Deviation in Consonant Cluster Realization in the Speech of Ikwere L_2 Users of English

By

Ann Ogechi Emeka-Igbokwe
Department of General Studies
School of Foundation and General Studies
Captain Elechi Amadi Polytechnic, Rumuola Port Harcourt
Email: annwoke20@gmail.com
Phone: 08034647448

Abstract

Every language has a unique sound system which the native speakers are intuitively accustomed to. Hence, the learning and use of a second language (L_2) is often characterized by certain first language (L_1) influenced deviations. This study investigates the deviation patterns in the realization of consonant clusters by Ikwere L_2 speakers of English. The purpose of this work is to examine how native Ikwere speakers pronounce English with complex syllable words. The data is collected by recording the reading of an extract by ten randomly selected Ikwere L_2 speakers of English who are HND students of Captain Elechi Amadi Polytechnic Port Harcourt, Rivers State, Nigeria. This work is hinged on Optimality Theory (OT), a constraint-based approach which postulate provides that constraints are universal and violable structural requirements which ranking is language specific. Findings from data analysis yielded violation of MAX-C (consonant elision) and DEP-V (no vowel epenthesis) in the pronunciation of selected words by the respondents and the optimal form of the words show a violation of *COMPLEX. This work concludes that the phonotactic difference in Ikwere and English is the major cause of the deviations in the realization of consonant clusters by Ikwere speakers of English. This study recommends that Ikwere speakers of English should make deliberate efforts to articulately pronounce English words with

complex syllables. In the rural Ikwere communities, Oral English should be extensively taught with emphasize on syllable phonotactics. Also, policy makers on education in Rivers State should make and enforce policies that support the effective teaching of Oral English in the state.

Introduction

Phonology is a core aspect of linguistics, which is seen as the scientific study of language structure (Odden, 2015). Every language has a unique system of sound patterning, and this is what is referred to as the phonology of the language. Linguists have described phonology as the study of the patterns of sound in a particular language and across languages. Hence, phonological study is concerned with the categorical organization of speech sounds in a language and importantly too, how speech sounds are organized in the mind and used to convey meaning. Phonological study anchors on two aspects – the inventory sounds that a language has and secondly, the set of rules which specify exactly how each sound is pronounced and how sounds affect and are affected by sounds around them (Marlett, 2001). Phonologists engage in the analysis of these phenomena to solve speech related problems, which is why phonological analysis is crucial in a second language acquisition situation. Baker (2004) opines that in handling speech impairment especially in children, phonological analysis is pivotal. Although it may be long-drawn-out, yet it aids to expound on the patterns or problems underling unintelligible speech. It also gives idea on the 'point of beginning' that is which phoneme or syllable word problem to address first.

Studies in second language acquisition (SLA) have shown that deviations in L_2 usage is more commonly observed in speech. Emeka-Igbokwe (2020) citing Denham and Lobeck (2010) avers that although, second language acquisition can bring about other linguistic situations, like the issue of intermediate grammar (inter grammar), that is a grammar influenced by both a person's native tongue and second language, nevertheless, the phonological deviation or variation in L_2 usage is readily observable. The obvious reason for such deviations in second language situations is the differences that exist in L_1 and L_2 forms which often result in L_1 to L_2 transfer.

Native Ikwere speakers are English L_2 users. Ikwere phonology is distinct, possessing sounds and conventions that differ from those of English. The difference between the segmental and prosodic features in both languages is significant enough to creates a defined gap in the speech of Ikwere users of English. Ncobela (2015) postulates that correct pronunciation of a language is essential to communication especially at international domain and deviations in pronunciation may affect linguistic intelligibility. Consequently, when meaning is lost or altered, actual communication purpose is defeated. With regards to international intelligibility, limited pronunciation skill could be problematic for a people whose lingua and official code is English.English language is extensively used in Rivers State, which like Nigeria is a multiethnic and multilingual society. Researches like Alerehi, 2020 has shown that Ikwere languages operates a phonetic system that does not license (allow) complex syllables. In which case, its native speakers innately conditioned to zero realization of complex syllable, which unfortunately exist in English. In the field of SLA, a phenomenon like this is topical for a research such as this one.

