Acoustic Manifestation of English Lexical Stress Pattern by Native Erei Speakers

Edadi Ilem Ukam[1]

[1] Department of English and Literary Studies, Veritas University, Abuja, The Catholic University of Nigeria, Nigeria

Correspondence: Edadi Ilem Ukam, Department of English and Literary Studies, Veritas University, Abuja, The Catholic University of Nigeria, Nigeria

Received: November 12, 2017 Accepted: December 4, 2017 Online Published: December 4, 2017

doi:10.5430/elr.v6n4p38 URL: http://dx.doi.org/10.5430/elr.v6n4p38

Abstract

Lexical stress is the combination of intensity, fundamental frequency and vowel quality acoustically. Like many other non-segmental features of English, it is very vital for intelligibility, foreign accentedness and comprehensibility since wrong placement of primary and/or secondary stress in English words might lead to different interpretations. The feature is not observable in Erei, which is a tonal language, where all the syllables or vowels in a word are given strong form. Erei language is different from free variable stress system of English, and the difference between the two languages may likely result in the transfer of Erei tonal system in the articulation of English lexical stress by native Erei speakers. The study examined the deployment of English lexical stress in the speech outputs of Erei-English bilingual speakers in Biase Local Government Area of Cross River State Nigeria. Eight subjects were selected from four secondary schools. Eight words, selected from Cruttenden's Gimson's pronunciation of English, were used for the analysis. The metrical theory, developed by Lieberman (1975), was adopted as the framework for the analysis. Findings indicated that Erei-English bilinguals place stress on the wrong syllables as shown in the native British speaker's output, and therefore, do not observe English rhythmic alternation rules. All the syllables in a word are almost given equal prominence, a rehash of the tonal nature of Erei, affecting the intelligibility of their spoken English. Based on the findings, the study suggested the availability of well-equipped language laboratories, provision of sophisticated audio-visual aids and computerised speech equipment in Nigeria as well as language teachers in L2 situations should focus instruction on non-segmental features before the individual segments to promote international intelligibility in the speech outputs of L2 users.

Keywords: Lexical Stress, Rhythmic Alternation, Erei-English Bilinguals, Speech Output, Intelligibility, Application, First Language, Second Language

1. Introduction

Second language (L2) speakers learning the English language usually find it difficult to produce the English lexical stress, sentential stress/rhythm and intonation accurately. This difficulty might be caused by the influence of native indigenous languages which are first acquired by L2 speakers (Juffs, 1990). In the study of an L2, focus has been on the production of individual segments (vowel and consonants), thereby disregarding the supra-segmental (non-segmental or prosodic) features, which are factors that contribute greatly to foreign accent and intelligibility (Flege, Munro & Mackay, 1995; Ukam, 2015).

The Segments are discrete unit of sounds which can be separated individually; they are the vowels and consonants, occurring in a distinct temporal order. They are drastically different from the non-segmental features which co-exist with multiple segments, and therefore cannot be distinctively separated. According to Okon (2000), the non-segmental features are elements of prominence which include, among others, stress (intensity), rhythm, intonation (pitch) and duration (length). The features are extended over more than one sound in an utterance, and cannot be sharply divided into smaller units as does with the vowels and consonants (Ukam, 2015). Non-segmental features group languages of the world into three main classes: stress languages (like English), tone languages (like many African and Asian languages) and pitch languages (like Japanese) (Ladefoged, 2006, pp. 253-54).

Flege, Munro and Mackay discovered that late Italian speakers who arrived from Canada had a noticeable foreign accent than those who arrived earlier. Their research shows that early Italian arrivals in Canada perform better at English pronunciation tasks. This is, of course, an indication that maturity has implicative negative factor on human

ability to actually acquire native-like accent of a target language. Although research shows that L2 phonological systems may be acquired adequately when there is a comprehensive knowledge of both the segmental and the supra-segmental features (Ukam, 2015), yet Derwing (2008) maintains that the supra-segmental features have been found to have exerted more influence on intelligibility of L2 speech than the segmental features.

