Sapientia Global Journal of Arts, Humanities and Development Studies (SGOJAHDS), Vol.3 No.4 December, 2020; p.g. 271 – 284; ISSN: 2695-2319 (Print); ISSN: 2695-2327 (Online)

A MINIMALIST CONTRASTIVE DISTRIBUTION OF INTONATIONAL PHONOLOGY OF ENGLISH AND TONAL PHONOLOGY OF IGBO

EGONU NGOZI GRACE (PhD)
Department of Languages and Humanities
School of General Studies
Alvan Ikoku Federal College of Education Owerri,
Imo State, Nigeria
E-mail: ngoziegonumummy@gmail.com
Tel: +2348060122534

Abstract

Today, the education of the African child is not completely based on foreign language of English, French or Portuguese. The indigenous language is used today from Primary to University level as language of instruction, communication and practice. The researcher uses descriptive survey method in the collection and analysis of primary and secondary sources of data. The study attempts to: (i) Identify contrastive distribution in intonational phonology of English and tonal phonology of the Igbo language. (ii) Identify their features based on minimalist framework analysis.(iii) Examine their nature, examples, status, behaviour and qualities of intonational and tonal languages. The study examines the factors of contrastive distributions in the Igbo and English languages for communication and education. This in the past has affected the Igbo children in all walks of life. Hence the researcher is understudying the phonology of the two languages. The framework of Chomsky's (Principles and Parameters) Government and Binding (GB) theory of Universal Grammar (1995) is used in this study. Findings show that English uses phoneme (segments) and supra-segmental-stress and intonation in generating minimal pairs. On the other hand Igbo generates minimal pairs through phoneme (segments) and supra-segmental – tone. The minimal pairs generated are seen as building blocks for contrastive distribution in tonal and intonational phonology. The researcher finds out that minimal pairs in minimalist contrastive distribution are valid to the study of Igbo phonology. The study will also serve as reference material for further phonological analysis to tonal and intonational research oriented scholars.

Keywords: Igbo language-tonal, English language-intonational, minimal pair, supra-segmental, phonology.

Introduction

No language has all the speech sounds possible in human languages. Each language has its own pattern of speech sounds called phonemes. This study is prompted by the fact that there is the problem of inter-lingual interference in speech in the study of English and Igbo languages. What inspired the study is to discover how phonemes and supra-segmental phonemes (tone, intonation, stress etc) form minimal pairs in English and Igbo and for speakers to have phonological understanding of these languages. It is aimed at providing additional evidence apart from what earlier researchers have done. The minimalist theory is used different from what earlier researchers used in the past. Minimalism is an organic development of previous research programme of Chomsky about the development of the

Principles and Parameters (P & P) model. Some of the earlier researchers do not agree on some of the phonological processes as factors that result in minimal pair. The study provides additional evidence to aid the general definitions and view of minimal phonemic and phonetic difference capable of causing meaning contrast. The researcher observes that inventories of languages and factors resulting in minimal pairs differ.

In this paper, to identify peculiar sound features, the following symbols are used-superscript /h/ is used for aspiration, the tilde diacritic mark /~/ is used for nasalisation, /w/ is used for labialisation, while /j/ is used for palatalisation. The three tone marks in Igbo –the acute rising mark (/) for high, grave falling mark (\) for low and a raised macron (-) for the downstep are also used.

Background

This study has produced many interesting observations and theoretical treatment of tonal and intonational English and Igbo languages. The study of linguistic minimalism is based on the scientific foundation in the Government and Binding (Principles and Parameters) framework. Chomsky's idea is a propelling force in phonological analysis of languages. The Minimalist theory of Chomsky (1995) for linguistics is motivated by the desire to minimize the acquisition burden placed on the child, thereby minimizing the learning ability of natural language grammars. In this latest exposition, Azubuike (2007:11) affirms that Chomsky strives at presenting "economy where minimal rule will achieve maximal results". Grammar is also based on rules. It is objective and needs no context unlike language and human conversation that are context-dependent.

Statement of Problem

The problem of this study is to find out the factors that generate minimal pairs in intonational and tonal languages of English and Igbo. The researcher realizes that Igbo minimal pair has not been investigated using the minimalist theory in contrastive distribution in the past. Though there are a few studies on this, the study uses the minimalist theory in solving the nagging problem of inter-lingual interference of English and Igbo..

Purpose of study

The aim of this study is to (i) find out the phonological system of several languages in GB framework; though Green and Igwe (1963), Emenanjo (1978), Nwachukwu (1995a). Oluikpe (1979), Mbah (2010:149) and Nkamigbo (2011) had worked on Igbo phonology, (ii) establish and analyse contrastive distribution of intonational and tonal phonology (including English an European language and Igbo, a Niger Congo language) (iii) find out minimal pair in these languages in GB framework using Igbo language and English as examples to identify their properties and phonological processes. Igbo is heavily aspirated, nasalised, palatalised and labialised.

Methodology

The researcher uses primary sources in the generation of data basically from elicitation and introspection and the use of secondary sources as well. It is purely descriptive analytical research method. The researcher compared her data with that from extant literature crosschecked with competent speakers of the language. The data from primary source were organised and justaposed with the secondary sources to avoid prejudice since they are

documented records of past years.

Theoretical framework

This work is based on the theory of government and Binding (Principle & Parameter) framework of Chomsky (1995). Universal Grammar by implication provides the formal mechanisms for constructing language specific grammar. It also provides the very substance that grammar is built from and is concerned with characterising the property of natural languages. Cook and Newson (2010:1) admit that Chomsky's theories of language are still leading, stimulating and adventurous and that the P&P approach is a descriptive theoretical framework and a way of thinking about languages. Crystal (2008), and Mbah (2011) in their view claim that Universal Grammar as a theory of knowledge is a set of principles apply to all languages and parameters allow languages to vary. GB refined deep and surface structure into the more technical notions of D-structure" and "S-structure". Hornstein (2001:14) cited in Boeckx (2006) opines that a minimalist research programme is to simplify, naturalise and economise earlier GB accounts. He expresses, that Government-Binding theory is a very well-developed version of the P & P theory, with wide empirical coverage of an interesting deduction structure. Syal and Jindal (2012:122) opine that Chomsky takes a deductive approach in formulating a theoretical account of grammar unlike the early structuralists who followed the inductive methods in their analysis..