Concepts

Consonants

Consonants are unique speech sounds found in human languages including the English language and Ikwere. Denham and Lobeck (2013) states that there are many consonantal sounds in English, but there are only twenty-four phonemic (that is sounds that make a difference in the meaning of words) consonants in English. O'Grady et al (2011) explain that "consonantal sounds, which may be voiced [v] or voiceless [f] are made with either a complete closure [p] or a narrowing [f] of the vocal tract. The airflow is either blocked momentarily or restricted so much that noise is produced as air flows past the constriction". Similarly, Matthews (2007) affirms that consonants are sounds in whose production, the flow of air is obstructed at some point in the mouth, throat, or larynx, at least sufficiently to cause audible friction. In other words, their production involves a level of stricture greater than open approximation. This further establishes that the difference between vowels and consonants is that of the function of the lung's air. While air flows unobstructed in the production of vowels, that of consonants involve some level of stricture

Consonants are categorized according to the mechanics involved in their production. There are parameters used by linguists to classify consonants; they are basically identified by their *places of articulation* (the location of the highest place of the active articulators in connection with the passive articulators Ngulube, 2019) *manner of articulation* (refers to the way in which a consonant speech sound is produced by the speech organs Richard and Schmidt, 2012) and by the *state of the glottis* (refers to the condition in the production of a consonant that shows whether it is voiced or voiceless Roach, 2009) during their productions as shown in what follows in table 1 and 2:

Table 1. The English Consonant Chart

Manner of Articulation	**Place of Articulation**							
	Bilabial	**Labio - dental**	**Dental**	**Alveolar**	**Post Alveolar**	**Palatal**	**Velar**	**Glottal**
Plosive	P b			t d			k g	
Fricative		f v	θ ð	s z	ʃ ʒ			h
Affricate					ʧ ʤ			
Nasal	m			n			ŋ	
Lateral				l				
Approximant	w				r	j		

The Table 1 shows that eight places of articulation and six manners of articulation are utilized in the describing the distinctive features of English consonants. In describing the feature of a consonant, the state of the glottis (voiceless – at the left and voiced – at the right) is stated first, followed by place of articulation and then the manner of articulation. For instance, /p / is a voiceless bilabial plosive and /b/

/ is a voiced bilabial plosive. The non-paired consonants (nasals, lateral and approximants) are all voiced hence they are placed that the right.

Consonant Cluster

Consonant cluster, consonant sequence or consonant compound is a phenomenon in the field of phonology. It is a group or sequence of consonant before, after or between (medial) vowel in a syllable. (Matthews, 2007; Nordquist, 2019). According to Richards and Schmidt (2012) consonant cluster is a sequence of two or more consonants at the beginning of a syllable (e.g. */splæʃ/* or the end of a syllable */mpts* in *tempts).* Linguists refer it as a consonant cluster or a consonant blend. Richards and Schmidt point out that some linguists argue that the term can be appropriately applied only to those consonant clusters that occur within one syllable. Others claim that the concept is more useful when it includes consonant sequences across syllable boundaries. The varying opinions notwithstanding, the pivotal point here is that a cluster of consonants features within the syllable.

Nordquist (2017) establishes that onset (syllable initial) consonant clusters may occur in two or three initial consonants – CC or CCC, while coda consonant clusters can occur in two- to four-consonant groups – CC, CCC or CCCC. Nordquist (2019) citing Pearce (2007) illustrates the common three-item initial consonant clusters in the following words: /spr/ 'sprout', /spj/ spume, /str/ 'stream', /spl/ 'splendid', /stj/ 'student', /skj/ 'skua', /skl/ 'sclerotic', /skr/ 'screed', /skw/ 'squad'. In these sequences, it can be observed that the morpheme-initial is the voiceless alveolar fricative /s/ followed by a voiceless stop, such as /p/, /t/ or /k/ and a liquid or glide like /l/, /r / or /w/. Nordquist (2019) citing Pearce (2007) further explains that the written English language has up to 46 permissible two-item initial consonant clusters, ranging from the common "st" to the less common "sq," but only nine permissible three-item consonant clusters as already illustrated

