# A Corpus-based Study of Patterns of Triphthong Realisation in Educated Nigerian English

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**Abstract**
The existence of triphthongs in native and non-native English varieties is a controversial topic. Therefore, this paper undertakes a corpus-based study of the patterns of triphthong realisation in educated Nigerian English (NigE) to identify the phonological processes employed in their realisation. Natural phonology has been adopted as a theoretical framework based on its practical application against formal or rule-governed phonological theories. The spoken part of the International Corpus of English (ICE), Nigeria of over 600,000 words provided data for the study. Using AntConc corpus analysis toolkit (version 3.4.4.0), 26 lexical items that contain English triphthong sounds were searched for in the ICE-Nig corpus. Only 20 of the items that occurred ten times and more in the corpus were eventually selected for analysis. These were analysed quantitatively by counting the tokens of occurrence and the number of speakers and converting them to percentages. The findings revealed that triphthongs are variedly realised in NigE, through natural phonological processes of syllabification, diphthongisation and monophthongisation as a 'natural' solution to the general difficulty associated with their pronunciation. This marks NigE as different from RP and validates its peculiarity and uniqueness. The study re-echoes the ongoing clamour for the codification and standardisation of NigE so that it can also occupy its rightful place as a variety of World Englishes.

**Keywords**: Triphthongs, ICE-Nig, syllabification, lenition, Nigerian English, diphthongisation

## 1. Introduction

English was implanted in Nigeria and adopted as the language of administration through British colonisation. Years after independence, it has attained a prestigious status as the language of education, politics, commerce and industry, law, media, entertainment, and so on. Its co-existence with over 500 indigenous Nigerian languages (Blench, 2020) has produced a home-grown variety known as *Nigerian English* (NigE, henceforth), *which* is "simply English the way Nigerians speak and write it" (Okoro, 2004, p. 167). Going by Kachru's (1985) categorisation of World Englishes, Nigeria belongs to the Outer Circle and her English variety is one of the new Englishes (Adetugbo, 2004), which has been integrated into the Nigerian socio-cultural system.

The cultural and linguistic diversity in Nigeria has shaped the NigE variety such that it now "manifests the linguistic (syntactic, semantic, pragmatic and phonological) characteristics of the Nigerian environment (social and physical)" (Alo, 2005, p. 16). Adegbija (2004) refers to the process of rebirth of English to suit the Nigerian environment as the domestication of English in Nigeria. Although Nigeria was colonised by Britain, spoken Nigerian English

uniquely differs from the British English variety and other standard varieties at both segmental and suprasegmental levels (Awonusi, 2009a; Jowitt, 2019).

Notable among the distinguishing features of NigE are the neutralisation of the long-short vowel contrast, as in *seat* /si:t/ rendered as [sit] and *shirt* /ʃɜ:t/ realized as [ʃɛt]; devoicing of final voiced alveolar fricative, as in *bags* /bægz/ uttered as [bags]; and the monophthongisation of diphthongs, as in *away* /əweɪ/ pronounced as [awe] or [ewe] (Adetugbo, 2009; Awonusi, 2009). Specifically, previous studies have expressed divergent views on the realisation of triphthongs in NigE. For instance, Eka (1985) reports that many NigE speakers substitute the middle elements /ɪ/ and /ʊ/ in triphthongs /eɪə/, /aɪə/, /ɔɪə/, and /aʊə/ with a consonantal glides [j] or [w], as in [leja] for *layer* /leɪə/ and [pawa] for *power* /paʊə/. In a similar vein, Simo Bobda (2007) opines that the triphthong sequences are prone to disyllabification in (West) African Englishes through the gliding of the medial high vowels /ɪ/ and /ʊ/ often restructured to /i/ and /u/. Melefa (2019) also finds that some of the television newscasters sampled in his study realised full triphthongs /aɪə/ and /aʊə/ while others did through gliding. On the contrary, other scholars (e.g. Awonusi, 2009a; Josiah & Babatunde, 2011) have posited that triphthongs are hardly uttered in the speech of Nigerian speakers of English.

The controversy surrounding the realisation of triphthongs is not limited to NigE, other standard varieties also have their fair share (Farooq & Mahmood, 2017). For instance, Simo Bobda (2007, p. 414) claims that the concept 'has a low frequency of occurrence in the literature on English phonology', while Chalker and Weiner (1994, p. 407) assert that "there are no triphthongs among the English phonemes" but sounds containing a closing diphthong followed by schwa /ə/ which may be heard in careful articulation of words. Rogerson (2011) also argues that the use of triphthongs in English tends to be unstable and some seem to be disappearing, particularly in standard Southern American English, where *Ireland* /aɪələnd/ and *poor* /pʊə/ are now pronounced as [ɑ:lənd], and [pɔ:] respectively (Gut, 2009). Jowitt (2001) further reports the disappearance of the two possible RP realisation of triphthongs (/aɪə/ and /aʊə/) in favour of diphthongs and claims that the varieties of English that substitute /r/ with the schwa sound do not have triphthongs. This may be due to the challenges involved in the glide movement within the triphthongs which can be difficult to produce and perceive except in careful speech. Often, the middle vowels /ɪ/ or /ʊ/ sound can be hard to distinguish (Jones, 2018).