Intonation

Hyman (1976) and Mbah (1999) assert that tone and intonation are two types of speech variation, used by speakers of many languages in order to give shape to utterances.

Tone

Hyman (2010) says that 40-50% of the languages of the world are tonal. Wadsworth (2008:109), Pike (1948:13), Ndimele (2006:633) and Anabogu, Mbah and Eme (2010:130) opine that tone is a structural element in the sound system of a language and significantly contrastive but relative pitch syllables.

Phonology is the knowledge of the sound system and its analysis aimed at establishing inventory of phonemes and how they form meaningful systems within languages. McGregor (2009:46) uses example Suspicious pair or minimal pair in Gooniyandi the voiced alveolar stop [d] and the voiced alveolar retroflex [d] contrast phonetically for phoneme that contrast, written naturally as: 1. /d/ [judu] 'straight', [bidi] 'they'

/ɖ/ [juɖu] 'dust' [biɖi] 'thigh'

/d/ and /ɖ/ occur in the same phonetic environment representing two separate phonemes. Crystal (2006:163) and Manda (2011:83) posit three criteria in deciding whether sounds belong to the same phoneme. The three types of distribution are:

Complementary distribution

Free variation and phonetic similarity (Analogous environment)

Contrastive distribution /Opposition principle (Minimal pair) our main concern

Contrastive Distribution

Contrastive distribution cuts across languages of the world in intonational and tonal languages. Mbah (1999:76) quoting Ferdinand de Saussure, believes that the distinctiveness of speech sound is the quality that matters. Two phones in opposition are contrasts when one

replacing the other yields a different lexical item. Lexical items in English :

2a. p̲an, b̲an-identical except in the initial place in the sequence
2b. pa̲n, pi̲n-different only at the medial place in the sequence
2c. pan̲, pat̲-different only at the final place in the sequence
/p/, /b/, /a/, I/, /n/ and /t/ are separate phonemes in English

Igbo (lexical items): These phonemes that form minimal pairs are imperatives.

3a	lèé – look	tàá – eat	sié – cook	ṅụọ - drink
3b	kèé – share	dàá – fall	rié – eat	nyụọ - defecate
3c	mèé – do	bèé – peel	bié – slice	gbùọ - kill
3d	sèé - draw	dèé – write	tìé – beat	bùó - carry

The above words have the same tone pattern, identical vowel component and occupy the same phonotactic position. They are separate phonemes: /l/, /k/, /m/, /s/, /t/, /d/, /b/, /d/, /s/, /r/, /b/, /t/, /ṅ/, /ny/, /gb/, /b/

Minimal Pairs

Chomsky (2000) claims that the nature of sound and meaning is an empirical distinction not spelling. Manda (2011) says that minimal pairs are valuable in establishing, identifying and discovering the contrastive sounds – the phonemes of a language (segments) place and manner of articulation. Consonants are characterised by voicing while tongue height and advancement lip rounding and tenses are for vowels. Anyanwu (2006), Bolinger (1968) in Mbah and Mbah (2010) contend that prosodic supra-segmental or auto-segmental features occur 'on top of' each segment at the same time as the before-and-after segment e.g in Igbo k^w, n^w, g^w . By this phenomenon Igbo is syllable-timed while English is stress-timed.

Minimal Pair Factors in Intonational Languages:

There are many factors that result in minimal pairs in intonational languages, of the world thus: Voicing, Utterance, Aspiration, Phoneme, Syllable, Devoicing, incomplete plosion, Homophones (Homonyms), Flapping, Quantity (Vowel and consonant length), Juncture, Stress, Pitch accent, Stress and Glide, Phrase, Syntactic Gemination, Velarisation, Assimilation, Co-articulation.

Voicing: is exemplified by Bolinger (1981), in Egonu (2014), Katamba, O'Grady and Achibald (2011), Andrian, Dennis, Farmer and Harnish (2001) as the vibration of the vocal cord in a voiced sound. It distinguishes phonological regularity, minimal distinction and as well phonemes in minimal pairs such as /z/ and /s/ in English:

4) /zip/ and /sip/, /ʃip/ - ship , /ʧip/ - chip of /ʃ/ and /ʧ/.

Pitch: Lagefoged (1995) and Crystal (2006:169-175) exemplified (relative pitch) on syllable 'p, b' 'b,p' 'r, l' constitute minimal pair in English. Example

(5) p̲in b̲eak w̲all /p/, /b/, /w/
b̲in p̲eak w̲ar /b/, /p/, /w/

Utterance: Denham and Lobeck (2010: 108), with Weisler & Milekic (2001) affirm that English speech error 'Slip of Tongue' is deviation in some way from the intended utterances, show that such rules are applied or are "real" realised in nasalisation rule or aspiration. They are

contrastive. Example

6) i) tons of soil ii) "gone to seed" [gãn tə sid] iii) scratching daddy's back
sons of soil "god to seen" [gəd tə si:n] snatching graddy's back

in (ii) instead of 1st consonants of the first and the third words reverse changed the nasality vowels.

