or not, we have avoided grouping them under this section. These nasalized fricatives generally occur with vowels that bear some nasality; it will take acoustic studies to determine the source of their nasality. The data used here mainly involve plosives and affricates.

The minimal pairs appear below.

**a /a/**

- (49) **ba** □ /bā/ peel  
 (50) **ba** □ /ba/ enter  
 (51) **cha** □ /tʃā/ wash  
 (52) **cha** □ /tʃa/ ripe  
 (53) **da** □ /da□/ fall  
 (54) **da** □ /da/ heat (food)  
 (55) **ga** □ /ga□/ shout (at somebody)  
 (56) **ga** □ /ga/ go (**aga m na ibe aga** do something to fulfil all righteousnes)
- (57) **Ọa** □ /ɔba□/ barn  
 (58) **Ọa** □ /ɔba/ king; old ( man or woman)  
 (59) **kwa** □ /kwa□/ cry (verb)  
 (60) **kwa** □ /kwa/ sew  
 (61) **a□kwa** □ /akwa□/ cry (noun)  
 (62) **a□kwa** □ /akwa/ be sewing

**e /e/**

- (63) **de** □ /de□/ rumble  
 (64) **de** □ /de/ write  
 (65) **íke** □ /ike□/ buttocks  
 (66) **íke** □ /ike/ to share  
 (67) **je** □ /dʒē/ go  
 (68) **je** □ /dʒe/ tie (wrapper)  
 (69) **ke** □ /ke□/ tie  
 (70) **ke** □ /ke/ share  
 (71) **te** □ /te□/ dance, wake  
 (72) **te** □ /te/ paint, make soup

**i /i/**

- (73) **chi** □ /tʃī/ go back; state (one's case)  
 (74) **chi** □ /tʃi □ □ god  
 (75) **d□í** /di □/ endure  
 (76) **dí** /di/ husband

**î /ɪ/**

- (77) **pï** /pĩ/ sharpen (pencil)  
 (78) **pï** /pi/ press, squeeze (verb)

**o /o/**

- (79) **do**□ /**do**□/ settle (quarrel)  
 (80) **do**□ /**do**/ greeting  
 (81) **I**□**gbò** /**igbõ**/ slave  
 (82) **I**□**gbo**□ /**igbo**/ Igbo ethnic group

**Ñb/**

- (83) **dÒ** /**dɔ**□/ arrange  
 (84) **dÒ** /**dɔ**/ drag  
 (85) **gbÒ** /**gbɔ**□/ obstruct  
 (86) **gbÒ** /**gbɔ**/ bark (dog)  
 (87) **kÒ** /**kɔ**□/ hook and drag  
 (88) **kÒ** /**kɔ**/ shave  
 (89) **kpÒ** /**kpɔ**□/ pack away (dirt)  
 (90) **kpÒ** /**kpɔ**/ call

**u /u/**

- (91) **e**□**gwu**□ /**egwu**□/ fear  
 (92) **e**□**gwu**□ /**egwu**/ be playing or swimming  
 (93) **kwúrú** /**kwu**□**.ju**□/ meet  
 (94) **kwúrú** /**kwu.ju**/ be talking  
 (95) **kwu**□ /**kwũ**/ swear  
 (96) **kwu**□ /**kwu**/ talk

**Ô/**

- (97) **a**□**kÕ** /**aku**□/ kernel  
 (98) **a**□**kÕ** /**aku**/ be beating  
 (99) **a**□**kpÕ** /**akpu**□/ cassava  
 (100) **a**□**kpÕ** /**akpu**/ be moulding  
 (101) **dÕ** /**du**□/ burn  
 (102) **dÕ** /**du**/ knock, poke  
 (103) **ɛ**□**bÕ** /**ɛbu**□/ armpit  
 (104) **ɛ**□**bÕ** /**ɛbu**/ song  
 (105) **ɛ**□**kpÕ** /**ɛkpu**□/ seed yam  
 (106) **ɛ**□**kpÕ** /**ɛkpu**/ swelling  
 (107) **gÕ** /**gu**□/ read, count  
 (108) **gÕ** /**gu**/ pick (with fork)  
 (109) **kÕ** /**ku**□/ plant  
 (110) **kÕ** /**ku**/ knock, beat (gong)  
 (111) **kpÕ** /**kpu**□/ drag (by rope)

- (112) **kpŃ** /**kpu**/ mould, mob  
 (113) **tuŃ** /**tuŃ**/ build  
 (114) **tuŃ** /**tu**/ lie (tell a lie)

From the foregoing, the nasal vowels in Ika can be observed. They can also be seen from the vowel chart in figure 3.