About Ikwere

The Ikwere language is an Igboid language spoken primarily by the Ikwere people, who dwell in the North of Rivers State (Williamson 1988, Weje, 2007). Weje (2007) citing Wahua avers that Ikwere covers a land space of about 21400 sq.m,

which approximates to 20 percent of cultivatable land in the state. The people of Ikwere refer to both their language and themselves as Ikwere (Alerechi, 2020). As explained by Alerechi, the Ikwere language is one of the major languages spoken in Rivers State and natives of Ikwere occupy four out of the twenty-three Local Government Areas in the state – Emohua, Ikwere, Obio/Akpor and Port Harcourt. Owhoeli (2011) citing Ndimele and Williamson (2002) observes that there are varieties of Ikwere and these dialects are mutually intelligible; they include Eleele, Isiokpo, Omuagwa, Iguruta, Aluu, Obele/Ibaa, Odeghua, Rumuekpe, Rundele, Ogbakiri, Emohua, Egbeda, Omudioga, Omerelu, Akpani, Ubima, Ipo, Ozuaha, Omademe, Omuanwa, Akpabo, and Ubimini.

Some Aspects of Ikwere Phonology

Donwa-Ifode and Ekwulo (1987), Ekwulo, 1993, Alerechi, 2007, Owhoeli, (2011) establish that the Ikwere language has the following inventory: nine oral vowels - /a/, /e/, /ɛ/, /i/, /ɪ/, /o/, /ɔ/, /u/, /ʊ/ and eight nasalized vowels - /ĩ **Ɪ̃** ẽ ã õ ɔ̃ ũ ʊ̃/; twenty-eight consonants - /p/, /b/, /t/, /d/, /k/, /g/, /k^{w}/, /g^{w}/, /ɸ/, /ɓ/, /ʧ/, /ʤ/, /f/, /v/, /s/, /z/, /h^{w}/, /h/, /r/, /j/, /ɥ/, /w/, /l/, /m/, /n/, /ɲ/, /ŋ/, /ŋ^{w}/ and thirty-seven letters – a, b, ch, d, e, ẹ, f, g, gb, gh, gw, h, i , ị, j, k, kp, kw, l, m, n, nw, ny, ṅ, o, ọ, p, r, s, t, u, ụ, v, w, wh, y, z. Table 2 and 3 presents the consonants and vowels of Ikwere respectively.

Table 2. The Ikwere Consonant Chart

MANNER OF ARTICULATION	**PLACE OF ARTICULATION**						
	Labial	**alveolar**	**Palatal**	**Velar**	**Labialized Velar**	**Labial Velar**	**Glottal**
Nasal	m	n	ɲ	ŋ	ŋ^{w}		
Plosives	(p) (b)	t d		k g	k^{w} g^{w}		
Implosives	ɸ ɓ						
Affricates			ʧ ʤ				
Fricatives	(f) (v)	s z		ɥ	h^{w}		h
Tap		r					
Central Approximant			j			w	

Lateral Approximant		l					

The Table 2 shows that Ikwere has twenty-eight consonants. Except from the affricates /ʧ, ʤ/ which English and Ikwere share in common, Ikwere has other diagraphs consonants – the labialized velar sounds – (/ ŋʷ ˌ kʷ gʷ ˌ hʷ /). These labiovelar consonants are basically articulated or produced with a partially closed lips rounding (Falanga, 2021). The labial implosives – /ɓ, ɗ / (made with a blend of glottalic ingressive am degressive air flow process); palatal nasal –/ ɲ / (made by lowering the velum, letting air pass from the nasal cavity) and the velar – /ɥ / fricative (made with the dorsum at the velum with turbulent air flow through a narrow passage) are other consonants in Ikwere inventory that not in English. Vowels Ikwere are classified uniquely based on the features represented in Table 3:

Table 3. The Ikwere Vowel Chart

		Front	**Back**
High	**+ATR**	Iĩ	uũ
	-ATR	IĨ	ʊʊ̃
Mid	**+ATR**	eẽ	oõ
	-ATR	ɛ	ɔɔ̃
Low	**-ATR**	aã	

Alerechi (2007) explains that Ikwere distinguishes vowels by the quality of frontedness (front) or backness (back) and height (high, mid, low), the presence or absence of nasalization (˜), and the presence of or absence of advanced tongue root (+ATR, -ATR)). Also, every vowel in Ikwere word, with a few exceptions, aligns with the other vowels in the word as to the presence or absence of ATR; this is one important aspect of vowel harmony in Ikwere. Owhoeli (2011) posits that vowels of the same height in adjacent syllable must all be either front or back, i.e., the pairs /i/&/u/, /I/& /ʊ/, /e/ & /o/, and /ɛ/& /ɔ/ cannot occur in adjacent syllable. On the other hand, vowels of different height however, need not match for frontedness or backness

English phonology and Ikwere phonology differ. The former has twenty phonemic vowels and twenty-four phonemic consonants, whereas the latter has nine oral vowels and eight nasalized and twenty-eight consonants. English is a stress-timed language while Ikwere is a syllable-timed language (Akinkuolie, 2019). With such phonological differences existing between English and Ikwere, native Ikwere speakers of English are bound to exhibit limited pronunciation skills which is in line with the claim Optimality theory that throughout linguistics, phonology reflects universally conflicting or competing constraints which ranking differ remarkably from one language to another (Al-Yami, 2012); a situation that could result in limited skills in L_2 usage.

Language Transfer/Interference

The reason there may exist varieties of Englishes across former British colonies is because like any other L_2 users, the English L_2 learners or users tend to transfer the features of their L_1 or mother tongue into English (Emeka-Igbokwe, 2020). As much as this happens in all aspects of language, Spada and Lightbown (2012) claim that pronunciation and word order are more susceptible to L_1 influence more than grammatical morphemes, especially because it is easier to fall back to L_1 sounds where L_2 sounds prove challenging for the learner. Besides, there are necessarily, no obvious rules against substituting L_2 sounds with those of L_1 as it is part of L_2 and FL learning process.

According to Richard and Schmidt (2012), language transfer has to do with the effect of one language on the learning of another. They opine that two types of transfer are possible: the *positive transfer* and the *negative transfer.* They claim that the former makes learning easier and may happen when the learner's L_1 and the target language have the similar forms. The latter on the other hand, is what is known as interference – the transfer habits where the use of L_1 patterns and rules result in error or inappropriate forms in the target language. This obviously is the form of transfer that accounts for the kinds of deviations in the speech of most Ikwere L_2 speakers of English. Negative language transfer can negatively affect intelligibility and lead to limited communication skills.

Framework

The study adopts the Optimality Theory in the analysis of data collected for this investigation. The Optimality Theory was introduced in the 1990's by Alan Prince and Paul Smolensky. The theory which is also referred to as OT is primarily a constraint-based approach built upon interacting constraints, and claims that phonology reflects universally conflicting or competing constraints rather than rules (Al-Yami, 2012). Though these constraints are assumed to be found throughout linguistics, they differ in term of ranking (ordering) – that is to say, ranking constraints can vary markedly from one language to another. As a result, learning another language might pose difficulties due to the difference in violable constraints ranking. OT states that the surface pattern (optimal output) originates from conflicting constraints in a speaker's competence.

The Generator (GEN), Evaluator (EVL) and Constraints (CONs) are recognized as the vital components of OT. Accordingly, the relationship between input and output is utterly dependent upon these three constituents. GEN produces a large number of candidates, and EVL then evaluates and filters the candidates (CANDs) (i.e. outputs) for the optimal output (also known as the "winner" or "harmonic candidate (kager, 1999). Hence, the OT paradigm follows thus: Input – GEN – CANDs –EVAL & CONs – output (winner CAND)

Data collection

Ten Ikwere-English L2 speakers who are HND students of Captain Elechi Amadi Polytechnic, Rumuola Port Harcourt were randomly selected. They were given a short passage containing words with consonant cluster to read and their readings were recorded using a recording device.