Aspiration – Edward (2008) opines that two sounds that are contrastive in one language can be in complementary distribution or free variation in another. The occurrence of [t^h] and [t] in English purely on phonological context and not contrastive. Example in English:

7) team [t^h:im] steam [sti:m]. Igbo pịa akwa p:ịa], p^hịa ihe [p^h:ịa]

Phoneme: This is an abstract unit of distinctive sound in a language such as in

8) English: pat- [p], bat [b], Igbo banye [b] pata - [p]

[b] and [p] in English and Igbo are phonemes and contrastive.

Syntactic Gemination: This is from the Latin word "Gemini". It means consonant elongation or twinning (doubling). Cook and Newson (2010:70)) exemplify it in English. Igbo does not have it according to the spelling rule. Example in English – occur, accommodate.

9) Italian Sandi : dà casa IPA:/da/ccasa/ Meaning: give he/she he/her
da casa /dá casa/ house from home

Phrases can only be distinguished from their context in Tuscany.

Lexical tone: This is a distinctive pitch level carried by a syllable of a word. It abounds in Swedish, Germanic and example in Bole Chadic.

10) /dindi/-toad, /dindi/ -tale, /àwè/ -'cat', /āwe/-'jujube'

Progressive assimilation is a process of sound change where preceding sound influences or modified the following sound since the preceding sound is too dominant. Example in English:

11) seven – [sevm], handkerchief – [haŋkertʃl:f], captain – [capm]

In seven, (en) is changed into [m] syllable, in captain, [tain] to [m]. these are (nasal sounds).

Labialisation is a secondary articulation realized by adding lip rounding to [k^w, g^w symbol [w] is superimposed in: English:

(12) /k^w en/ - 'when', /k ^{w} estʃen –'question', Igbo: k^wàá - push Kwáá – sew

Prosodic feature: Yule (2003:56) exemplified this in the pronunciation of French and English word eg 13) French: /m^{Σ}/ mets –'dish' /so/seau – 'pail' (14) English: [ben] –'ben'
/m^{Σ}/ main – 'hand' /sõ/ sun –'sound' [bæn] – 'ban'

[æ] and [e] are crucial vowel sounds in English, contrastive in pronunciation with different meaning.

Homonymy: (Homophones) is phenomenon of multiple ambiguities of phonological words where two or more words have the same form but with unrelated meaning: i.e. words that are identical in pronunciation but differ in meaning. Katamba, O'Grady and Achibald (2011), Kempson (1977), Cruse (1986) exemplify this in English and French as minimal pairs.

English: (16) /well/ - 'spring' /bank/ - 'inside river'
/well/ - 'all right' /bank/ - 'financial institution'

French: (17) - vert - [vɛ;r] - 'towards', Igbo: Ézè - chief ézè - to avoid,
verre [vɛ:r] - 'glass'. Ézè - someone's name

Juncture: Lagefoged (2006) and Crystal (1987) exemplify it as minimal pair in English. These are phonetic boundaries used to demarcate words or other grammatical units. Several phrases in English distinguished in this way constitute minimal pair.
(18) /that stuff/ and /that's tough/, / I scream/ and/ Ice cream/
/ great ape/ and /grey tape/, / nitrate/ and / night rate/
Phonemically, the two phrases are identical '/greiteip/

Segment: Katamba (2011) and Yule (2003) exemplify segment in English, French and Finnish. Example in English: (19) pit, bit /p/ /b/
The sound contrast in (voice) features and segment /p/ voiceless labial stop, /b/ voiced labial stop.

Devoicing: Lagefoged (1995) in Mbah and Mbah (2010) exemplify devoicing. It is phonemic in English as in the example below. The bilabial plosive [b] is devoiced.
(20) [Pʰ] - peep, pip /dæ?:tbɔɪ/ - 'that boy'.

Nasalisation: Weisler and Milekic (2001:8) in Egonu (2014) assert that nasalisation has diacritic mark [~] in which vowels are distinct across languages. When a sound is nasalised, the air passes through the nasal cavity (the nose) and the oral cavity. Nasalisation is not distinctive in English but is in French and Igbo examples;
(21) /lot/ - 'prize' pronounced /lo/ and /longue/ - 'long' pronounced /ŏ/. In American English compared hint camp bunk hit cap buck.

Stress accent: Relative emphasis or prominence given to a syllable in a word/or to a certain word in a phrase or sentence, in loudness or voice length and pitch. English has variable stress [ga:den] - garden - the first syllable is stressed garden. Hellmuth (2006), Katamba (2011:387) exemplify this in Egyptian Arabic, Greek, English, Russian, Czech, Welsh, French and Polish. '/' indicates secondary stress, '\' indicates primary stress. All are contrastive.
(22) In Spanish: tópo [molé] and topó (he/she/it./met).
Example in Khmer. /min/ - 'mine', /ci/- 'fertilizer',
/mln/ -'net', /ci:ə/ - 'to be'.

Factors for minimal pairs in tonal languages exemplied
These factors that result in minimal pairs in tonal languages will be exemplified in the following

Voicing (**Laryngealisation)**: In Mazatec in Mexico and French obstruents agree in voicing Nkamigbo (2011) exemplied voicing in Igbo as in
(24) /ɔʧù/ -óchù- sacriledge. - in ọchi /ʧ/ /ɔʧì/ - laughter
Egonu (2014): (25) zaa ụlọ :/z/ ọchá - /ɔʧa/ white/fairness -/ʧ/
si nri: /s/ ọshá / ɔʃa/ - musical instrument /ʃ/
/s/ and /z/ voicing in (initial position) , / ʧ/ and /ʃ/ voicing in medial position
Minimal pair in Igbo 26(i) bịa pee - /b/, /p/, iii) wuo - /w/.
pịa – bee -/p/, /b/ waa -/w/

Lexical tone exemplified in Igbo: (27) /pùọ́/ -'go' :/p/ /sie/-'cook' /s/
/kùó/- 'beat,' /k/, /rie/ -'eat' /r/