In Ika, inherent vowel nasalization is highly unpredictable. For instance, there may be no phonological explanation why the vowel of **tŃbuild** is nasalized and that of **tŃtell a lie** is not. By contrast, one can predict phonetic nasalization since nasal consonants and nasalized sounds tend to transfer nasality to adjoining vocalic sounds. The minimal pairs above exhibit various words with the same segments and tone patterns, differing only in nasality and yet having different meanings. This meaning difference indicates that the nasalized vowels are phonemic.

As can be inferred from the minimal pairs, the back nasal vowel, /**uŃ**/ occurs more frequently in words than the other nasal vowels. The examples below illustrate this further.

- (115) **nŃtŃ** /**ntuŃ**/ ash  
 (116) **nŃtuŃ** /**ntu**/ nail  
 (117) **nŃtaŃ** /**nta**/ hunting

Though the tones of the word in example 115 differ from those of 116 and 117, in the three words, the vowels occur in the same environment – preceded by **nt**. However, whereas /**uŃ**/ is nasalized, /**u**/ and /**a**/ are not. It is worthwhile to note that the frequency of the occurrence of /**ã**/ is equally high. Further investigations are needed to show why the frequency of the vowels varies.

Other cases of nasalization in Ika involve nasal consonants, that is, consonants (which may be either plosives or affricates) bounded by nasal consonants and nasal vowels. One can easily discern that the nasal consonants do not transfer nasality in such environments as is shown below particularly when comparison is made with those bounded by oral vowels.

- (118) **nŃchiŃchaŃ** /**ntʃtʃaŃ**/ sponge  
 (119) **ńkŃ** /**nkuŃ**/ firewood  
 (120) **nŃtŃ** /**ntuŃ**/ ash  
 (121) **ŃŃ** /**ŃkuŃ**/ fire  
 (122) **eŃkŃ** /**ekŃ**/ python

A close observation of the examples above will reveal that the nasality on the vowels in the words in 118 to 120 was not acquired from the nasals in the words. They are inherently nasalized since they are bounded by plosives and affricates which (in other Igbo dialects) do not allow the transfer of nasality from the nasal consonants. This argument is further confirmed by the nasal vowels in **ŃŃ** and **ekŃ** where there are no nasal sounds.

#### 3. 4 INFLUENCE OF IKA NASAL VOWELS ON ADJOINING CONSONANTS

Ika nasal vowels transmit some degree of nasality to adjoining sound segments. Thus, the direction of the flow of nasality is from right to left contrary to what obtains in other Igbo dialects where nasalized consonants confer nasality on adjacent vowels from left to right. In the case of Ika nasal vowels, the contiguous consonant sounds are produced with a lowered velum. That is, the velum is lowered in anticipation for the production of the nasal vowel while the articulators are still in position for the production of the preceding consonant. Crystal (1991) shows that such a sound (the one preceding the nasal) is released through the nose instead of the mouth and he refers to the nasal effect that results from this as ‘nasal plosion’. The nasal release of these consonants might be indicated in the following way:

- (123) **gõ**            /gõ/    read, count  
 (124) **õk**            /õk/      fire

In other words, the nasality of the following vowel engulfs the preceding consonant. However, one may easily discern where the nasality centres, contrary to what Ikekeonwu (1986:295) points out about consonantal nasalization in Igbo dialects that:

“...it is often difficult to identify specifically where the nasalization belongs”.