The following eight sentences were read by the participants:

1. It's a wet **ground.**
2. The cat is on the **table.**
3. Your action will **compound** matters.
4. The man gave a **command.**
5. My **school** has a bus.
6. That's the **plan**.
7. I have his **contact.**
8. she went to a **chemist**.

Outcome

English	Sequence	Observed Deviations	Gloss
/graʊnd/	'nd'	/ gran/, /graun/ /ga.rani /	'ground'
/teibl/	'bl'	/te.bu:/, /te.bulu	'table'
/kəmˈpaʊnd/	'nd'	/ˈkom.pani/, /ˈKomˈpaun/	'compound' (verb)
/kəˈma:nd/	'nd'	/ˈko.man/, /ˈkoˈmani/	'command'
/sku:l/	'sk'	/sʊkl/, /sku:/	'school'
/plæn/	'pl'	pa.lan/, /pa.la.ni/,	'plan'
/ˈkem.ist/	'st'	/ke.mis/, /ke.mi.si/	'chemist'
/kɒntækt/	'kt'	/kon.tat/, /kon.ta.ti/	'contact'

Analysis

Constraints from Kager (1999), De Lacy (2000) and McCcarthy (2007) are used in the OT tableau that follow:

MAX-C – do not delete consonant

DEP-V – do not insert vowel.

IDENT - do not change segment value or the feature – syllable, stress and vowel quality.

DEP-IO – output segment must have input correspondence

*VOICED-CODA – obstruents must not be voiced in coda position

*COMPLEX (i.e. no complex syllable allowed): A syllable must be V, CV or VC.

Each tableau has a pair of words which share the same constraint ranking based on this study.

Tableau 1: Analysis of outcome for 'ground' and 'table'

Input: 'ground'- ☞/graʊnd/ and 'table'-/teibl /

Candidate	MAX-C	DEP-V	IDENT (Vquality)	*COMPLEX
garani	*!	*!		
graun	*!			
☞graʊnd				*

tebulu		*!	*	
tebu		*	*	
☞teibl				*

Tableau 1 shows that the output forms of /graʊnd/ and /teibl / in the respondents' speech (/garani/, /graun/ and /tebulu/, /tebu/) violate MAX-C and DEP-V which are high ranking constraints. Hence, they do not emerge optimal even though they satisfy *COMPLEX, which is the least ranking constraint in the ranking hierarchy – MAX-C >> DEP-V >> INDENT (Vquality) >> *COMPLEX. ☞/graʊnd/ and ☞/teibl / on the other hand, are optimal forms – they satisfy MAX-C, DEP-V and INDENT (Vquality) and violate *COMPLEX.

Tableau 2: Analysis of outcome for 'compound' (verb) and 'command'

Input: 'compound'-☞ /kəmˈpaʊnd/ and 'command' /kəˈmaːnd/

candidate	MAX-C	INDENT (Vquality)	INDENT (stress)	*COMPLEX
ˈkomˈpaun	*!	*	*	
ˈkom.pa.ni	*!	*	*	*
☞kəmˈpaʊnd				
ˈko.man	*!	*	*	
ˈko.mani	*!	*	*	
☞kəˈmaːnd				*

In tableau 2, two candidates from the respondents' speech completed for the output of 'compound' and 'command'. Cand 3 for both inputs – 'compound' - / kəmˈpaʊnd / and 'command' - /kəˈmaːnd/ violated the least ranked constraint (*COMPLEX) hence emerging the optimal forms as indicated by the pointing fingers. Cand1and Cand2 for both words violated the high ranked constraint – (MAX-C, INDENT (Vquality and INDENT (stress) which is fatal in hierarchy of: MAX-C >> INDENT (Vquality) >>INDENT (stress) >> *COMPLEX

Tableau 3: Analysis of outcome for 'contact' and 'plan'

