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A REVIEW OF VOWEL ELISION AND ASSIMILATION IN IGBO: CLARIFICATION THROUGH ACOUSTIC, PERCEPTUAL AND THEORETICAL ANALYSIS

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Abstract
There seems to be confusion in the data presented by some authors (see Onuora, 2012; Emenanjo, 1991; Ngoesi, 2000; Omozuwa, 2021) in explaining elision and assimilation in Igbo; as similar items are presented as assimilation on one hand, and as elision on the other hand. While Onuora (2012); Emenanjo (1991); and Ngoesi (2000) claim that the vowels are first completely assimilated before they are elided, Omozuwa (2021) does not see any assimilation in them; for him, they are all cases of elision. This aroused the researchers' curiosity, leading to the investigation of vowel elision and assimilation in Igbo through oral data and data from these authors. The study uses perceptual, acoustic and theoretical analysis to study the duration of the vowels in order to clarify the contentious issue. The findings reveal that apart from a few instances of diachronic elision, all the vowels analysed as elided in the studies are only assimilated; not elided. They are instances of complete vowel assimilation where the phonetic features of one vowel are completely assimilated by another vowel, making the vowels to be identical. Such identical vowels align with theoretical analysis as instances of assimilation, they are perceptually longer in length than their single counterparts, and they clearly show that their duration, whether they bear same or different tones, is approximately double the duration of a single vowel of same acoustic features. Also, the study does not confirm earlier claims that elision and assimilation in Igbo occur only in fast, casual speech; instead, it shows them to also occur in normal free flow speech.

Keywords: Elision, Assimilation, Igbo, Perceptual analysis, Acoustic analysis, Theoretical analysis

Ụmịdemede
Ọ dị ka e nwere mgbagwoju anya n'ihe ndị odee ụfọdụ derela (hụ Onuora, 2012; Emenanjo, 1991; Ngoesi, 2000; Omozuwa, 2021) iji kọwa ndapụ ụda na olilo ụda n'Igbo; ihe ndị yiri onwe ha a kọwara dịka olilo ụda n'ebe ụfọdụ ka a na-egosi na ha bụkwa ndapụ ụda n'ebe ọzọ. Ebe Onuora (2012); Emenanjo (1991); na Ngoesi (2000) kwuru hoohaa na e buuru ụzọ nwee olilo nlocha ụda n'ebe ụdaume ndị ahụ nọ tupu ha wee dapụ, Omozuwa (2021) ahụtaghị olilo na ha; kama ọ hụtara ha dịka ndapụ ụda. Nke a kpalitere mụọ ndị nchọcha, ma mekwaa ka e nyochaa ndapụ ụda na olilo ụda n'Igbo site n'ihe ndị e nwetara n'ajụjụ ọnụ nakwa ndị e nwetara site na ndị odee ndị a. A gbasoro usoro ogige ihe a sụrụ n'ọnụ, iji atụtụ nyochaa ihe a sụrụ, nakwa iji ngwa nnyocha ụmịụda wee nyochaa oge ole o were iji kpọpụta ụdaume gasị iji mee ka ebe ndi obi akwụkọghị ọnụ doo anya. A chọpụtara na e wezuga ebe e nwere ndapụ ụda sitere n'ngafe oge rue oge, ụdaume ndị a kọwara dịka ndapụ ụda bụ nanị olilo ụda; ha abụghị ndapụ ụda. Ha gosipụtara olilo nlocha ụda ebe ụdaume wụsara ihe nile gbasara ya ma kporu ihe ndị gbasara ụdaume ọzọ, mee ka ha abụọ bụrụ otu ụdị. Atụtụ nchocha gosikwara ụdaume ndị a bụzị otu ụdị dịka olilo ụda, oge o were iji kpọpụta ha dọtịkwara karia oge o were ịkpọpụta ụdaume ndị kwuuru onwe ha, ma gosikwa na nagbanyeghị ma oge o were ịkpọpụta ha o nwere otu ụdaolu ka ụdaolu ha ọ dị iche, ruru mmakọ abụọ ihe o were iji kpọpụta ụdaume ndị nọọrọ onwe ya ma bụrụkwa otu ụdị. Ọzọ, nchọcha a ahụtaghị di ka eziokwu ihe e kwuru na ọ bụ mgbe a na-ekwu okwu ọsọọsọ ka a na-enwe ndapụ ụda na olilo ụda; kama a na-ahụtakwa ha mgbe e ji nwayọ ekwu okwu.

Ọkpụrụkpụ Okwu: ndapụ ụda, olilo ụda, Igbo, ogige asụrụ n'ọnụ, ntule nke ụmịụda, ntụle nke Atụtụ

1. Introduction

Igbo is one of the main languages spoken in Nigeria. Many researchers have investigated one aspect of the language or the other. Among the topics investigated is the phonological processes; comprising such language phenomena as elision, insertion, assimilation and vowel harmony. Our interests in this research are elision and assimilation. Elision is the dropping of a sound or a syllable in a word during speech. Assimilation occurs when a sound makes an adjacent sound to assume its phonetic feature(s). Complete vowel assimilation is the influencing of a vowel by an adjacent one such that the influenced vowel completely copies all the phonetic features of the vowel that influences it. Many works have been done on elision and assimilation in Igbo. They include Emenanjo (1978; 1991; 2015); Ume, Ugoji and

Dike (1989); Ngoesi (2000); Eme (2007; 2008); Onuora (2012); Omozuwa (2006; 2021). Scholars like Ume, Ugoji and Dike (1989), and Emenanjo (1991; 2010) aver that elision is strictly a dialectal issue since a sound or syllable that is elided in a word in one dialect may be fully realised in another dialect. They, as well as Onuora (2012), are of the view that in vowel elision, the vowel to be elided is first completely assimilated before it is finally dropped. The claim that elision is a dialectal issue and follows complete assimilation forms a way of making their data seem fool proof; but the items of the data are attested in the standard Igbo and cannot clearly evidence such vowel elision.