Her examples include the following:

- (125) **zu**            /zu/    steal  
 (126) **zi**            /zi/    to blow one’s nose

Her examples show that the vowels have acquired nasality from the nasalized consonants. We suggest that there are differences between the first scenario (nasal vowels spreading their nasality to the left) and the second (nasalized consonants spreading their nasality to the right). Firstly, fricatives and the post alveolar approximant, which are the nasalized consonants in Igbo, appear to aid the spread of nasality. By contrast, Ika nasal vowels usually co-occur with plosives which have been noted for blocking nasal spread in Igbo. Secondly, whereas the vowels succeeding the Igbo nasalized consonants are produced with an already lowered velum, following the production of the preceding nasalized consonants, the Ika consonants preceding the nasalized vowels are usually not produced with sufficient lowering of the velum. The velum is only lowered towards the end of the production. To avoid ambiguity, we have only established those vowels as nasal vowels that influence nasality, particularly in words devoid of nasal consonants. In addition, such nasal vowels form minimal pairs as has already been exemplified.

#### 4. SUMMARY AND CONCLUSION

Vocalic nasalization (as well as consonantal one) in Ika appears to be highly unpredictable with regards to the nasal vowels and the inherently nasalized consonants. This is because there are no linguistic reasons for their occurrence. By contrast, nasalized vowels occur because of the emission of nasality by nasal consonants to contiguous vowels. In this dialect, nasalization is systemic, that is, it brings about meaning distinction. This establishes the phonemic status of Ika nasal vowels. Their distinctive nature can be seen from the minimal pairs shown in (section 3.3).

In this paper, Ika has been shown to have eight nasal vowels. The following oral vowels- /a, e, i, ɪ, o, ɔ, u and ʊ/ – have these nasal counterparts: - /ã, ě, ĩ, ɪ̃, õ, ɔ̃, ũ and ʊ̃/. It is possible that further research could reveal more nasal vowels. The existence of many nasalized vowels in Ika confirms our earlier hypothesis that this dialect might be sharing certain features with Edoid languages, which also tend to have many nasal vowels (Aziza 2005:1). Ika appears to be the only Igbo dialect so far, which manifests vocalic nasalization: most Igbo dialects have only consonantal nasalization. The back nasal vowel, /ʊ̃/, is generally more frequent in occurrence than others. The frequency of the front vowel, /ã/ is equally high. Presently, we may not be able to show why these are more frequent than others though it is interesting to note that both are [-ATR] vowels. Both are produced with a retracted tongue position.

Ika nasal vowels transfer nasality to preceding consonants. Usually, they come word – finally, hence they spread nasality from right to left (regressive). Ika, like some Inland East Igbo dialects, also manifests consonant nasalization and such nasalized consonants transfer nasality to the vowels from left to right. Consequently, whereas in the Inland East dialects there is only progressive assimilation of nasality (left to right), in Ika there are both progressive and regressive assimilation of this feature, a confirmation that Ika is linguistically different from other Igbo dialects. In Ika and other Igbo dialects, only fricatives and the post alveolar approximant can be nasalized. By contrast, Ika nasal vowels co-occur mainly with plosives and affricates. There may be a need to investigate further why Ika allows for this possibility. In carrying out this investigation, the claim of Anyanwu (1998) that only fortis plosive sounds give rise to nasalized vowels in Igbo, though not totally true, may prove useful.

A further distinction between nasalization in Ika and other Igbo dialects is that in the latter, plosives are said to block the spread of nasalization but Ika nasal vowels emit nasality to contiguous plosives and affricates with which they mainly co-occur. This appears to negate the general assumption that plosives cannot be nasalized. Judging from ear perception, one could deduce that the degree of their nasalization is relatively lower than that which the nasalized consonants give out to adjacent vowels. This difference implies that the spread of nasality is somehow obstructed. If this deduction is correct, then the assumption that plosives block, or at least minimize, the spread of nasality could still be proved right. However, the difference can be attributed to the position of the nasal sounds. It is possible that since the vowels succeeding the Igbo nasalized consonants are produced with an already lowered velum (following the production of the preceding nasalized consonants), they are likely to be produced with more nasal escape of air than in the production of the Ika consonants which precede the nasalized vowels. This apparently, results from an inadequate lowering of the velum. In spite of the lower degree of nasality which consonants adjacent to Ika nasal vowels acquire from them, the effect of the nasal vowels on the preceding consonants are easily perceptible. The nasality of Ika nasal vowels is therefore undisputable.

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