Consonant length: Yip (2002) says consonant length is contrastive in Yapese, Italian, Turkish, Hungarian, Japanese and Arabic. Consonant length is phonemic. Example in Japanese: There is no consonant length in Igbo according to spelling rule. Example in Japanese:
(28) Shite - 'doing', Shitte - 'knowing', saki-'ahead' sakki-'before'
Quantity: This is long and short vowel exemplified by Wadsworth (2008) and Lagefoged (2006) in Italian, Japanese, Asian, example as in Italian long and short /l/:
(29) /palla/ ' palla'/ 'ball'
/palla/ 'palla'/'ball'

Pharyngealisation: Mbah and Mbah (2010:96) observed that segments may be pharyngealised during their production. This abounds in Igbo and Arabic as the retraction of the root of the tongue towards the pharynx in Igbo, the pharynegealised vowels are /a,ɛ,ɔ,ʊ,/i/ as in Igbo examples:
30) /i/ as in: /ika/- 'to mature',ɟ, ', /a/ as in /àsí/ - a 'lie, /ɔ/ as in/ɔku/-wealth
/iku/ - 'to beat '/àpi/- /to curve, /ɔkà/ - 'corn'
/ɛ/ as in /ɛ̀sɛ̀/ -'inquiry' /ɛ̀fɛ̀/-'cloth'

Ejectives: Weisler & Milekic (2001) and O'Grady (2011) describe this as voiceless consonants that are pronounced with simultaneous closure of the glottis. Example in Hausa (31) and Amharic (32). (31) :-/waka/ 'song', (32) : -/t'il/ 'quarrel', /kir/ - 'stay away',
/wak'a/ - abusive word /til/ - 'warm', /kirr/- 'thread',
In Amharic, an Ethopian language, the contrast is more glaring.

Neutralisation is elimination of final-word voicing contrast of two sounds into one different sound for instance in Hausa /d/ and /z/ before a front vowel neutralizes to /j/, formed from roots of /kad-/ and /kaz/ respectively as in (33) /kada/ - 'crocodile', /kaza/ - 'hen'. It is not found in Igbo.

Labialisation: is a secondary articulation adding lip rounding to a sound with symbol [w] superimposed as in (k^w, g^w) labialised velar sound. In Igbo and Hausa simple velar sounds labialise when they precede a back vowel. Hyman (1970) in Mbah (2010) says that Igbo stops and affricates are labialised. Examples in:
(34) Igbo: /an^{w}ʊ/ -'sunlight' (35) Nupe: /eg^{w}u/ -'grass' (36) Tiv:/p^{w}ar/-'to borrow'
/ɔn^{w}ʊ/ - 'death' /eg^{w}o/ -'mud' /t^{w}ar/- 'question'
Nupe examples show that consonants are labialised before rounded vowels or glides.

Palatalisation: the symbol [j] sound, adds a palatal articulation to a non-palatal consonant (raises) the front of the tongue towards the hard palate). Alveolar and labio-velar 'w' the velar 'k' voiceless, 'g' – voiced in Igbo. (37) b^{j}á/ -'come' /bà/ -/'press',
P^{j}á/ -'squeeze. /p^{j}á/ -'flog[/carve'

Glottalisation: is the closure of the glottis and sudden release of airflow to cause explosion (ʔ) for articulation of glottal stiop sound [h] Rischel (2007) says glottalisation results in minimal pair in Danish and Igbo. Example in Igbo.

(38): /wèʔá/- 'bring', /bàʔá/- 'come in'
/wùʔá/- ' pour out', /bèʔá/ - 'cut out'

Vowel length: Yule (2003) and Myers, (2003) exemplify this in Japan, Finish, and example in Kinyarwanda in Bantu languages in Rwanda:39) [gutaka] 'to scream' [guta:ka] – 'to decorate' Igbo vowel twinning tee – dance, cook [t] baa - enter [b], baa – enter [b], see – draw [s] paa- squeeze [p], b^haa – scold [b^h]

Double Articulation: Mbah and Mbah (2010:90) observe that labial velar plosives /kp/ voiceless, /gb/ voiced constitute double articulation and labialisation in Benue (Congo) languages and Igbo:Example in Igbo: (40) /àkpà/-'bag' /àgbà/ - 'jaw'
/ɔ'kpà/ -'bambara seed' /igbà/ - 'drum'

Homophones: Example in Igbo
(41) /ák^{w}à/ - 'cloth /ak^{w}a/ - 'to push', ǹtú – nail áká –hand àkwá –egg
Ńtụ́ – ash ákà – to draw/bead àkwà – bed
ǹtì – check ùbé – (pear) /ụ̀wa/ - 'person's name
Ntĩ (ear) ubé (cry) /ụ̀wà/ - 'earth'

Juncture
Oluikpe (1979) says juncture occurs in Igbo in between syllables and words. Syllable juncture in Igbo is symbolized by /-/, as very slight pause used to distinguish one syllable from the other, example: 42) /o-si-si/ - 'tree', /n-na/ - 'father', /u-mu/ - 'children'.

Devoicing: There is no devoiced speech sound in Igbo because of syllable structure. Chadic languages have devoiced speech sound example Hausa:
(43) /ʔaʔra/ 'ya' ra- 'children' /saʔa/- sa'a – 'goodluck'.

Nasalisation: Mbah & Mbah (2010:60), and Ezikeojiaku (1989:35) exemplify this in Igbo :
(44) /èré/ - 'sell', /árá/ -'madness', /ɔrụ – disability,
/erẽ/ - 'burn' , /árã́/ -'breast' /ọrụ̃ - work

Pitch accent: Yip (2002:4) exemplified this in Japanese as drop in pitch:
(45) [ámé] –'candy' [LH], [ámè] – 'rain' [HL]
Iwara (1995) in Mbah exemplifies pitch accent in Yoruba as in
(46) /bɛ/ - 'out', /bɛ/- 'beg', 'pray'

Tone contrast: Weisler and Milekic (2001) opine that Mandarine in Chenese uses pitch as sound feature to distinguish words. Igbo has tone contrast of high, low and downstep levels. Chinese example: (47) high tone (dá/ - build', low rising tone /dá/ - 'achieve' based on tone.