Therefore, there seems to be confusion in the data presented by some authors to explain elision in Igbo; as similar items are also presented as assimilation (see, for example, Emenanjo, 1991; Ngoesi 2000; Onuora, 2012; Omozuwa, 2021). This aroused the researchers' curiosity, leading us to investigate vowel elision and assimilation in standard Igbo through oral data and data from these authors. Omozuwa (2021) explains how elision manifests in Igbo, (a Kwa language), in line with its manifestation in other Kwa languages. He explains: "Another contentious issue is that of vowel elision in Igbo. It is a known fact that vowel elision/deletion is a very common phonetic phenomenon in Kwa languages, which are essentially open syllable languages." (Omozuwa 2021, 9). He goes further to claim that the phenomenon of elision in Igbo is better analysed using autosegmental phonology framework which, he claims, best explains the operations of the phenomenon in Igbo. He contends that Igbo data earlier analysed in Emenanjo (1978) and Omozuwa (2006) as manifesting complete vowel assimilation in Igbo are better reanalysed as vowel elision and tone shift. He, therefore, goes further to say:

It is the general assumption in Igbo Phonology that "few cases of vowel elision exist" in the language (Emenanjo 1978, 26). According to him [Emenanjo, 1978], "…while vowel assimilation is pronounced in Igbo, vowel elision is very limited in occurrence." Adopting the autosegmental perspective as an alternative analytical framework for a clearer explanation of the phenomenon, it was argued that the generally held assumption that the phenomenon be treated as the total assimilation of V2 by V3 in a V1CV2 # V3CV4 construction in previous studies (cf. Emenanjo, 1978; Omozuwa, 2006) appears defective.

We find all these quite fascinating and rather contend that what Omozuwa refers to as vowel elision and tone shift are cases of assimilation; hence, our grouping of Group II data under assimilation and further subject them to perceptual, acoustic, and theoretical investigations. This is to ascertain whether or otherwise the items of the data concerned are actually cases of vowel elision or complete vowel assimilation. Although these approaches may have their problems, as no method is completely fool proof, including the application of certain theories to certain language data, we align with Ball and Rahill (2013) who do not end in words of caution but in those of conviction of the relevance of the combination of the two approaches. According to them, "No approach to phonetic description can give all the answers, but using transcription and instrumentation together can get us quite a way along the road." Let us see, in the following section, a few materials from the literature concerning elision and assimilation in Igbo.

2. Earlier Studies on Elision and Assimilation in Igbo

In his discussion of vowel elision in Igbo, Onuora (2012) is of the view that assimilation precedes elision. Some of his examples are **Amauche → Amuuche → Amuche**; **Adaobi → Adoobi → Adobi**. These examples constitute part of the contentious issues on elision which this present study seeks to address. On assimilation, Onuora (2012) points out that it manifests in Igbo speech, but explains that it is not reflected in writing. He says that in Igbo, only vowels are involved in assimilation, which could be regressive, progressive, complete, partial or coalescent assimilation. Although this is not within the scope of this study, we must point out that there are many instances of consonant assimilation in Igbo attested in the literature (Eme, 2007; Emenanjo, 2015; Uwaezuoke, 2021). For Onuora (2012), V1 must be any of [**a e o ɔ**] before regressive assimilation can occur while progressive assimilation occurs as dialectal variants. His examples of complete (regressive) assimilation are **imeobi → imoobi**; **ọganaihu → ọganiihu**; **ụdụmụaga → ụdụmaaga**; **ụdaume → ụduume**. We can see that **ụdụmụaga → ụdụmaaga** has [**u**] as V1 contrary to his earlier stipulation.

Maduagwu (2012) also discloses that V1 can be [ʊ] as is witnessed in her illustration with **/ɔ́nʊ́ ìtè/ → [ɔ́ní ìtè]** 'mouth of pot'.

According to Ume, Ugoji and Dike (1989), regressive (complete) assimilation is when a vowel causes a vowel that directly precedes it to take up its features. Two of their examples are: **ọba ede → ọbeede**; **Omenaụkọ → Omenụkọ**. One is not clear as to the assimilation in the second example. They say that conditional assimilation occurs only on the condition that the speech is fast. Pointing out that elision in Igbo is dialect based, they aver that some instances of elision involve assimilation while some do not. Examples: **elu igwe → eliigwe → eligwe**; **di ike → diike → dike**; **nwa oke → nwooke → nwoke**; **agụụ nri → agụ nri**, where the last item does not involve complete assimilation.

Emenanjo (2010, 2015) is of the view that some instances of elision in synchronic Igbo speech have diachronic base. He shows the words, their diachronic realisations and current use. Examples from Emenanjo (2015:85-87):

(1) i. **ụsọ + ekwu → ụseekwu → ụsekwu**;
near tripod 'hearth'
ii. **di + ike → diike → dike**;
expert strength 'man of valour/warrior'
iii. **Ọzọ + emena → Ọzeemena → Ọzemena**
another not occur 'may evil not occur again (a name)'
iv. **mmụọ + ọnwụ → mmọọnwụ → mmọnwụ**
spirit death 'spirit of death/masquerade'

For him, elision of a vowel cannot occur unless the two adjacent vowels are involved in complete assimilation and they are both of the same tone. He explains that elision in modern Igbo speech is more prevalent in proper nouns (especially names of people), though in diachronic speech, a few associated nouns can manifest elision. The author is silent concerning what happened in his last example with respect to '**ụ**' of '**mmụọ**'.

Uwaezuoke (2017) obtained his data from eleven speech communities in his study of the phonology of Omambala varieties of Igbo, spoken in four Local Government Areas of Anambra State. He points out that while Ifite-Ogwari has four types of elision involving consonant, vowel, syllabic nasal and syllable, Nsugbe attests only consonant elision. He is of the view that regressive assimilation can occur, among other contexts, within a word in some of the dialects of the study and across word boundaries. Using Goldsmith's (1976; 1979) autosegmental phonology, Chomsky and Halle's (1968) generative phonology and Kaye, Lowenstamm and Vergnaud's (1985) government phonology accounts, he clearly shows the operations of complete assimilation in Igbo. Some of the items he analysed as regressive assimilation are:

(2) i. **élé ávụ̀ → [éláávɔ̀]** 'like that'
ii. like that
iii. **sụ̀bá óyìbó → [sʊ́bʊ́ ójìbʊ́]** 'be speaking English'
speak English
iv. **ńnékwú ívé → [ńnékwí i↓vé]** 'something big'
big thing
(cf. Uwaezuoke 2017, 131-143)

He shows that progressive assimilation occurs in Igbo. His example got from the speech of his male Ogbunike consultant is:

(3) **ńnékwú ↓ụ́bá → [ńnékwú ↓úbá]** 'great wealth'
big wealth
(cf. Uwaezuoke 2017, 146)