Given the challenge associated with the realization of triphthongs, studies on triphthongs have received very little attention in both native and non-native settings. While a few studies have reported on the patterns of triphthong pronunciation in Zambia and Zimbabwe (Bobda, 2007; Kadenge, 2009; Kadenge & Mudzingwa, 2011), comprehensive accounts of the realisation of English triphthongs in NigE are very scarce. The few existing studies (Melefa, 2019; Jowitt, 2019) are restricted to only two (/aɪə/, /aʊə/) out of the five triphthongs, which they claim are often glided. Therefore, this study investigates the patterns of triphthong realisation in NigE with a view to determining the phonological processes employed in their pronunciation by NigE speakers. The objectives are to examine various realisations of the English triphthongs in NigE; identify the common variants in NigE; and determine the phonological processes employed in triphthong realisation in NigE.

## 2. The English Triphthongs

The sequences of vowels, known as triphthongs, have received less attention from scholars; perhaps, because of the divergent views on the concept. Different languages have varied number of triphthongs in their speech repertoire. For example, Romanian is said to have two triphthongs while Bernese German, Northern Bavarian, Spanish, and Portuguese have four. The Vietnamese have eight triphthongs (Wells, 1982), while English has five, /aʊə/, /aɪə/, /ɔɪə/, /əʊə/ and /eɪə/. Diphthongs are comprised of any closing diphthong followed by a short vowel schwa /ə/ (Roach, 2010). Katalin and Sizlárd (2006, p. 31) attest that triphthongs are not found in all dialects of English, particularly, those dialects that pronounce all underlying /r/'s (the so-called rhotic dialects).

Jones (2018) asserts that the five English triphthongs are not regarded as English phonemes, but combinations of diphthongs with the schwa /ə/ sound (Gimson, 1980, p. 139). Also aligning with Jones, Rogerson (2011) affirms that some native English-speaking countries like America do not have triphthongs in their vowel systems. In terms of realisation, Roach (2010) claims that diphthongs are difficult to articulate, hence, they are referred to as complex sound formations since they require the configuration of the oral cavity involving the lips and the jaws to assume three shapes during their articulation.

Jones (2018) illustrates the instances in which diphthongs and triphthongs are in free variation in *irate* /aɪə'reɪt/ or /aɪreɪt/, *Irish* /'aɪə.rɪʃ/ or /'aɪrɪʃ/, and *Maori* /'maʊə.ri/ or /'maʊ.ri/. This suggests that triphthong realisation tends to be subjected to certain phonological processes, such as simplification or neutralisation in the native English setting. Gimson (1980) reports such triphthong simplification patterns in RP as involving the deletion of the central element and the lengthening of the first element as follows:

/eɪə/→ [eːə]
/aɪə/→ [aːə]
/ɔɪə/→ [ɔːə]
/ɑʊə/→ [ɑːə] or [ɑː]
/əʊə/→ [əː] = [ɜː]

Similar to what obtains in the native setting, some studies (e.g. Awonusi, 2004; Josiah & Babatunde, 2011) have posited that triphthongs are hardly uttered in the speech of Nigerian speakers of English. Simo Bobda (2007) asserts that some African English accents feature two major phonological processes in simplifying triphthong realisation – monophthongisation and resyllabification through the medial insertion of English glides [j] or [w]. Melefa (2019) reports the presence of two triphthongs /aɪə/ and /aʊə/ in the speech of Nigerian newscasters. According to him, 55% of the study's population produced the full form of triphthong /aɪə/ in *quietly* and *power*, while 45% syllabified the sound as in [aje] and [awa] respectively. Kadenge (2009) submits that Zimbabwean native Shona speakers employ monophthongisation strategy to reduce English triphthongs to five simple monophthongs. Along this line, Chikuta (2018) reports that triphthongs are not present in Zambian languages, hence, the medial elements /ɪ/ and /ʊ/ are substituted with /j/ and /w/ respectively. Corroborating this position, Jowitt (2019) reports that triphthongs are conveniently realised with the aid of /j/ or /w/ insertion in the

Nigerian English accent (NEA). Most often, *player* or *power* becomes two syllables, as in [ple.jə] or [pa.wa], rather than a single syllable with a final-ending triphthong /pleɪə/ or /paʊə/ respectively, perhaps, because they share similar articulatory features - /ʊ/ and /w/ are rounded, while /ɪ/ and /j/ are high and unrounded. Thus, there is hardly a perceptual difference between /ʊ/ and /w/ in rapid speech (Fatunsi, 2007). Considering these divergent views, the present study attempts corpus-based research of the patterns of triphthong realisation in Nigerian English. It is believed that the findings of the study will reveal the phonological processes deployed in triphthong pronunciation in the variety.