Empirical Studies
Oluikpe's (1979:69-79) work on a contrastive study of English and Igbo Syntax, in phonology of the Ngwa dialect of Igbo, though not on minimalist analysis of the researcher. Nkamigbo (2011:189) has two way voicing contrasts in Igbo stops and fricatives. She asserts that velar stops have greater voice onset time and aptitude than bilabial and alveolar stops. Voicing is contrastive in both tonal and intonational languages. Anyanwu (2006) did a research on the

minimal pairs of English and Igbo finding the interference of Igbo speakers in English language. He adds that the minimal pairs will serve as a way of checking the problem of speech habituation. Ukwe (2008: 1-4) studied Igbo, Yoruba and English sound systems and observed that the tonal and intonational languages have different sound systems phonologically. These researches phonologically are relevant and related to the present study. In the researcher's view, tone and intonation help to realize meaning in languages and solve the problem of inter-lingual interference.

(48) English Language vowels are 20: i, e,æ, a,ɒ,ɔ,ʊ,ụ,ə,ɜ,^,iə, ei, e3,ɑi, ʊə, əʊ, ɔi, aʊ
English language consonants are 24: p, b, t, d, k, g, m, n, ŋ,ʧ ,ʤ, f, v, ɵ, ō, s, z, ʃ, ʒ, h ,r, l, j, w

Minimality in Intonational Languages

Cambridge encyclopedia (1997:162) and Yule (2003:56) show two words in English phonemes as minimal pairs in vowels and consonants of English phonology.

(49) /p/ - /b/ pig-big /n/-/ŋ/ sin-sing /f/-/v/ fat-vat
/b/ - /t/ bee – tea /ŋ/ -/L/ sink-silk /v/ -/e/ leave – health
/t/ - /d/ tin-din /L/ - /r/ lid-rid /e/ -/ƿ/ wreath – wreathe
/d/ -/k/ din-kin /r/ -/w/ red-wed /ƿ/ -/s/ though – so
/k/ - /g/ cap-gap /w/ -/j/ well-yell /s/ -/z/ bus –buzz
/g/ -/h/ gap-hag /j/ - /ʧ/ you-chew /z/ -/ʃ/ zoo –shoe
/h/ -/m/ hen –men /ʧ/- /ʤ/ chin-gin /ʃ/ - /ʒ/ confusion-confusion
/m/ -/n/ map-nap /ʤ/ -/f/ large –laugh /ʒ/ - /t/ beige-beit
(50) /i/ - /I/ seat – sit, /ɔ:/ -/ʊ/ cord-could
/i/ - /e/ sit –set /ʊ/ -/u:/ pull-pool /əʊ/ -ɑʊ/ hoe – how
/e/ -/a/ set – sat /u:/ -/ʒ:/ pool-pearl /ɑʊ/- /iə/ now-near
/e/ -/à/ cat – cut /ʒ:/ - /eɪ/ pearl –pale /ɪə/ -/ɛə/ tear(noun)tear-(verb)
/^/ - /a:/ cut – cart /eɪ/ - /aɪ/ day- die /ɛə/ - /ʊə/ tear - tour
/a:/ - /ɒ/ cart-cot /aɪ/ - /ɔɪ/ buy –boy /ʊə/ - /i:/ sure – she
/ɒ/ - /ọ:/ cot –caught /ɔɪ/ - /əʊ/ toy-toe /ə/ - zero, waiter-wait

These English phonemes vowels generate minimal pairs in English language.

Minimality in tonal language – Igbo

Igbo has small set of 8 vowels, and double articulation especially the implosives consonant. It has ɒ as the ninth vowel Igbo vowels

51) ị, ɪ ísí – to say ísī – to cook e,a, áká – 'hand' ékè – 'to shear', áhà 'name'
o, ọ òkù – 'call' ɔkʊ - 'fire' ɒ aka –'hand' ʊ,u úṭọ - sweet, 'friendly' ùtó – growth

Igbo has 28 consonants and is more in number unlike English. It is wider in range (Dustan, 1969) in Egonu (2014). There are no double alphabets in English as we have in Igbo such as: ch, gb, gh, gw, kp, kw, ny, nw, sh – Igbo double consonants.

Igbo Consonants

(52) p, b pù – 'go out' bụ - 'hatch' s.z, sí – 'cook' zì – 'send'
t, d, tá –'chew' dà – 'falling m, n, má – know ná - receive
β-gb-egbè-'gun', ƥ-kp-ékpè -'traditional institution, ɲ-ń, ńụ–'drink', ɳ-ny nyú – 'defecate
Kʷ, gʷ kwú – 'speak' gwù – 'dig' ŋw nwá –'child'
K,g kè –'share' gé –'listen' ʃ, ʧ áshà –'bird', áchà –' to cut'
f, v fù – 'ignite' vù – 'uproot' ɤ, h ághá –'war' áhà –'name'
ʧ, ʤ èchú- 'to fetch' éjù – 'snail' l, r, ụló – 'house' ụró – 'clay'

j,w yà – 'to disect' wá – cut, 'break'

From the above Igbo phonemes, words form minimal pairs. Liddicoat & Curnow (2004:29) opine that every language has its own pattern of sound system. Sounds that do not contrast in English may be distinctive in Igbo because contrasts are language specific. Example [p^h] and [p] are different phonemes in Igbo while in English both sounds are allophones of the phoneme /p/.