Uwaezuoke (2019; 2021) re-echoes his earlier view of assimilation in Igbo. We shall return to some of his data items and their analysis later in this study. Jonah (2021) studies

assimilation with reference to the Ọhaọzara dialect of the Igbo language. She points out that vowel assimilation occurs in fast speech. One of her findings supports Uwaezuoke (2017) when she points out that assimilation is also attested in some simple words of Ọhaọzara-Igbo. Omozuwa (2021) is a critical review of some contentious issues in phonetics and phonology: vowel elision, vowel coalescence, vowel harmony, downdrift and downstep. His elaborate data are from Edo, Igbo, and Yoruba. He applies autosegmental approach in his descriptive analysis of elision. He contends that what were earlier analysed as vowel assimilation in Igbo (cf. Emenanjo, 1978; Omozuwa, 2006) should better be re-analysed as vowel elision. Also, he is of the view that whether there will be outright deletion of the vowel and its tone or the linking of the tone of the deleted vowel to the next, leading to what he calls 'redundant lengthening', depends on the tones of the combined words. (We have ignored in this paper the phonetic predictable nasalization in his data). Some of his Igbo examples are:

(4) i. **/ǫ́ŋé # ídʒè/** → **[ǫ́ŋídʒè]**
person walk 'traveller'
ii. **/ǫ́ŋé # ɔ̀ʧɔ̀/** → **[ǫ́ŋô:ʧɔ̀]**
person taboo 'destroyer'
iii. **/útʃè # ɔ́má/** → **[útʃɔ̃́:má]**
thought good 'good thought'
iv. **/ókè # àlà/** → **[ó!kâ:là]**
boundary land 'land boundary'
(cf. Omozuwa 2021, 12)

3. Methodology

The data for this study are sourced through oral data from consultants and data from some of the authors whose items in their presented data on elision seem not to perceptually align with their elision claim. For the oral data for perceptual analysis**,** the consultants are eight literate Igbo-English bilinguals selected without reference to their dialects provided they are knowledgeable in the use of standard Igbo. They are three men and three women from 36 years and above, and two youths aged 25 and 32 years old. The researchers had to present the gloss to the consultants who now rendered them in Igbo. In a case where the gloss has synonymous terms used by the different consultants, the researchers choose the format presented in the literature in order to capture what the reviewed author intended. The data are descriptively analysed perceptually, theoretically and acoustically. Data items are transcribed by using the symbols of the International Phonetic Association (IPA). The tone marking convention adopted for the study is that of marking all tones- where high and low tones are respectively marked with acute and grave accents, [´] and [`]; while downstep tone is marked with a macron [¯]orthographically or by first placing a down pointing arrow before the syllable followed by an acute accent phonemically and phonetically.

4. Data Presentation and Analysis

This section treats data presentation and analysis. The data is first presented separately followed by analysis. There are the perceptual, theoretical and acoustic analysis, and in this order.

4.1 Data Presentation

The data which the named authors adjudged to represent vowel elision are presented in two groups. Group I is data from the secondary source while Group II comprises oral data from interview. Data from the literature are presented in sets and numbered (5a-d) according to the source material from which the sets of data are gathered while the source is indicated at the end of each set. The bulk of the secondary data is from Omozuwa (2021) because of the profuse data in his work. All the items of the data in both Groups I and II are serially numbered for ease in reference. Oral data are the collation of our consultants' rendition of the items of the data as serially presented.

4.1.1 Group I- Data Derived from the Literature

(5) a

1.	**/áká #**	**ɔ́má/**	→	**[ákɔ́má]**
	hand	good		‘good hand’
2.	**/áfɔ#**	**úkwú/**	→	**[áfúkwú]**
	stomach	big		‘big stomach’
3.	**/ífé #**	**ɔ́má/**	→	**[ifɔ́má]**
	thing	good		‘good thing’
4.	**/ǎɲá #**	**ɔ́ʧá/**	→	**[áɲɔ́ʧá]**
	eye	white		‘white eye’
5.	**/ǎɲá #**	**úkwú/**	→	**[áɲúkwú]**
	eye	big		‘big eye’
6.	**/ǒɲé #**	**ídʒè/**	→	**[óɲídʒè]**
	person	walk		‘traveller’
7.	**/ɛ́kɛ́ #**	**ɔ́gbà/**	→	**[ɛkɔ́gbà]**
	python	big bush		‘(big) python’
8.	**/áká #**	**ígù/**	→	**[ákígù]**
	hand	palm leaf		‘palm frond’
9.	**/ǒɲé #**	**ɔ̀ʧɔ̀/**	→	**[óɲɔ̂:ʧɔ̀]**
	person	taboo		‘destroyer’
10.	**/íké #**	**ɔ̀gɔ̀/**	→	**[íkɔ̂:gɔ̀]**
	strength	fight/war		‘name of a person’
11.	**/ǒɲé #**	**ìsì/**	→	**[óɲî:sì]**
	person	blind		‘blind person’
12.	**/íkpé #**	**ɔ̀hà/**	→	**[íkpɔ̂:hà]**
	judge	public		‘name of a person’
13.	**/útʃɛ̀ #**	**ɔ́má/**	→	**[útʃɔ̌:má]**
	thought	good		‘good thought’
14.	**/ógè #**	**ɔ́má/**	→	**[ógɔ̌:má]**
	time	good		‘good time’
15.	**/íkè #**	**úkwú**	→	**[íkŭ:kwú]**
	buttocks	big		‘big buttocks’
16.	**/únè #**	**ɔ̀gɔ̀/**	→	**[únɔ̂:gɔ̀]**
	banana	Ogo		‘Ogo’s banana’
17.	**/ǒnɔ̀ #**	**àdʒà/**	→	**[únâ:dʒà]**
	house	sacrifice		‘house of sacrifice’ (shrine)
18.	**/ójè #**	**àbà/**	→	**[ójâ:bà]**
	market day	Aba		‘Aba market day’
19.	**/ókè #**	**àlà/**	→	**[ókâ:là]**
	boundary	land		‘land boundary’
20.	**/òkè #**	**(ǹkè)# ɔgɔ̀/**	→	**[òkɔ̂:gɔ̀]**
	share	PM Ogo		‘Ogo’s share’
21.	**/àkpà #(ǹkè) # àgwà/**		→	**[àkpâ:gwà]**
	bag PM beans			‘bag of beans’
22.	**/ìtè #(ǹkè) # àgwà/**		→	**[ìtâ:gwà]**
	pot PM beans			‘pot of beans’
23.	**/ìtè #**	**ázɔ̀/**	→	**[ìtă:zɔ̀]**
	pot	fish		‘pot of fish’
24.	**/àmà #**	**ógè/**	→	**[àmŏ:gè]**
	who knows	time		‘name of person’
25.	**/ùdé #**	**ùgò/**	→	**[ùdû:gò]**
	body cream	name of person		‘Ugo’s body cream’