## 3. Natural Phonology and Phonological Processes

The study adopts Stampe's (1973) Natural Phonology, further developed by Donegan and Stampe (1979, 1983, 2004, 2009). The cause of Natural Phonology (NP) as a theory that naturally reflects on the needs, abilities, and situations of language users was advocated by Donegan and Stampe (1979, p. 6). The theory sees the phoneme as "an underlying *intention* shared by the speaker and the listener" which guarantees meaningful communication between the duo within a given language, even if the real pronunciation differs significantly from what is intended (Dziubalska-Kolaczyk, 2007). Hence, it is viewed as a functional and performance-based theory (Balas, 2009; Nathan, 2014) that projects natural (innate) processes in the light that natural classes of sounds are innate mechanisms employed for articulatory and perceptual purposes. NP theory relies on phonological processes the humans' vocal and perceptual systems employed as the natural responses to the challenges that come with producing and understanding speech. Donegan and Stampe (2009, p. 6) remark:

> phonological processes, as opposed to conventional rules, are natural responses to limitations of the unpracticed human speech capacity, limitations that can be overcome in learning a language if the language requires it, but which otherwise remain as the true phonology of the language.

Such processes, which may be occasioned by dialectal or accentual variation, natural implications of flowing speech, articulatory economy, the presence of aerodynamic principles in the vocal tract, or a group of speakers' peculiar language use, can occur at the level of a sound segment, syllable, word, or sentence. The adherents of NP, therefore, state that phonological processes are not learned or acquired by language speakers (Bruck, Fox & Galy, 1974), but depict subconscious mental substitutions of one sound or class of sounds for another as a natural response to the seemingly difficult sounds. The natural phonological processes comprise fortition and lenition. Language users employ the fortition processes to modify phonemes in contrast to their environments in a bid to enhance perceptual clarity and distinctiveness of linguistic forms while they use lenition processes to vary phonemes to fit their environments to amplify the ease of articulations so that the vocal apparatus will do less work (Donegan & Stampe, 1979). Fortition processes include dissimilations, diphthongisations, syllabifications and epenthesis, whereas lenitions entail assimilations, monophthongisations, disyllabification, reductions, and deletions.

Studies (e.g., Bobda, 2007; Gimson, 1969; Gut, 2009; Jowitt, 2019) have revealed that triphthongs are generally simplified through diphthongisation, monophthongisation or syllabification. Diphthongisation and monophthongisation are described as types of elision (the omission of a vowel sound in a sequence of sounds) that involves the loss of the second element of a prevocalic triphthong or diphthong reduced to a diphthong or a monophthong as the case may be. For instance, /eɪ/ of *chaos* /keɪɒs/ becomes [e] and is pronounced as [keɒs] (Hannisdal, 2006). It illustrates a dynamic phonological development within the RP's centering feature and the ongoing sound change process, allowing a variational speech process. Dinkin (2011) states that the diphthongisation of monophthong /æ/ in *h**a**nd* and *c**a**t* as in [hɛənd] and [kɪət] respectively is prominent in Northern Cities Shift, likewise the monophthongisation of diphthong /ʊə/ and triphthong /aɪə/ in *poor* and *fire* as in [pɔ:] and [fa:] respectively (Gut, 2009). Other triphthongs /eɪə/, /ɔɪə/, and /əʊə/ are diphthongised or monophthongised to [eə], [ɔə] and [ɜ:] as in *player* [pleə], *lawyer* [lɔə], *mower* [mɜ:], and [tɑ:] as either *tar*, *tyre* or *tower* respectively (Brown, 1990; Gimson, 1969; Wells, 1982).

Also, some English diphthongs and triphthongs are prone to syllabification processes via the insertion of /j/ and /w/. Gut (2009, p.66) reports the differences between the transcription symbols of the International Phonetic Association (IPA) and the Northern American (NA) tradition. According to her, the IPA diphthongs /aɪ, ɔɪ, eɪ, aʊ, oʊ/ are transcribed in the NA tradition as /aj, oj, ej, aw, ow/ respectively; hence, the syllabification of the medial elements /ɪ/ and /ʊ/ into [j] and [w] in most African English accents (Bobda, 2007). Jowitt (2019) attests to this position that monosyllabic items, such as *fire* /faɪə/ and *power* /paʊə/ are syllabified as ['fa.ja] and ['pa.wa] respectively in the Nigerian English accent. This is also confirmed by Melefa (2019) who reports that 45% of his sampled newscasters articulated triphthongs [aje] in *quiet* and [awa] in *power*. It is worth mentioning that existing studies on triphthongs in NigE have only focused on two out of the five English triphthongs. Thus, the present study conducts a corpus-based investigation on patterns of the five triphthongs in Nigerian English.

## 4. Research Method

The data for this study were sourced from the International Corpus of English, Nigeria (ICE-Nig), which contains 1,010,382 words, comprising (609,586) spoken and (400,796) written NigE usage. The corpus was compiled between 2014 and 2017 at the Universities of Augsburg and Münster (Gut, 2014) as part of the International Corpus of English project founded by Greenbaum and associates in 1990 (Unuabonah & Gut, 2018). The text samples were provided by Nigerian males and females of different age groups, who have been educated in Nigeria through English from primary to, at least, the end of secondary school. They include clergy, medical practitioners, university lecturers, teachers and students, media practitioners, sports analysts and commentators, politicians, lawyers, judges, and technocrats. Preference for these groups of respondents as the sampled population for this study is based on their recognition as suitable candidates for the codification of NigE (Gut, 2012). All the fourteen text files of the spoken categories of ICE-Nig, comprising formal, semi-formal, and informal texts, which include broadcast discussion, broadcast news, broadcast talks, non-broadcast talks, commentaries, conversations, demonstrations, parliamentary, unscripted speeches, among

others were painstakingly listened to. Table 1 illustrates the data types in the spoken part of the corpus and the total number of files and words contained in each of the texts.