(53) English: /pɪn/ 'pin' /pɪg/ 'pig' Igbo: /p^ia/ 'pịa – 'press
/ bɪn/ 'bin' /bɪg/ 'big' /b^ia/ 'bia' - come

Example /ák^{w}à/ -'cloth' and /ág^{w}à/ 'name of town' constitute a minimal pair in Igbo phonology while /pig/ and /big/ constitute a minimal pair in the phonology of English. What constitute minimal pairs in a language are (i) difference in meaning of words eg /àkpà –'bag' and /àgbà/ - 'jaw' (ii) difference in sound which correlates with the difference in meaning eg /kp/ and /gb/ in Igbo consonants within Igbo /a/ and /a/ occurring between two vowels. Example in English /s/ and /ʃ/ contrast in /ʃouldə/ 'shoulder'and /souldʒə/ 'soldier' 'soldier' /ʃɪp/ 'ship' vs /sɪp/ 'sip', /ʃæk/ 'shack'vs /sæk/ 'sack, ʃut/ 'shoot' vs /sut/ 'soot' by occurring in a stressed syllable followed by a weak one. The phonology of any language therefore consists of the inventory of all the abstract and basic distinctive sounds of the language. Culled from Yul-ifode (1999:29)

The phonemes in English which are not in Igbo pose inter-lingual interference which is the real learning problem of English in Igbo.

Minimality (contrastive distribution) in Igbo Language

Minimal pairs abound in Igbo and are lexically and grammatically contrastive. Okiro (1979) and Dustan (1967) assert that only three types of syllable structure are possible in Igbo language. V-/ị/ - 'you', CV - /di/ - 'husband', N (Syllabic nasal) -/mba/ - 'no'. The only consonant that can occur as C_1 in a C_1C_2V structure and also in a word final position is /m/. It is a syllabic in any of these two positions example /mbe/ - 'tortoise', /dum/ - 'all'.

Below are examples of minimal pairs to establish difference in meaning of the same phoneme.

(55) ényi – elephant ékwè – 'back of head' óké- 'male' ọ́kwá – 'position'
Ényi – friend ékwé – 'wooden gong' òkè –'share' ọ̀kwà –'hawk'
Ọ́bọ̀ (úkwú) 'sole of feet' ékè –'to share' úbè –'spear' ọ́nyá – 'wound'
Ọ́bọ́ – sheat éké – 'python' ùbé – 'pear' ọ́nyà – 'trap'

In the above examples, 'male' and 'share' 'position' and 'hawk' are tonally equipollent. Each segment has tone that others lack. óké –'male and ọ́kwá –'position' have high tone each while òkè –'share' and ọ̀kwà –'hawk' have low-low tone. Both intonational and tonal languages contain two tiers: the prosodic and the supra-segmental.

Gerunditive verbs with steps forming Minimal pairs in nouns and adjectives
Minimal pairs with some nouns

(56) ízù – to meet imi – nose úkwú – 'huge' (adjective) Ùkwà –'name of a city'
ízū – to steal ímì – to suck úkwù –'waist'(noun) úkwà –breadfruit (nouns)
ívù – to be fat ipù – to go out áñú – bee (noun) igwe – sky (noun)
ívū – to carry ipū – to drag/pull àñú – to drink (verb) igwē - to grind (verb)

Recent research shows that downstep contrasts minimal pairs generated at the base component (Mbah 1999). Ezeuko and Chira (2005:57-67) assert that minimal pairs could be realised from phonemes at the initial, medial or final position of words in Igbo for example in Igbo pee /p/, bee /b/, (initial), odu /d/, otu /t/, (medial), akụ /ụ/, aka /a/ (final) position. These

could be tone, labialisation, aspiration, nasalisation, and palatalisation. They are all supra-segmental features and are contrastive in Igbo.

Oluikpe (1979:18) says that plosives in Igbo are aspiration – (p, p^h, b, b^h, t, t^h, d, d^h, ch, ch^h, j, j^h, k, k^h, g, g^h, kw, kw^h, gw, gw^h), except -/gb/, /kp/ and /ʔ/ which are not aspirated. Emenanjo (1978:28) distinguishes two words which otherwise are identical examples /b/- unaspirated voiced bilabial plosive and /b^h/-aspirated voiced bilabial plosive and other examples.

(57) /ịba/ 'to enter' /kʊɔ / - 'beat' /ịpa/ - 'to carry'
/ịb^{h}a/ 'to catch' /k^{h}ʊɔ- 'plant' /ip^{h}a/ - 'to squeeze'
/ɔdʒi/ -'kolanut' /ɔʧĭ/ - 'laughter' /te/ - ' cook soup'
/ɔdʒ^{h}i/ - iroko tree /ɔʧ^{h}ì/ - constipation /t^h é/ - ' to climb'

Ezikeojiaku (1989:37) is of the view that aspiration in /b^h/, /k^h/, /t^h/, /d^h/, /dʒ^h/, /ʧ/ is contrastive in minimal pairs in Igbo but not distinctive in English.
Nasalisation is another way in which vowels are distinct across languages. It is phonemic and brings about difference in minimal pairs with tilde (~) as the sign signifying it. It is usually placed on the vowels before the tone mark and on some consonants (~) such as r̃ (alveolar liquid), h̃ (glottal fricative). Ezikeojiaku (1989:35) and Mbah and Mbah (2010:60) say that in Owerri and Mbaise dialect clusters; the nasalised trill /r̃/ is phonemic and the source of minimal pair e.g /r̃/ as in: /ara/ - 'madness', /ar̃a/ - 'breast', /ere/ - 'selling', /er̃e – 'burning'. In some words in Orlu or Iḳa dialects of Igbo, aspiration and nasalisation go together as phonemic features.