26. **/àkwá # ùgò/ → [àkwû:gò]**
egg eagle ‘eagle’s egg/name of person’
27. **/ìkó # àʤà/ → [ìkâ:ʤà]**
cup sacrifice ‘cup used for sacrifice’
(cf. Omozuwa 2021, 9-18)

b. 28. **Ụ́zọ̀ + àmáká → Ụ́zààmáká → Ụ́zàmáká** ‘name of person’
29. **Ọzọ́ + éménà → Ọzééménà → Ọzéménà** ‘name of person’
(cf. Emenanjo 1991, 28)

c. 30. **Nwá + ụ́kà → Nwụ́ụ́kà → Nwụ́kà** ‘name of person’
31. **Àmà + úchè → Àmùúchè → Àmúche** ‘name of person’
32. **Àdá + ọ̀hà → Àdọ́ọ̀hà → Àdọ́hà** ‘name of person’
33. **Ézè + ụ́dụ̀ → Ézụ́ụ́dụ̀ → Ézụ́dụ̀** ‘name of person’
(cf. Onuora 2012, 28)

d. 34. **Nwá + èké → Nwé!éké → Nwéké** ‘name of person’
35. **Ámá + èsì → Áméèsì → Ámésì** ‘name of a town’
36. **ụ̀sọ́ + ékwú → ụ̀séé!kwú → ụ̀sé↓kwú** ‘hearth’
(cf. Ngoesi 2000, 37)

4.1.2 Group II Data Derived from Fieldwork

(6) a 1. **/áká # ɔ́má/ → [ákɔ́ɔ́má]**
hand good ‘good hand’
2. **/áfɔ # úkwú/ → [áfúúkwú]**
stomach big ‘big stomach’
3. **/ífé # ɔ́má/ → [ifɔ́ɔ́má]**
thing good ‘good thing’
4. **/áɲá # ɔ́ʧá/ → [áɲɔ́ɔ́ʧá]**
eye white ‘white eye’
5. **/áɲá # úkwú/ → [áɲúúkwú]**
eye big ‘big eye’
6. **/ɔ́ɲé # íʤè/ → [ɔ́ɲííʤè]**
person walk ‘traveller’
7. **/ɛ́kɛ́ # ɔ́gbà / → [ɛkɔ́ɔ́gbà]**
python big bush ‘(big) python’
8. **/áká # ígù / → [ákíígù]**
hand palm leaf ‘palm frond’
9. **/ɔ́ɲé # ɔ̀ʧɔ̀/ → [ɔ́ɲɔ́ɔ̀ʧɔ̀]**
person taboo ‘destroyer’
10. **/íké # ɔ̀gɔ̀/ → [íkɔ́ɔ̀gɔ̀]**
strength fight/war ‘name of a person’
11. **/ɔ́ɲé # ìsì/ → [ɔ́ɲíìsì]**
person blind ‘blind person’
12. **/íkpé # ɔ̀hà/ → [íkpɔ́ɔ̀hà]**
judge public ‘name of a person’
13. **/útʃè # ɔ́má/ → [útʃɔ̀ɔ́má]**
thought good ‘good thought’
14. **/ógè # ɔ́má/ → [ógɔ̀ɔ́má]**
time good ‘good time’
15. **/íkè # úkwú → [íkùúkwú]**
buttocks big ‘big buttocks’
16. **/únè # ɔ̀gɔ̀/ → [únɔ́ɔ̀gɔ̀]**
banana Ogo ‘Ogo’s banana’
17. **/ɔ́nɔ̀ # àdʒà/ → [únáàdʒà]**

house sacrifice ‘house of sacrifice’ (shrine)

18. **/ójè # àbà/ → [ójáàbà]**
market day Aba ‘Aba market day’

19. **/ókè # àlà/ → [ó!káàlà]**
boundary land ‘land boundary’
20. **/òkè # (ǹkè) # ɔ̀gɔ̀/ → [òkɔ́ɔ̀gɔ̀]**
share PM Ogo ‘Ogo’s share’
21. **/àkpà #(ǹkè) # àgwà/ → [àkpáàgwà]**
bag PM beans ‘bag of beans’
22. **/ítè # (ǹkè) # àgwà/ → [ìtáàgwà]**
pot PM beans ‘pot of beans’
23. **/ítè # ázɔ̀/ → [ìtàázɔ̀]**
pot fish ‘pot of fish’
24. **/àmà # ógè/ → [àmòógè]**
who knows time ‘name of person’
25. **/ùdé # ùgò/ → [ùdúùgò]**
body cream name of person ‘Ugo’s body cream’
26. **/àkwá # ùgò/ → [àkwúùgò]**
egg eagle ‘eagle’s egg/name of person’
27. **/íkó # àʤà/ → [ìkáàʤà]**
cup sacrifice ‘cup used for sacrifice’

b. 28. **Ụ́zọ̀ + àmáká → Ụ́zààmáká** ‘name of person’
29. **Ọ̀zọ́ + éménà → Ọ̀zééménà** ‘name of person’
(cf. Emenanjo 1991, 28)

c. 30. **Nwá + ụ́kà → Nwụ́ụ́kà** ‘name of person’
31. **Àmà + úchè → Àmùúchè** ‘name of person’
32. **Àdá + ọ̀hà → Àdọ́ọ̀hà** ‘name of person’
33. **Ézè + ụ́dụ̀ → Ézụ̀ụ́dụ̀** ‘name of person’
(cf. Onuora 2012, 28)

d. 34. **Nwá + èké → Nwé!éké** ‘name of person’
35. **Ámá + èsì → Áméèsì** ‘name of a town’
36. **ụ̀sọ́ + ékwú → ụ̀séé!kwú** ‘hearth’
(cf. Ngoesi 2000, 37)

4.2 Data Analysis

4.2.1 Perceptual analysis

Pronouncing the items of the data as Igbo competent native speakers, and confirming our perceptual analysis with the pronunciation of our consultants comprising three men, three women and two youth native speakers, and the researchers’ findings go to support our earlier view that assimilation is what operates across the data irrespective of the tone of the combining vowels. Realising that all the consultants and researchers perceive the vowels as lengthened, the entire data were subjected to validation by four competent standard Igbo speakers made up of two men and two women, aged between 53 and 70 years. Their pronunciation aligned with the data as presented. In items 1-8, Group I, the items without lengthened vowels which are seen as elision by the authors are not perceived as such, instead they are perceived as clearly two distinct, though phonetically same, vowels. The ones with lengthened vowels could, as well, be more neatly analysed alongside similar data items as complete assimilation. This is irrespective of the tone of the combining words, as tonal change may occur in associative construction depending on the tone classes of the associating words (Nwachukwu, 1995). Our claim is in accordance with research finding that shows that assimilation, whether complete or partial, does not affect tone or syllable structure; therefore, the assimilating and assimilated segments still retain the tones they bear before assimilation

(cf. Eme 2008, 127; Emenanjo 2015, 84; Uwaezuoke 2017, 172)[1]. Analysing the two same vowels that emerge after complete vowel assimilation as mere 'redundant lengthening' of vowel fails to capture the interesting phonological phenomenon of assimilation that is prevalent in the Igbo language.