**Table 1. Text types in the spoken part of ICE-Nig (ICE-Nig, 2014)**

| S/No. | Text type | Total No. of files | File Name | No. of Words |
|---|---|---|---|---|
| 1. | Broadcast discussion | 26 | bdis_01 – 26 | 40,290 |
| 2. | Broadcast interview | 10 | bint_01 – 10 | 20,356 |
| 3. | Broadcast news | 40 | bnew_01 – 40 | 40,916 |
| 4. | Broadcast talk | 45 | btal_01 – 43 | 40,138 |
| 5. | Business transactions | 11 | btr_01 – 11 | 20,732 |
| 6. | Class lessons | 14 | les_ 01 – 14 | 41,394 |
| 7. | Commentaries | 56 | com_01 – 56 | 40,770 |
| 8. | Conversations | 69 | con_01 – 67 | 180,789 |
| 9. | Cross examinations | 11 | cr_01 – 10 | 20,486 |
| 10. | Demonstrations | 14 | dem_01 – 14 | 20,594 |
| 11. | Legal presentations | 14 | leg_01 – 14 | 20,481 |
| 12. | Non-broadcast talks | 10 | nbtal_01 – 10 | 20,156 |
| 13. | Parliamentary debates | 20 | parl_01 – 20 | 20,161 |
| 14. | Phone calls | 7 | ph_01 – 07 | 20,624 |
| | Unscripted speeches | 51 | unsp_01 - 50 | 61,699 |
| **Total** | | **403** | | **609,586** |

Twenty-seven lexical items containing the five groups of Standard English triphthongs /aɪə, əʊə, aʊə, ɔɪə, eɪə/ were sourced from Jones' (2018) *Cambridge English Pronouncing Dictionary* (CEPD). Using AntConc corpus analysis toolkit version 3.4.4.0 (provide citation for AntConc), the lexical items were searched in ICE-Nig. For a well-balanced representation of each lexical item: twenty items that occurred ten times and more were eventually selected for analysis. Table 2 illustrates, in alphabetical order, the list of lexical items used for the analyses.

**Table 2: Lexical Items Studied**

| S/N | Lexical item | S/N | Lexical item |
|---|---|---|---|
| 1 | empowered | 11. | player(s) |
| 2 | fire(d) | 12. | Power |
| 3 | Flour | 13. | Powers |
| 4 | flower/flowers | 14. | Prayer |
| 5 | Higher | 15. | Retired |
| 6 | Hour | 16. | Royal |
| 7 | Hours | 17. | Tired |
| 8 | Ireland | 18. | Trial |
| 9 | Lawyer | 19. | vowel/ vowels |
| 10 | Lower | 20. | wire/wires/wiring |

The respondents' articulations of tripthongs in the lexical items were subjected to perceptual analysis. The authors who are Nigerian speakers of English independently listened to the relevant audio clips of each word in ICE-Nig several times to determine the variants pronounced. Their findings were compared and disputable pronunciations were resolved. Jones' (2018) CEPD model was employed for the native English pronunciation variants while Jowitt's (2019) phonemic model of NigE accent was adopted for the NigE phonemic representations. The data were analysed quantitatively by counting the tokens of occurrence of each variant and speaker and converting them to percentages.

Two levels of calculation were carried out. First, the sum of each variant of a triphthong sound was calculated as a percentage of the total sum of occurrences of the lexical item in the corpus; and second, the number of speakers who produced each sound was also calculated as a percentage of the total number of speakers who articulated the lexical item. The pattern of realisation of each triphthong sound was also noted. Therefore, the variant with the higher (or highest) percentage of occurrences and the higher (or highest) number of speakers were regarded as the preferred, while the pattern with the highest total number of occurrences was taken as the dominant pattern of triphthong realisation. This is statistically represented in Figure 1.

$$\frac{Sum\ of\ variant}{Total\ sum\ of\ occurences\ of\ a\ lexical\ item} x\ 100$$

$$\frac{No\ of\ speakers\ of\ a\ variant}{Total\ No\ of\ speakers\ of\ a\ lexical\ item} x\ 100$$

**Figure 1. A statistical representation of preferred variants**

## 5. Findings

This section presents the findings of the analyses of different realisations of the five () English triphthongs /aɪə, aʊə, eɪə, ɔɪə, əʊə/ in NigE. The British and American English pronunciation variants and the NigE speakers' variants are presented in the order of preference in the tables.

***Realisation of /aɪə/ in Nigerian English***

Table 3 shows the varied realisations of triphthong /aɪə/ in seven items, such as *fire*, *Ireland*, *higher*, *retire*, *tire*, *trial*, and *wire*.