58) Infinitive in Igbo Nouns Verbroots Exemplified with monosyllabic word:
/ísa$\tilde{ʃ}$/ - to wash /ùré/ decay /ké/ - tie /dí/ - 'husband'
/íṣā/ - to spread /ùr̃é/ - 'art of burning' /kè/ -'share' /dì/ - 'endure'
/ˊịzõ/- to train /òr̃ír̃é/ - 'art of burning' /bú/- 'to carry' /ṅʊ̀/ Rejoice
/ịzụ̄/ - 'to buy' /òríré/ - art of selling /pú/ - /germinate' /ṅʊ́/ 'to drink'
From the above, minimal pairs are generated from nasalised phonemes and monosyllabic words.

Examples of nasalisation and aspiration generate minimal pairs in Igbo.
(59) (i) /ɔhìịhà - 'setting free' (ii) a̍tõ/ - 'chewing stick; (iii) /èk^{h}é/ - 'market day'
/ɔhĩịhã$\tilde{ʃ}$/-to be equal /a̍t^{h}õ/ - 'buffalo' /éké/ - 'python
/ʊ̀tá/ - 'bow' /ák^{h}ʊ̀kʊ́rō/ - burnt food in the pot /àbá/ - 'name of a city'
/ʊ̀t^{h}á/ - 'blame' /ák^{h}õ̀k^{h}ṍr̃ō/ - burnt back of roasted yam /àgbá/ -'to run'

Nasalisation together with aspiration cause minimal pair in Igbo as shown in the above examples. Examples of Igbo words demonstrating palatalisation in minimal pairs.
(60) i) /ípʲā - 'to fold' (ii) íḥʲɔ - 'to snatch away' (iii) /ísʲā - 'strip leaves from palm front'
/íṗā/ -'to carry' /íḥɔ/ - 'to select' /íṣā/ - 'to strip'

Differences in above examples are in medial segment of words which are palatalised or labialised. Labialisation can distinguish otherwise identical words in Igbo: for example
(61) /àg^{w}à/ - beans' , manner /íg^{w}è/ -'bicycle; /èn^{w}ē/ to possess
/ág^{w}ɔ/ - 'snake /ig^{w}è/ - crowd /èn^{w}è/ 'monkey'
/ɔg^{w}ʊ/-medicine /á^{w}ɔ/ - toad /ɔn^{w}ʊ /' death'

/ɔg^{w}á/ - name of a city /áh^{w}à/ -name (dialectal) /ɔnwá/ - moon

It is observed in Igbo that a consonant segment may be palatalised or labialised.

Yul-ifode (1999:158) confirms that in some Orlu sub-dialect of Igbo segments are palatalised or labialised. Igbo (Orlu) examples:

(62) ipwo [ip^{w}ò] ' herring' ibwo [ib^{w}o]- to send íḅia (íb^{i}ā)' to come íṗía [íṗ^{i}ā] 'to fold'
ituo [ít^{w}ò] 'to praise' iduo [id^{w}ò] 'to rain' gia[ɔgi^{j}á] 'cheek' okie [ók^{i}é] 'old person'
agwa [ag^{w}a] 'beans' akẇa [ák^{w}á] 'cloth' ufie [ùf^{i}è] 'width' azie [àz^{i}è] 'peanuts'

Summary of Findings and Conclusion

This paper summarised the research questions and objectives of the study in Igbo language as a way of exemplifying contrastive distribution. From the findings in the study, phonemes, tone and prosodic and supra-segmental phonemes are contrastive in Igbo and result in difference in meaning. English uses intonation, stress, voice intensity and pitch while Igbo uses tone to make variation in speech. Segments are characterized by place and manner of articulation and voicing for consonants, tongue, height and advancement, lip rounding and tenseness for vowels. Phonemic inventories and phonological context of the two languages are not the same. In a great manner they affect each other. Some factors allophonic in English are distinctive in Igbo, resulting in meaning difference in minimal pairs. The researcher was able to identify points of likely difficulty arising from differences in phonemes between English and Igbo. These help to solve the problem of inter-lingual interference.

References

Anabogu, P.N, Mbah, B.M and Eme, C.A (2010). *Introduction to Linguistics. Awka: Amaka Dream.*

Anabogu, P.N. (1987b) "The Circumfix in Igbo Morphology", Paper presented at the 8th Annual Annual conference of the linguistic Association of Nigeria, University of Port Harcourt.

Andrian, A, Richard A.D., Farmer A.K and Harnish R.M, (2007). *Linguistics: An introduction language and communication* (5th ed). Massachusetts: Cambridge University Press.

Anyanwu, P.A (2006). Curbing the bilingual morphophonemic problems through a dynamic use of minimal pairs: In African Journal of Language Research 2. 1&2.

Azubuike, B. (2007). *Introduction to linguistics*. Owerri: Cel-Bez & co. Publishers.

Boeckx, C. (2006). *Linguistic minimalism-origins, concepts, methods, and aims*. Oxford. Oxford University Press.

Chomsky, N (1995*). The Minimalist Program.* Cambridge, Mass: The MIT Press.

Chomsky, N. (2000).*The architecture of language.* New Delhi: Oxford. Oxford University Press.

Cook, V. J & Newson, M. (2010). *Chomsky's universal grammar: An introduction.* (3rd ed.) Blackwell Publishing.

Crystal, D (1997). The Cambridge encyclopedia of language (2nd ed) Cambriedge. Cambridge University Press.

Crystal, D. (2008). *A dictionary of linguistics and phonetics* (6th ed.) Blackwell. Publishing.

Denham, K & Lobeck A. (2010) *Linguistics for Everyone: An Introduction* . Wadsworth Publisher Michael Rosenberg.

Emenanjo, N.E. (1978). *Elements of modern Igbo grammar: A descriptive approach*. Ibadan: Oxford University Press.