In the words of Guion (2005) and Rasier and Hiligsmann (2007), the study of the non-segmental features has recently been investigated in the foreign accent and L2 acquisition. Particularly, Byne and Walsh (1973), Coniam (2002), Bott (2005) and Guion (2005), have independently argued that perceived foreign accent and intelligibility might be more greatly impacted by the supra-segmental features than the individual segmental features. Ukam (2015) observes similar difficulty made by Erei learners of English due to prosodic difficulty with stress placement, rhythm and intonation of English. According to the source, since stress and/or rhythmic systems of Erei are apparently different from English, there is the possibility of stress clash, and as such negative interference could be noticeable to Erei-English learners. In the same vein, Ukam, Uwen and Omale (2017) found that the non-segmental features are not given adequate attention in L2 pronunciation teaching class compared to the segmental features, which would greatly affect native Erei speakers. In their report, they conclude that L2 learners like Erei speakers find it difficult to apply appropriate stress, rhythm or intonation in their spoken outputs due to inadequate attention given to the teaching of the non-segmental features.

Brawerman-Albini and Becker (2014) demonstrate that L2 adult speakers have continuously struggled to produce certain sounds of the target language, especially the prosodic elements particularly because of the difficulty they have to produce contrasts of an L2 which are not distinctive in their first language (L1) in an appropriate way. They report that L2 learners usually identify L2 sounds with L1 sounds even when both are acoustically different, making them to substitute their L1 sounds for the target language during the process of articulation. Flege, Takagi and Mann (1995) argue that very few people who start learning an L2 at adult age are able to speak without any kind of accent.

Brawermann-Albini and Becker (2014, cited in Mehler, Jusczyk, Lambertz, Halsted, Bertocini & Amie-Tison 1988) suggest that L2 learners should learn the L2 prosody before they learn the individual segments if they should communicate intelligibly. They further argue that at adult age, it is usually very difficult to adjust the perception and production mechanism, and therefore L2 learners will definitely find it difficult to produce and perceive the target language accurately.

Within the area of phonology, Altmann (2006) reports that the study of lexical stress has not been seriously studied: "less interest has been paid to the L2 acquisition of word stress which did not become the topic of psycholinguistic research until recently" (p. 1). The source points out that although stress was not sufficiently studied, it is obvious that the incorrect placement of primary stress in "L2 words may lead to miscommunication since the misplacement of lexical stress can precipitate false recognition, often in defiance of segmental evidence" (p. 1) (see Cutler, 1984, p. 80). In 2013, Chen, adding to Altmann's investigation, agrees that lexical stress was not much emphasised in the early Communication Language Teaching, has not been sufficiently studied and was therefore, completely understudied topic in applied linguistics in general.

Lexical stress in English is a very vital tool in the production and perception of English words and sentences by native English speakers. Second language learners of English often find it difficult to place the main or primary stress on a word correctly due to the tonal nature of their L1. For instance, Ukam, Uwen and Omale (2017) observe that Erei-English speakers place equal prominent to every syllable so that the tonal nature of Erei would come out clearly. Chen (2007) investigated Chinese speakers of English and found out also that Chinese speakers use tones in studying English stress. For L2 speakers to communicate intelligibly therefore, it is advisable to correctly place the primary stress on the right syllable since the incorrect stress placement may actually contribute to lack of foreign accent and unintelligibility. Brawermann-Albini and Becker (2014) note that stress is treated in different ways between speakers of varied languages. They argue further that learners show phonological deafness, that is, discrimination of phonological contrasts which are not used in their L1. According to their reasoning, "this difficulty would resist to L2 teaching and even be difficult to overcome with specific training" (p. 76), and that speakers whose L1 has contrastive stress like Spanish, China and most Nigerian languages, store such in their lexicon, and therefore use it to manifest the target language like English.