**Table 3.** Realisation of /aɪə/ in NigE

| **Lexical items & variants** | **No. of occurrences** | **%** | **No. of speakers** | **%** |
|---|---|---|---|---|
| F**i**re | | | | |
| /aɪə/ [aja] | 53 | 93 | 18 | 82 |
| [a:] | 2 | 3.5 | 2 | 9 |
| [aiə] | 1 | 1.8 | 1 | 4.5 |
| [ajə] | 1 | 1.7 | 1 | 4.5 |
| **Total** | **57** | **100** | **22** | **100** |
| **I**reland | | | | |
| /aɪə/ [ai] | 31 | 96.9 | 4 | 80 |
| [ari] | 1 | 3.1 | 1 | 20 |
| **Total** | **32** | **100** | **5** | **100** |
| h**i**gher | | | | |
| /aɪə/ [aiə] | 19 | 57.5 | 14 | 53.8 |
| [ajə] | 10 | 30.3 | 8 | 30.8 |
| [aə] | 2 | 6.1 | 2 | 7.7 |
| [aja] | 2 | 6.1 | 2 | 7.7 |
| **Total** | **33** | **100** | **26** | **100** |
| ret**i**re(d) | | | | |
| /aɪə/ [aə] | 25 | 62.5 | 11 | 73.3 |
| [aja] | 12 | 30 | 3 | 20 |
| [ɛja] | 3 | 7.5 | 1 | 6.7 |
| **Total** | **40** | **100** | **15** | **100** |
| tr**i**al(s) | | | | |
| /aɪə/ [aiə] | 27 | 56.3 | 17 | 68 |
| [aə] | 18 | 37.5 | 6 | 24 |
| [ajə] | 3 | 6.2 | 2 | 8 |
| **Total** | **48** | **100** | **25** | **100** |
| **Ti**red | | | | |
| /aɪə/ [aja] | 13 | 41.9 | 6 | 33 |
| [ajə] | 9 | 29 | 5 | 28 |

| | | | | |
|---|---|---|---|---|
| [aiə] | 5 | 16.1 | 4 | 22 |
| [aə] | 4 | 13 | 3 | 17 |
| **Total** | **31** | **100** | **18** | **100** |
| W**i**re | | | | |
| /aɪə/ [aja] | 14 | 78 | 3 | 50 |
| [ajə] | 3 | 17 | 2 | 33.3 |
| [aə] | 1 | 5 | 1 | 16.7 |
| **Total** | **18** | **100** | **6** | **100** |

As illustrated in Table 3, the triphthong /aɪə/ ass variably realised as [aja], [a:], [aiə], [ajə], [ai], [ari], [ae], and [ɛja] in all the lexical items. In ***fire***, [aja] had the highest frequency with 82% of speakers in 93% of all cases, while in ***Ireland***, 80% of speakers in 96.9% of all instances preferred [ai]. The diphthong [aiə] had the highest realisation in ***higher*** with 53.8% of speakers in 57.5% of all tokens. In *retired*, 73.3% of speakers in 62.5% of all cases favoured [aə]. The item *trial* was produced by most speakers, that is, 68% of speakers in 56.3% of all tokens, as [aiə]. In *tired*, the variant [aja] was preferred by 33% of speakers in 41.9% of all cases. Also in *wire*, the variant [aja] was favoured by 50% of speakers in 78% of all instances. The results suggest that the variant /aja/ was more pronounced in all the items containing the diphthong /aɪə/.

***Realisation of /aʊə/ in Nigerian English***

This section reveals the different pronunciations of triphthong /aʊə/ in six items such as *empower, flour, flower(s), hours, power(s),* and *vowel(s).*

**Table 4. Realisation of /aʊə/ in NigE**

| Lexical items & variants | No. of occurrences | % | No. of speakers | % |
|---|---|---|---|---|
| emp**ower**ed | | | | |
| /aʊə/ [awa] | 10 | 62.5 | 3 | 42.8 |
| [awə] | 4 | 25 | 2 | 28.6 |
| [a:] | 2 | 12.5 | 2 | 28.6 |
| **Total** | **16** | **100** | **7** | **100** |
| Fl**our** | | | | |
| /aʊə/ [awa] | 14 | 70 | 4 | 80 |
| [a:] | 6 | 30 | 1 | 20 |
| **Total** | **20** | **100** | **5** | **100** |
| fl**ower**(s) | | | | |
| /aʊə/ [awa] | 7 | 53.8 | 3 | 50 |
| [aʊə] | 5 | 38.5 | 2 | 33.3 |
| [a:] | 1 | 7.7 | 1 | 16.7 |

| | | | | |
|---|---|---|---|---|
| **Total** | **13** | **100** | **6** | **100** |
| h**our**(s) | | | | |
| /aʊə/ [a:] | 35 | 43.2 | 21 | 51.2 |
| [awa] | 28 | 34.6 | 16 | 39 |
| [aə] | 18 | 22.2 | 4 | 9.8 |
| **Total** | **81** | **100** | **41** | **100** |
| p**ower**(s) | | | | |
| /aʊə/ [a:] | 142 | 58.2 | 60 | 56.1 |
| [awa] | 102 | 41.8 | 47 | 43.9 |
| **Total** | **244** | **100** | **107** | **100** |
| v**owe**l(s) | | | | |
| /aʊə/ [aʊə] | 14 | 87.5 | 2 | 66.7 |
| [awɛ] | 2 | 12.5 | 1 | 33.3 |
| **Total** | **16** | **100** | 3 | **100** |

In Table 4, findings reveal that the participants realised the diphthong [aʊə] in different items as [awa], [awə], [a:], [aʊə] and [aə]. Specifically, 42.8% of speakers preferred [awa] in 62.5% of all cases of *empower*, 80% and 50% of speakers favoured the same variant in 70% and 53.8% of all occurrences of *fl**our*** and *fl**ower*** respectively. The sound [a:] had the highest rate of production with 51.2% of speakers in 43.2% of all cases in *hour*, 56.1% of speakers in 58.2% of all instances in *power*. In the item *vowel*, 66.7% of speakers dominantly realised the triphthong [aʊə] in 87.5% of all the cases. Generally, the results suggest that many educated NigE speakers pronounce /aʊə/ as /a:/.