Input: 'contact'- ☞ /sku;l/ and 'plan'- /plæn/

Candidate	MAX-C	DEP-V	INDENT (syll)	*COMPLEX
sʊkʊl		*	*	
sku:	*!			*
☞ sku:l				*
palani		*	*	
plani		*	*	*
☞plæn				*

In the tableau 3, Cand1 for both inputs – / sku:l / and /plæn/ and Cand2 of the second input violated a high ranking constraints DEP-V. Cand 2 for input - /sku:l/ violated MAX-C. Therefore, Cand1 and Cand2 for both inputs are not optimal but Cand3 for both inputs are haven violated a least ranked constraint. The constraints ranking for tableau 3 is MAX-C >> DEP-V) >>INDENT (syll) >>* COMPLEX.

Tableau 4: Analysis of outcome for 'chemist' and 'contact'

Input: 'chemist'- ☞ /ˈkem.ist/ and / 'contact'- /kɒn.tækt/

Candidate	MAX-C	DEP-V	*COMPLEX
kemis	*!	*	
kemisti		*	
☞ ˈkem.ist			
kon.tat	*!		
kon.ta.ti		*	
☞kɒn.tækt			

Tableau 4 shows that for the output of 'chemist /ˈkem. ist/ and 'contact' / kɒntækt/, Cand1 and 2 violated the high ranked constraint – MAX-C and DEP-V but satisfied *COMPLEX hence they are not optimal. Cand3 for both inputs violated the least ranked constraints and are therefore the optimal for 'chemist' and 'contact' based on the ranking hierarchy of MAX-C- DEP-V >> *COMPLEX.

Discussion

The analysis of the data shows that consonant elision especially in a word final cluster and vowel epenthesis are prominent deviation pattern the of Ikwere speakers of English. This is because *COMPLEX (no complex syllable allowed) is a high-ranking constraint in Ikwere but a low ranked constraint in English which licenses complex syllables. This justifies the claim of Smolensky and prince (1995) that constraints are cross-linguistic and conflicting phenomenon but their ranking is language specific. The data also show that vowel epenthesis is process used by Ikwere speakers English to open up closed syllables in order to realize open syllables which a structural requirement in Ikwere syllable system. In the case of consonant elision, it is observed that the consonants in the sequences share the same voicing features: 'nd' are both voiced alveolar consonants; 'st' are both voiceless alveolar sounds; 'kt' are both voiceless stops and 'bl' are both voiced consonants.

Although * COMPLEX is a typical markedness constraint which restricts marked consonant blend, however, it ranks lower than MAX-C and DEP-V in English. Therefore, the optimal output forms of target words /graʊd/, /teibl /. / kəmˈpaʊnd /, / kəˈmaːnd/, /skuːl /. /plæn /, /kem.ist / and kɒntækt / violated the constraint - * COMPLEX, yet emerged as the optimal output forms of 'ground', 'compound', 'table' , 'command', 'school', 'plan', 'chemist' and 'contact' because * COMPLEX ranks low in English. The finding shows that closed syllable and complex syllables are unlicensed Ikwere. This basically affirms that Ikwere primarily operates a V and CV syllable structure (Alerechi, 2007).

Summary

Ikwere L_2 speakers of English tend to delete a consonant in a cluster of consonants at syllable coda, especially if the consonants in such sequence share the same voicing. However, at syllable onset, they insert a vowel to separate consonant blends. The separation of sequence of consonants by either elision or epenthesis supports the claim of Akinkuolie (2019) that Ikwere syllable onset and coda do permit a cluster of consonants, whereas it is

allowed in English. The difference between the structure of English and Ikwere syllables phonotactics creates a proficiency gap in the pronunciation of English complex syllables by Ikwere users of English. this can create a unique types of intelligibility problems. This work argues that correct pronunciation of complex syllables in English is imperative to meaning realization.

Recommendations

This study recommends that Ikwere speakers of English should make deliberate efforts to articulately pronounce English words with complex syllables. In the rural Ikwere communities, Oral English should be extensively taught with emphasize on syllable phonotactics. Also, policy makers on education in Rivers State should make and enforce policies that support the effective teaching of Oral English in the state.

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