The researchers' view of such data being instances of assimilation, with two separate vowels, is supported by Mbah and Mbah (2010) using the following examples of complete regressive vowel assimilation:

(7) i. **/ólɔ̀ ákwɔ́kwɔ́/** → **/ólà ákwɔ́kwɔ́/** 'school building'
ii. **/ólɔ̀ élū/** → **/ólè élū/** 'storey building'
iii. **/ùdé ísí/** → **/ùdí ísī/** 'hair pomade'
iv. **/ɔ́dʒí ɔ̀bɔ̀/** → **/ɔ́dʒɔ́ ɔ̀bɔ̀/** 'palm kola nut'
(cf. Mbah and Mbah 2010, 98-99)

Items in Group I (b, c) and part of (d), numbered 28-34, are popular Igbo names. We went into town to find out the native-speaker pronunciation of these names. All the speakers, including the bearers of those names, failed to realise elision in their pronunciation, thereby giving us the perception, we recorded in Group II, numbers 28-34. The view of this study is that assimilation is what operates across the data irrespective of the tone of the combining vowels. The items with length diacritic and contour tones in examples 9-27 of Group I could, as well, be more neatly analysed alongside similar data items as complete assimilation; as every TBU that bears a contour tone is perceptually long.

Since assimilation does not affect tone in Igbo, it is not surprising to see the vowels bearing same tones (examples 1-8, 28-30, 34 and 36), contrasting high/low tone (examples 9-12, 16-22, 25-27, 32 and 35) or low/high tone (examples 13-15, 23-24, 31 and 33). These should not be analysed as a vowel with 'redundant lengthening,' a long vowel bearing rise-fall contour tone or a long vowel with low-rise contour tone respectively. From the data, it is evident that some of the assimilated vowels bear tones different from the tones of the vowels that assimilated them, as they retain the tones they bear before assimilation. A case of high/downstep tone is even seen in example 34, which does not fit into elongation or contour analysis. Therefore, the explanation using the issues of length elongation and contour tones do not suffice. The two vowels involved in the items of the data above cannot be analysed as simply that one vowel is elided and the length of the remaining one elongated, or the remaining one bears a contour tone. To claim elision for the data items by the application of autosegmental analysis does not suffice either, as Uwaezuoke (2017, 134-136) has shown.

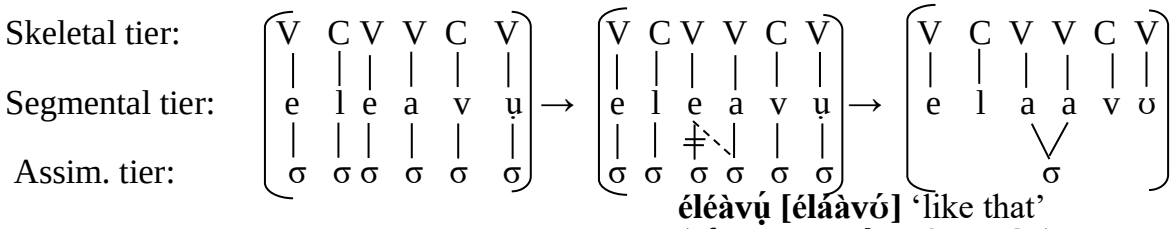
4.2.2 Theoretical Analysis

Although Uwaezuoke (2017) also applies the autosegmental phonology framework in his analysis of Igbo data, he realises such data presented in Group I, numbers 1-36 as complete regressive vowel assimilation. He further authenticates his claims using the phonological rules of generative phonology, as well as government phonology. Space permits us to use only four of his examples; three for the more common regressive assimilation and one for progressive assimilation:

[1]Emenanjo (2015:84), clearly notes that vowel assimilation occurs without vowel elision and/or tone assimilation. He also points out that while vowel assimilation does not imply the disappearance or contraction of vowels, vowel elision does.

Regressive assimilation

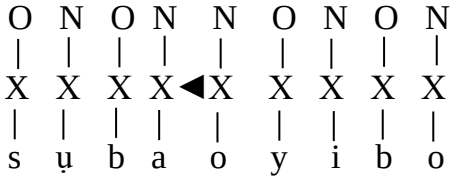
Fig. 1 Autosegmental analysis of **élé ávụ̀ → [élá ávò]** ‘like that’



éléàvụ́ [éláàvʊ́] ‘like that’
(cf. Uwaezuoke 2017, 134)

Figure 1 is a three-tiered representation of three independent segments: skeletal tier, segmental tier and assimilation tiers. The three tiers are linked to one another by association line. The dotted line represents the new link between the two vowels ‘e’ and ‘a’ at contiguous position. The new link makes the two vowels to be alike as seen in column 3.

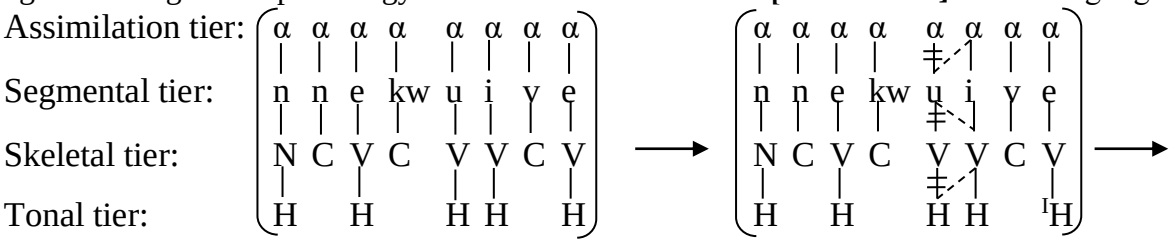
Fig. 2 Government phonology analysis of sụ̀bá óyìbó → [sʊ́bó ójìbó] ‘be speaking English’

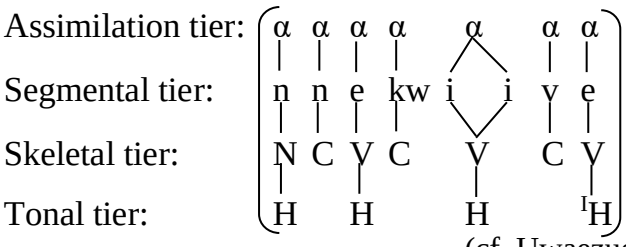


sụba oyìbo [sʊbo ojìbo]
(cf. Uwaezuoke 2017, 134)

It is seen in figure 2 that sound /o/, which is the governor governs the preceding vowel /a/ as the governee. The government effect makes the vowel /a/ to completely drop its features and take up all the features of the vowel /o/.