***Realisation of* /eɪə/ *in Nigerian English***

This subsection shows the realisation of the triphthong /eɪə/ in two items *pl**ayer*** and *pr**ayer***.

**Table 5. Realisation of /eɪə/ in NigE**

| Lexical items & variants | No. of occurrences | % | No. of speakers | % |
|---|---|---|---|---|
| pl**ayer** | | | | |
| /eɪə/ [eə] | 60 | 52.6 | 21 | 46.7 |
| [ɛə] | 29 | 25.4 | 14 | 31.1 |
| [eja] | 25 | 22 | 10 | 22.2 |
| **Total** | 114 | **100** | **45** | **100** |
| pr**ayer** | | | | |
| /eɪə/ [eja] | 50 | 50.5 | 25 | 53 |
| [ea] | 20 | 20.2 | 10 | 21 |
| [eə] | 16 | 16.2 | 6 | 13 |
| [ɛ:] | 13 | 13.1 | 6 | 13 |
| **Total** | **99** | **100** | **47** | **100** |

Table 5 shows that the diphthong /eɪə/ had variants [eja], [ea], [eə], [ɛə], and [ɛ:] in NigE. In item *pl**ayer***, 46.7% of speakers preferred [eə] in 52.6% of all instances, while the variant [eja] is the most common in *prayer* with 53% of speakers in 50% of all instances. The results imply that the triphthong /eɪə/ has two competing variants [eə] and [eja] in NigE.

***Realisation of /ɔɪə/ in Nigerian English***

This section discusses the educated NigE speakers' pronunciation of triphthong /ɔɪə/ in items *l**awyer*** and *r**oyal***.

**Table 6. Realisation of /ɔɪə/ in Nigerian English**

| Lexical items & variants | No. of occurrences | % | No. of speakers | % |
|---|---|---|---|---|
| la**wyer**(s) | | | | |
| /ɔɪə/ [ɔa] | 70 | 76.9 | 23 | 63.9 |
| [ɔja] | 13 | 14.3 | 7 | 19.4 |
| [ɔia] | 8 | 8.8 | 6 | 16.7 |
| **Total** | **91** | **100** | **36** | **100** |
| Ro**yal** | | | | |
| /ɔɪə/ [oja] | 5 | 45.4 | 5 | 62.5 |
| [ɔj] | 3 | 27.3 | 2 | 25 |
| [ɔɪə] | 3 | 27.3 | 1 | 12.5 |
| **Total** | **11** | **100** | **8** | **100** |

The results in Table 6 show that diphthong /ɔɪə/ was variably realised as [ɔa], [oja], [ɔja], [ɔj] and [ɔɪə]. In item *l**awyer***, variant [ɔa] was the most pronounced with 63.9% of speakers in 76.9% of all cases, while [oja] was preferred by 62.5% of speakers in 45.4% of all instances of *r**oya**l* produced.

***Realisation of /əʊə/ in Nigerian English***

The section presents the NigE speakers' realisation of the triphthong /əʊə/ in one item (*l**ower***) as.

**Table 7. Realisation of /əʊə/ in Nigerian English**

| Lexical items & variants | No. of occurrences | % | No. of speakers | % |
|---|---|---|---|---|
| Lo**wer** | | | | |
| /əʊə/ [oa] | 38 | 73.1 | 13 | 61.9 |
| [owa] | 14 | 26.9 | 8 | 38.1 |
| **Total** | **52** | **100** | **21** | **100** |

Table 7 shows that the item ***lower*** has two variants [oa] and [owa]. The variant [oa] is dominantly pronounced by 61.9% of speakers in 73.1% of all cases. This suggests that many of the respondents do not favour the glided variant.

**Frequencies of NigE variants of English triphthongs**

This section presents the occurrence rates of the NigE variants of the five triphthongs.