Recent research has even demonstrated clearly that misplacement of lexical stress is a factor affecting intelligibility across a range of listeners' group. Field (2005), for example, states that rightward stress shift accompanied by a change in vowel quality was found to have a strong effect on intelligibility for both native and non-native speakers. It cannot therefore, be argued that the perception of stress does not correlate with proficiency in other aspects of L2, particularly tone (Boyle, 1987; Altmann, 2006). In other words, L2 learners may encounter problems with the

perception and/or production of word stress in English. They may either apply the L1 stress placement strategy to the target language (Archibald, 1993, 1998; Altmann, 2006), or produce stress in a position it would fall differently, that is, neither in the L1 nor L2 (Archibald, 1993, 1997; Pater, 1997).

Verdugo (2006) suggests that stress, like intonation, must be integrated into the curriculum of any L2 instruction, must be well taught to help learners understand the right application of the prosodic features of the new language, and later generate the appropriate utterance depending on the meaning that the speech is intended for. English lexical stress explains the unique rhythmic characteristics of English, and of course, very significant for intelligibility and foreign accentedness, which should be investigated among Erei people as L2 users of English.

1.1 Objectives of the Study

1. To investigate the English lexical stress in the speech outputs of Erei-English bilingual students in order to test their performance.
2. To determine the manifestation and/or placement of English lexical stress by Erei learners of English.
3. To suggest measures of the right application of English lexical stress by Erei-English bilingual users.

1.2 Research Questions

1. What is the nature of Erei and English lexical stresses?
2. To what extent do Erei learners of English place stress in their outputs?
3. What measures may be taken to ensure the correct application of English lexical stress by Erei-English bilinguals to enhance communication.

2. Literature Review

2.1 Lexical Stress

Although stress or accent has been studied at length for a very long time, there remains an area where terminological confusion abounds (Cutler & Ladd, 1983). In some languages, some syllables in a word are produced louder and longer than others; they are described as stressed. The difference between strong and weak syllables in English is linguistically important because strong and weak syllables alternate with each other to give English its characteristic rhythm. A stressed syllable is the emphasis given to certain syllables in relation to others, or the emphasis given to certain words in a sentence in relation to others. Ladefoged (2006) defines a stressed syllable as "usually produced by pushing some air out of the lungs in one syllable relative to others... has greater respiratory energy than neighbouring unstressed syllables... it may also have an increase in laryngal activity (p. 110). And Ou (2004, p. 1541) describes lexical stress as "the prominence in a word".

One important thing we must note about stress is its relativity. All syllables in a word or sentence are not given the same amount of energy in their articulation; whereas some are produced louder and longer, others are weakened and usually rushed over. In the words of Mathews (1997), stress is "the relative degree of force with which a syllable is heard as more prominent than others" (p. 383). In auditory terms, it is noted to be different in length, in perceived loudness, in vowel quality, in pitch or in a combination of these. This auditory sensation of loudness, as Couper-Kuhklen (1986, p. 19) observes in her analysis, has two different correlates: an increase in the amplitude of the sound wave (loudness) and/or increase in the vibration of the pitch (vocal folds).

Apart from the syllable being louder or longer, the other variable which must be considered in defining stress is the existence of a glide in the syllable. Using the word "insult" to illustrate, we can have: ˈin-sult (n.) and in-ˈsult (v.). In her analysis of the word "insult" as a verb, Couper-Kuhklen (1986, p. 20) is of the opinion that the second syllable is louder and longer than the first. There is, of course, a noticeable pitch glide in the second syllable, whereas the first syllable has a level pitch. The first syllable, on the other hand, is louder and longer than the second when used as a noun.

Scholars (Quirk & Greenbaun, 1973; Onuigbo, 1996; Roach, 2000; Ladefoged, 2006) demonstrate that there are two important characteristics which mark stressed syllables from the unstressed syllables: production and perception. The production aspect has to do with what the speakers do in producing stressed syllables, exerting more muscular energy. And from the viewpoint of perception, the listeners are considered to perceive some syllables as louder than others. Listeners are therefore able to detect the syllables that are stressed from their unstressed counterparts in that they hear some more prominently than the others. Ladefoged (2006) indicates that stress has at least two functions in English: to emphasis a word and to differentiate one word with another. Even the connecting words, like the conjunctions and the preposition, according to Ladefoged, could be stressed, depending on the speaker's intention.