Emenanjo, N.E. (1982). "The interfix? An aspect of universal morphology". Journal of West Africa languages 21, 1. 77-88.

Emenanjo, N.E. (2015). *A Grammar of contemporary igbo: Constituents, Features and Processes*. Department of Linguistics and Communications Studies, University of Port Harcourt Nigeria. M&J Grand Orbit Communications Ltd. Port Harcourt.

Ezeuko, R.O & Chira, A.E (2005). *Fonetiiks na Fonoloji Igbo.* Awka Kristophel Publishers. Finnegan, W. (2008). *Language, its structure and use.* (5th ed.), Wadworth, K (107-112).

Green, M.M and Igwe, G.E (1963). *A descriptive Grammar of Igbo.* Berlin: Akademic Varling for London. Oxford University Press.

Gussenhoven, C. (2004). *The phonology of tone and intonation.* Cambridge. Cambridge University Press.

Hellmuth, S.J. (2006). Intonational pitch accent distribution in Egyptian Arabic.

Hornstein, N. (2001). *Move! A Minimalist Approach to Construal.* Oxford Blackwell.

Hyman, L.M. (2010).*How to study a tone language exemplified from Oku*.Glassfields Bantu, CameroonUniversity of California Berkeley, Annual Report.

Ikekaonwu, C.I. (1996). Introduction to Elementary Phonology in O.S. Ogwueleka, Y.A. Babatunde, & O. Wale, (Eds) Effective English Usage Lagos: Greenline Publishers.

Iwara, A.U. (1995). "Some Elements of Lokaa Phonology Revisited" in E.N. Emenanjo and O.M Ndimele (Eds.) IALL.

Lagefoged, (1993). *A course in phonetics*. (3rd ed.). New York: Harcourt Brace Jovanovich Inc.35-6.

Lagefoged, P. (1995) "Voiceless approximant in Tee" in IALL.

Liddicoat, A.J & T.J Curno (2004). Language of descriptions: *in the Handbook of Applied linguistics* (eds A. Davies and C. Elder), Oxford Blackwell.

Maddieson (1984). *Patterns of sounds*. Cambridge University Press.

Manda, I.P (2011). *Introduction to Syntax* G.S Omachonu (ed.) Nsuk Texts in General linguistics Russen Publication.

Mbah, B.M (1999). *Studies in syntax: Igbo phrase structure*. Nsukka: Prize Publishers.

Mbah, B.M (2005). Epenthetic Tone in Igbo. O.M. Ndimele (Ed). *Globalization and the study of languages in Nigeria,* (pp. 369-376). Port Harcourt: Grand Orbit Communication and Emhai Press.

Mbah, B.M & Mbah, E.E (2010). *Topics in phonetics and phonology: Contribution from Igbo*. AP Express Publishers Nsukka.

Mbah, B.M (2011). *GB Syntax: A Minimalist Theory and Application to Igbo.* Enugu, Cross River Association of Nigerian Authors.

McAthur , T. (1996). *The Oxford companion to the English language.* Abridged Edition: Oxford: Oxford University Press.

McGregor William B. (2009). *Linguistics. An introduction.* Continuum International Publishing Company.

Ndimele, O.M (2003). *A first course on morphology and syntax, linguistics and communication studies.* University of Port Harcourt: Emhai Printing and Publishing Co.

Ndimele, O.M (2003). (Ed). *Four decades in the study of languages and linguistics in Nigeria:* A Festschrift for Kay Williams. Aba. National Institute of Nigerian languages.

Nkamigbo, L. (2011). Experimental analysis of voicing contrasts in Igbo in *UJAH.* 12, 2, 189.

Nwachukwu, P.A (1995). *Tone in Igbo syntax* Nsukka. Igbo Language Association.

O'Grady, W. Archibald, J & Katamba, F. (2011). *Contemporary linguistics: An introduction.* (2nd ed).

Ogwueleka, O.S,. (1994). Epenthetic Vowel and Tone Melody in Igbo *Nigerian language Studies* 1,2 (28-40).

Oluikpe, B.O (1979). *Igbo transformational syntax: the Ngwa dialect example* Africana Publishers Ltd 69-79.

Oyebade, F. (1998). *A Course in Phonology*. Ijebu Ode: Shemibiotimo Publishers.

Oyebade, F. & Mbah, E.E (2008). *Trends in the history of modern phonology.* In B.M Mbah & E.E Mbah (Eds). *History of linguistics and communication: A festchrift in honour of Professor P.A Nwachukwu* Nsukka: AP Express Publishers.

Radford, A. (1997). *Syntactic theory and the structure of English*: *A Minimalist Approach* Cambridge. Cambridge University Press.

Radford, A. (2006). *Minimalist syntax: Exploring the structure of English*. Cambridge: CUP.

Remijsen, B & Van Heuven, J.V (2005). Stress, tone and discourse prominence in the Curacao dialect of Papiamentu. LUCL, Cambridge. Cambridge Press.

Riad, T. (1998) Towards a Scandinavian accent typology. In Wolfgang Kehrein & Richard Wiese (ed.) *Phonology and Morphology of the Germanic Languages*. Tubingen: Niemeyer. 77-109.

Syal, P &Jindal, D.V. (2010). *An Introduction to linguistics, language, grammar and semantics* (2nd Ed) New Delhi: PHI Learning Private Ltd.

Ukwe, J.I (2008) *Proficiency in oral English* Onitsha: Eagleman Books. 1-4.

Weisler, S.E & Milekic, S. (2001). *Theory of language* (2nd ed) Cambridge: Massachusetts. MIT Press.

Yip, M. (2002). *Tone.* Cambridge. Cambridge University Press.

Yule, G. (2003) *The study of language* (2nd Ed.) Cambridge: Cambridge University Press.

Yul-Ifode, (1999) A Course in Phonology Port Harcourt: Riverside Communications. 158.