**Table 8. The Frequency of Variants of English Triphthongs in Nigerian English**

| Lexical items & variants | No. of occurrences | % | No. of speakers | % |
|---|---|---|---|---|
| /aɪə/ [aja] | 94 | 36.3 | 32 | 27 |
| [aiə] | 52 | 20.1 | 36 | 31 |
| [aə] | 50 | 19.3 | 23 | 20 |
| [ai] | 31 | 12 | 4 | 3 |
| [ajə] | 26 | 10 | 18 | 15 |
| [ɛja] | 3 | 1.2 | 1 | 1 |
| [a:] | 2 | 0.7 | 2 | 2 |
| [ari] | 1 | 0.4 | 1 | 1 |
| **Total** | **259** | **100** | **117** | **100** |
| /aʊə/ [a:] | 186 | 47.7 | 85 | 50.3 |
| [awa] | 161 | 41.3 | 73 | 43.2 |
| [aʊə] | 19 | 4.9 | 4 | 2.4 |
| [aə] | 18 | 4.6 | 4 | 2.4 |
| [awə] | 4 | 1 | 2 | 1.2 |
| [awɛ] | 2 | 0.5 | 1 | 1 |
| **Total** | **390** | **100** | **169** | **100** |
| /eɪə/ [eə] | 76 | 35.7 | 21 | 23 |
| [eja] | 75 | 35.2 | 35 | 38 |
| [ɛə] | 29 | 13.6 | 20 | 22 |
| [ea] | 20 | 9.4 | 10 | 11 |
| [ɛ:] | 13 | 6.1 | 6 | 6 |
| **Total** | **213** | **100** | **92** | **100** |
| /ɔɪə/ [ɔa] | 70 | 68 | 23 | 52 |
| [ɔja] | 13 | 13 | 7 | 16 |
| [ɔia] | 8 | 8 | 6 | 14 |
| [oja] | 5 | 5 | 5 | 11 |
| [ɔj] | 3 | 3 | 2 | 5 |
| [ɔiə] | 3 | 3 | 1 | 2 |
| **Total** | **102** | **100** | **44** | **100** |
| /əʊə/ [oa] | 38 | 73.1 | 13 | 62 |
| [owa] | 14 | 26.9 | 8 | 38 |
| **Total** | **52** | **100** | **21** | **100** |

The findings show that the English triphthongs /aɪə/, /aʊə/, /eɪə/, /ɔɪə/, and /əʊə/ are variably realised in NigE. According to Table 8, /aɪə/ has eight possible variants, out of which [aja] is the most common variant. In triphthong /aʊə/, the variant [a:], is the most preferred of the six variants. The triphthong /eɪə/ has five variants, with [eə] as the preferred variant. There are six different realisations for /ɔɪə/, out of which the variant [ɔa] is dominant. Out of the two variants of /əʊə/, the variant [oa] is favoured. Following these findings, the patterns of diphthong realisation in educated Nigerian English can be represented as follows:

/aɪə/ → [aja] generally, with [aiə] and [aə] as variants in some words
/aʊə/ → [a:]and [awa] commonly in variation
/eɪə/ → [eə] and [eja] as variants
/ɔɪə/ → [ɔa] generally
/əʊə/ → [oa] generally

**Phonological Processes employed in the realisation of English triphthongs in NigE**

In this section, the NigE variants of the five English triphthongs are categorised according to Natural Phonology phonological processes: fortition and lenition, which are germane to the study.

**Table 9. Natural phonological processes employed in the realisation of NigE triphthongs**

| English triphthongs | Phonological processes/No. of tokens | | | | Total |
|---|---|---|---|---|---|
| | Fortition | | Lenition | Triphthongi-sation | |
| | Diphthongi-sation | Syllabifi-cation | Monophthongi-sation | | |
| /aɪə/ | [ai] 81 | [aja] 124 | [a:] 2 | [aɪə] 52 | 259 |
| /aʊə/ | [aə]18 | [awa] 167 | [a:] 186 | [aʊə] 19 | 390 |
| /eɪə/ | [eə] 125 | [eja] 75 | [ɛ:] 13 | - | 213 |
| /ɔɪə/ | [ɔa] 70 | [ɔja] 21 | - | [ɔia] 11 | 102 |
| /əʊə/ | [oa] 38 | [owa] 14 | - | - | 52 |
| **Total** | **332** | **401** | **201** | **82** | **1016** |
| **%** | **33** | **39** | **20** | **8** | **100** |

The results presented in Table 9 indicate that educated NigE speakers deployed lenition and fortition natural phonological processes in realising the English triphthongs. Specifically, fortition processes of diphthongisation and syllabification occurred in 33% and 39% respectively of all instances, while the lenition process of monophthongisation was engaged in 20% of all cases. The respondents rendered only a few instances (8%) of triphthongs. This implies that, as observed in previous studies (Jowitt, 2019; Simo Bobda, 2007), syllabification is the most common process employed by NigE speakers, followed by diphthongisation.

For instance, the monosyllabic items *fire* /faɪə/ and *power* /paʊə/ became disyllabic, as in ['fa.ja] and ['pa.wa] through the /j/ and /w/ insertion which replace the medial elements /ɪ/

and /ʊ/ respectively. Also, all the English triphthongs contain a diphthongised variant. For instance, the /aɪə/ in *Ireland* and *fire*, that is, /aɪələnd/ and /faɪə/, were uttered as [ai] and [aə] respectively, and the /eɪə/ in *player* was articulated as [eə] in [pleə], as reported by Jowitt (2019). Likewise, in line with Adetugbo (2009) and Awonusi (2009), the first two of the vowel sequences in *lower* and *lawyer*, that is /əʊə/ and /ɔɪə/, were reduced to [o] and [ɔ], as in [loa] and [ɔa] respectively.