Fig. 3 Autosegmental phonology account of **ńnékwú ívē → [ńnékwí íˡvé]** ‘something big’



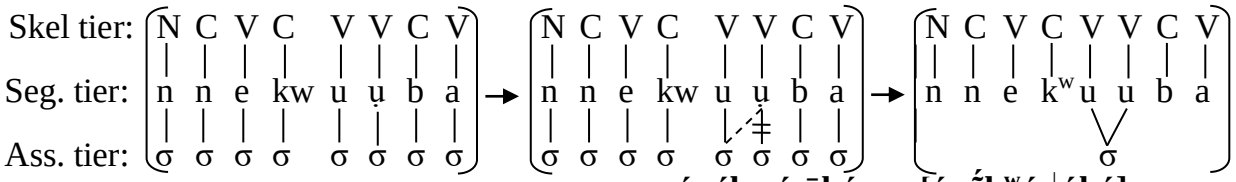


ńnékwú ívē → [ńnḗkʷí íˡvé]
(cf. Uwaezuoke 2017, 141)

The second column of figure 3 shows that a new association line links the first vowel of the second word and the final vowel of the first word from the assimilation tier, while the association line linking the final vowel of the first word with the assimilation tier is delinked. It also shows that a new association line links the first vowel of the second word and the final vowel of the first word from the skeletal tier, and the association line linking the final vowel of the first word with the skeletal tier is delinked. A new association line links the tone of the first vowel of the second word and the final vowel of the first word from the tonal tier, while

the association line linking the final vowel of the first word with the tonal tier is delinked. In the third column, the first vowel of the second word and the final vowel of the first word are linked to one node at the assimilation tier. The first vowel of the second word and the final vowel of the first word are also linked to one V at the skeletal tier; and in line with OCP, they are equally associated with one tone at the tonal tier.

Fig. 4 Autosegmental analysis of **ńnékwú ụ̄bá → [ńnékwú ↓úbá]** 'great wealth'



ńnékwú ụ̄bá → [ńnék^{w}ú ↓úbá]

(cf. Uwaezuoke 2017, 146)

Figure 4 has the skeletal tier, segmental tier and assimilation tiers, which are linked to one another by association line. The dotted line in the second column represents a new link between the two vowels 'u' and 'ụ', and the linking shows the occurrence of progressive assimilation, which makes the two vowels to be alike in column 3. The direction of the dotted line is very significant as it has clearly disclosed the type of assimilation to be progressive.

4.2.3 Acoustic analysis

For acoustic analysis, the following utterances are tested:

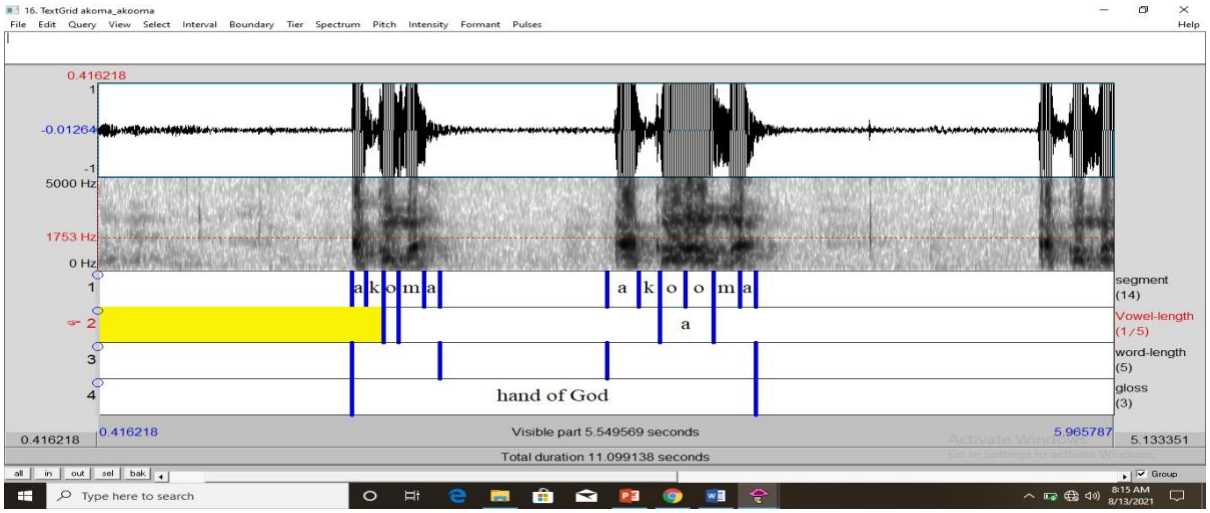
8. A i. **/áká # ɔ́má/ → [ákɔ́má]**
   ii. **/áká # ɔ́má/ → [ákɔ́ɔ́má]**
   hand good 'good hand'
   B i. **/ǫ́né # ídʒè/ → [ǫ́nídʒè]**
   ii. **/ǫ́né # ídʒè/ → [ǫ́níídʒè]**
   person walk 'traveller'
   C i. **/ɛ́kɛ́ # ɔ́gbà/ → [ɛkɔ́gbà]**
   ii. **/ɛ́kɛ́ # ɔ́gbà/ → [ɛkɔ́ɔ́gbà]**
   python big bush '(big) python'
   D i. **Ọ̀zǫ́ + éménà → Ọ̀zééménà → Ọ̀zéménà** 'name of person'
   ii. **Àdá + ọ̀hà → Àdǫ́ọ̀hà → Àdǫ́hà** 'name of person'
   iii. **Ézè + ụ́dụ̀ → Ézụ̀ụ́dụ̀ → Ézụ́dụ̀** 'name of person'

Vowel Length:

9 A i. **[ákɔ́má]**, the vowel duration is 081 msecs
   ii. **[ákɔ́ɔ́má]**, the vowel duration is 293 msecs
   B i. **[ǫ́nídʒè]**, the vowel duration is 083 msecs
   ii. **[ǫ́níídʒè]**, the vowel duration is 216 msecs
   C i. **[ɛkɔ́gbà]**, the vowel duration is 079 msecs
   ii. **[ɛkɔ́ɔ́gbà]**, the vowel duration is 210 msecs
   D i. **[Ọ̀zéménà]**, the vowel duration is 084 msecs
   ii. **[Ọ̀zééménà]**, the vowel duration is 200 msecs
   iii. **[Àdǫ́hà]**, the vowel duration is 123 msecs
   iv. **[Àdǫ́ọ̀hà]**, the vowel duration is 167 msecs
   v. **[Ézụ́dụ̀]**, the vowel duration is113 msecs
   vi. **[Ézụ̀ụ́dụ̀]**, the vowel duration is 194 msecs

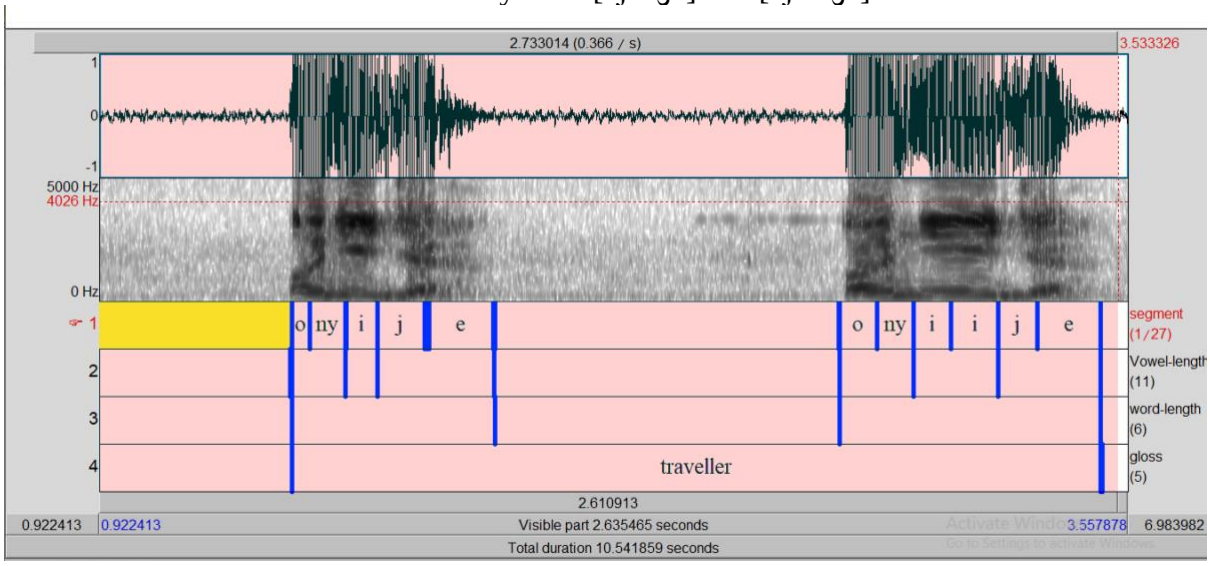
Below are some pictures of the acoustic analysis showing the segments, the length of the vowels tested, length of the words and the glosses:

Picture 1 Praat Picture of acoustic analysis of [ákɔ́má] and [ákɔ́ɔ́má]



The praat picture 1 contains two columns showing the textgrid of [ákɔ́má] and [ákɔ́ɔ́má]. The first column is analysis of [ákɔ́má], and the second column is for [ákɔ́ɔ́má]. The analysis determines the segments that make up the words, the vowel length, and the word length. It also contains the gloss. The picture shows that the duration of [ákɔ́má], which has a single vowel and indicates vowel elision, is 081msecs; and that of [ákɔ́ɔ́má], where there are two vowels of the same quality, is 293 msecs. The duration of [ákɔ́ɔ́má] where there is complete vowel assimilation is more than three time that of [ákɔ́má] with vowel elision.[2]

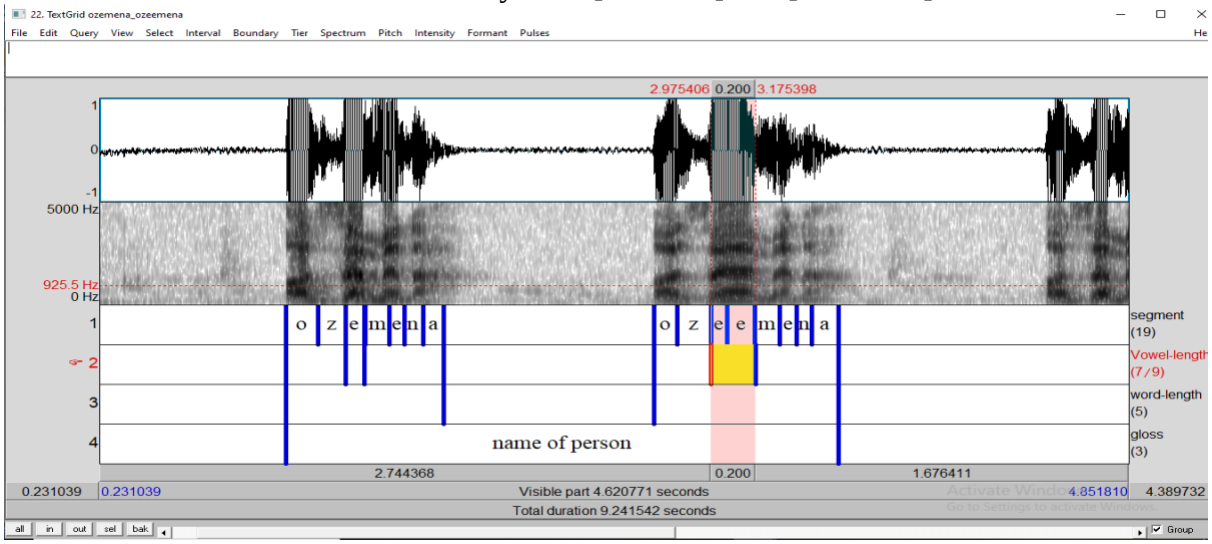
Picture 2 Praat Picture of acoustic analysis of [ọ́ɲídʒè] and [ọ́ɲíídʒè]



In the praat picture 2 is the textgrid analysis of [ọ́ɲídʒè] and [ọ́ɲíídʒè]. Just as in picture 1, the analysis determines the segments that make up the words, the vowel length, and the word length as well as contains the gloss. The duration of [ọ́ɲídʒè] in the first column has its single vowel /i/ realized with a duration 083 msecs, but the duration of [ọ́ɲíídʒè] with two vowels of the same quality is 216 msecs.