## 6. Discussion

Aside from expressing divergent views on the articulation of English triphthongs in NigE, previous studies (e.g. Awonusi, 2009; Josiah & Babatunde, 2011; Jowitt, 2019; Melefa, 2019; SimoBobda, 2007) have either focused on only two out of the five triphthongs or claim that triphthongs are not realised in NigE. Therefore, this study set out to investigate the patterns of triphthong pronunciation in NigE Nigerian English with the objectives of identifying their various realisations and the common variants, as well as determining the phonological processes employed in their realisation.

Regarding the first objective, findings have shown that NigE speakers dominantly varied the realisation of each triphthong. Specifically, /aɪə/ has eight possible variants [aja, aiə, aə, ai, ajə, ɛja, a:. ari]; /aʊə/ contains six [a:, awa, aʊə, aə, awə, awɛ]; /ɔɪə/ also has six [ɔa, ɔja, ɔia, oja, ɔj, ɔiə]; /eɪə/ has five [eə, eja, ɛə, ea, ɛ:]; while /əʊə/ contains only 2 [oa, owa]. This suggests that, like in RP, triphthongs are variably realised in educated NigE. It is worth noting that, in spite of the variable realisation, the full forms of some triphthongs were still heard in the speech of some NigE speakers, though not common. Besides confirming the triphthongs /aɪə/ and /aʊə/, which Melefa (2019) claims exist in NigE, this study has also established the existence of /ɔɪə/. The triphthong /aɪə/ was articulated in *trial* [traɪəl], /aʊə/ in *vowel* [vaʊəl], and /ɔɪə/ in *lawyer* [lɔɪə]. They were produced by acrolectal speakers such as trained newscasters, vice chancellors, and sports commentators, among others.

Concerning the common variants of English triphthongs in NigE, the results reveal that, in lexical items that contain trphthong /aɪə/, the glided variant [aja] is commonly heard with [aiə] and [aə] as variants in some words, while [a:] and [awa] are generally produced in /aʊə/. In words with the triphthong /eɪə/, [eə] and [eja] are commonly articulated, while [ɔa] and [oa] are widespread in /ɔɪə/ and /əʊə/ respectively. This shows that some of the commonly produced variants (e.g. [eə] *player*, [a:] *power*]) correlate with the RP forms (Brown, 1990; Gimson, 1969; Wells, 1982), while others show peculiar simplification patterns (e.g. [aja] *fire*, [oa] *lower*] in tandem with other African English accents (Gut, 2009; Simo Bobda, 2007). Specifically, three of the English triphthongs are monophthongised by the respondents: /aɪə/, /eɪə/ and /aʊə/ occur as [a:] in *fire* [fa:], *empower* [impa:], *flour*, *flower* [fla:], hours [ha:s], and *power* [pa:]. This suggests that sound change which Gut (2009) observes has resulted in monophthongisation of triphthongs /aɪə/ and /aʊə/ in the native English climes is becoming evident in NigE.

The last objective relates to the phonological processes employed by NigE speakers in realising English triphthongs. Findings show that the fortition and lenition processes of the natural phonology theory are deployed. The report demonstrates more of the fortition processes of diphthongisation and syllabification, and some instances of the lenition process of

monophthongisation. This implies that, contrary to Simo Bobda's (2007) claim that diphthongs are disyllabified through gliding in West African Englishes, they are also commonly diphthongized and monophthongised. Diphthongisation and syllabification processes are employed to enhance perceptual clarity and distinctiveness of lexical items, while monophthongisation is adopted for ease of articulation. These are a natural response (Stampe & Donegan, 1979) to the inherent difficulty in articulating and perceiving triphthongs by non-native speakers (Farooq & Mahmood, 2018).

## 7. Conclusion

This study set out to conduct a corpus-based analysis of patterns of triphthong realisation in NigE. The results have shown that triphthongs are variedly pronounced in NigE, utilising natural phonological processes of syllabification, diphthongisation and monophthongisation for ease of articulation (Stampe & Donegan, 1979) and speakers' conveniences (Jowitt, 2019), which justifies the adoption of natural phonology as the theoretical framework for this study. Notwithstanding the simplification of the triphthongs, some of the variants correlate with the RP forms while a few acrolectal speakers adopted the full forms of some of them, but not widespread.

Overall, however, it is obvious that NigE speakers have devised 'natural' solutions to the general difficulty associated with triphthong realisation, which validates the prediction of Natural Phonology that second-language users naturally respond to the challenges encountered in second-language usage by substituting easier sounds for those absent in their phonemic inventory. And as Bamgbose (1998, p. 8) opines, 'phonological systems need not be identical, for they are not even identical in native varieties of English.' Hence, these peculiar NigE features, for instance, the substitution of /ɪ/ and /ʊ/ with glides [j] and [w], do not render the NigE an error or sub-standard, but validate its peculiarity and uniqueness as a syllable-timed variety. It is, rather, an indigenised variety that is mutually, internationally intelligible, and socially-acceptable (Olaniyi, 2020, Jowitt, 2019, Ugorji, 2010). On this note, the present study joins its voice to the existing clamour for the codification and standardisation of NigE so that it can also occupy its place in world Englishes.

Having observed that so many English lexical items that contain triphthongs were not found in ICE-Nig and some with fewer occurrences could not be considered, this study therefore recommends a field-based investigation that would address the constraint and examine the sociophonetic variation of patterns of triphthong realisation in NigE.

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