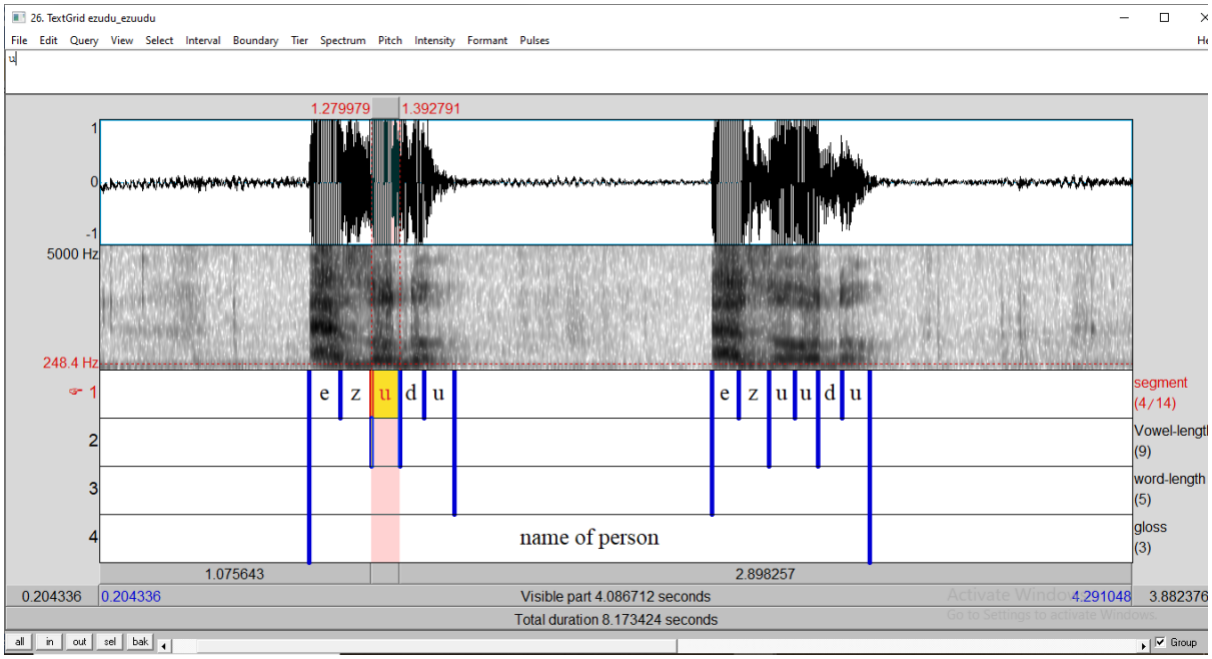
[2]Utterances diachronically involving two vowels at contiguous position in the Igbo language have the adjacent vowels synchronically represented with one vowel in written form and in pronunciation, as are the cases with *di* 'expert' + *ike* 'strength' represented as *dike* 'warrior' and *nwa* 'child' + *oke* 'male' represented as *nwoke* 'male child/man'; they are pure case of vowel elision. However, most often, utterances are orthographically written based on how they are produced (that is, showing the two vowels that are involved in assimilation phonetically), as is seen in *aka èkpè* 'right hand', *ndị ìkòm̀* 'men', *m̀kpọàhà* 'noun', *ndebeolu* 'intonation', *ahāìzùgbe* 'common noun', *ụ̀dàelu* 'high tone', *ụ̀dàumeazu* 'back vowel', *ụ̀dàumēēlu* 'high vowel', *ụ̀dàumēàlà* 'low vowel' (see SPILC 1985, 8, 9, 28).

Picture 3 Praat Picture of acoustic analysis of [ɔ̀zéménà] and [ɔ̀zééménà]



For the praat picture 3, there is the textgrid analysis of [ɔ̀zéménà] and [ɔ̀zééménà]; and the segments that make up the words, the vowel length, and the word length are determined just as in pictures 1 and 2. [ɔ̀zéménà]in the first column has its single vowel /e/ realized with a duration 084 msecs, while [ɔ̀zééménà]with two vowels of the same quality has a duration of 200 msecs.

Picture 4 Praat picture of acoustic analysis of [ézʊ́dɔ̀] and [èzɔ̀ʊ́dɔ̀]



There is the textgrid analysis of [ézʊ́dɔ̀] and [ézɔ̀ʊ́dɔ̀] in the praat picture 4, and the things set out to determine, just as in pictures 1, 2 and 3 are the segments that make up the words, the vowel length, and the word length. The picture also contains the gloss. [ézʊ́dɔ̀] in the first column has its single vowel /ʊ/ realized with a duration 113 msecs, while [ézɔ̀ʊ́dɔ̀] with two vowels of the same quality has a duration of 194 msecs.

Expectation:
The research expected shorter duration of the vowels without assimilation than the duration of the corresponding vowels that resulted in assimilation.

Discovery:
1) There is shorter duration of the vowels without assimilation than the duration of the corresponding vowels that resulted in assimilation.
2) The two vowels involved in the items of the data can be analysed as one vowel completely dropping its features and completely assimilating the features of another vowel, rather than analysing them simply as vowel elision and elongation of the length of the remaining vowel, or the remaining vowel bearing a contour tone.

5. Summary and conclusion

The paper has investigated some claims of the phonological phenomena of elision and assimilation in the Igbo language – through perceptual, theoretical and acoustic analysis. The findings do not confirm the items of data earlier suggested to be instances of elision; instead, they are perceived and realised as complete vowel assimilation where the phonetic features of one vowel are completely assimilated by another vowel, making the vowels to be identical. Having used perceptual and acoustic methods of investigation, supported by autosegmental phonology and government phonology, we have shown that the items suggested as elision in Group I data are actually realised as their corresponding items in Group II. The acoustic analysis clearly shows that the duration of two vowels of the same quality, whether they bear same or different tones, is approximately double the duration of a single vowel of same acoustic features.

From the findings, the study does not align with Omozuwa (2021) that "the generally held assumption that the phenomenon be treated as the total assimilation of V2 by V3 in a V1CV2 # V3CV4 construction in previous studies (cf. Emenanjo 1978; Omozuwa 2006) appears defective" since the investigations support the Igbo data as instances of complete assimilation rather than elision. Therefore, the two vowels involved in the items of the data are better analysed as one vowel completely dropping its features and completely assimilating the features of another vowel, rather than analysing them simply as vowel elision and elongation of the length of the remaining vowel, or the remaining vowel bearing a contour tone.

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