2.2 Degrees of Stress

The phenomenon of stress presents some problems to linguists. One of such problems is how to determine what degree of stress differentiation is necessary in a given word, phrase or sentence. Phoneticians like Roach (2000), Cruttenden (2001) and Ladefoged (2006) recognise three or four degrees of stress in English: primary, secondary, tertiary and weak. Particularly, Cruttenden (2001) argues that four degrees of stress are necessary in English: primary accent, marked by the last major pitch change in a word; secondary accent, marked by a non-final pitch change in a word; minor prominence, produced by the occurrence of a full vowel, containing no pitch change and a non-prominent syllable containing no pitch change which includes one of the vowels /i, u, ə/. Although Cruttenden is of the opinion that four degrees of stress exist in English, he further suggests that it is the position of the primary accent that contributes most to a word's accented pattern, and which will be the principal cue to the nuclear tone.

The primary (dynamic or stressed) syllables are produced with greater muscular energy with the vowels having longer duration than those in unstressed position. Stress therefore, is a relational feature because a syllable may be classified as strong in relation to the rest. Other syllables produced with less effort are unstressed. A secondary stressed syllable is not pronounced as strongly as the primary, but it is stressed relative to weak syllables. The secondary stress, like the primary is unpredictable in English. In the words "ˌorganiˈsation" and "aˌccumuˈlation" for example, the primary stress is on the fourth syllable for both, whereas the former has the secondary stress placed on the first syllable, and the latter has the secondary stress placed on the second. The secondary stress, unlike the primary that is indicated by a short high vertical stroke placed at the top of the stressed syllable or sometimes written by capital letter, is indicated by a short low vertical stroke placed at the foot of the stressed syllable. Ladefoged (2006) reports that secondary stress is only necessary in polysyllabic words containing several unstressed syllables preceding the primary stress in order to avoid long unstressing (stress lapse), "in longer words containing two stresses, the apparent difference in the levels of the first and the second stress is usually due to the superimposition of an intonation effect" (p. 113), otherwise, there are no such differences in the stress levels.

Some phoneticians (Onuigbo 1996; Roach, 2000; Ladefoged 2006) have argued that "it is possible to describe English with only one degree of stress as long as unstressed syllables are phonetically distinguished for vowel reduction" (Ladefoged, 2006, p. 114). They are independently of the opinion that the different degrees postulated for English, like primary-secondary or primary-secondary-tertiary and so on, are not true phonemic stress but are mere phonetic detail instead, because the supposed secondary stress is not characterised by the increase in the respiratory activity as shown with the primary stress in English or other languages. And Roach (2000) argues further that "the introduction of tertiary stress seems to introduce an unnecessary degree of complexity" (p. 19).

2.3 Placement of Stress

Every word said alone has a stress pattern. In English, stress is a distinctive feature as it is present in both words and sentences. If stress changes from one syllable to the other, meaning might change as well, as in, a ˈpresent (n.) and to preˈsent (v.). As we have illustrated earlier, L2 learners often find it difficult to assign the correct position of English word stress. In some languages like French (where the last syllable in a word is usually stressed), Polish (where the penultimate, second to the last syllable, is usually stressed) or Czech (where the first syllable is usually stressed), stress position in a word is obviously detectable with a fixed regular stress pattern, whereas in some others, especially English, it depends on certain general rules applicable in those languages. English therefore, is an accentual language with moveable and/or variable stress assignment which could be unpredictable. But most languages like Erei as well as most indigenous Nigerian languages use tone lexically to differentiate the meaning of words. The unpredictability or constant changing of English lexical stress is by and large worrisome which "causes a great deal of difficulty, particularly to foreign learners" (Roach 2000, pp. 96-7) of English.

Many phoneticians have suggested that "English word stress is too difficult to predict and should be treated as a property of the individual word which will be learnt when the word itself is learnt" (Roach, 2000, p. 89). They argue that lexical stress placement in English is a highly complex matter. According to Roach (2000), the native English speakers usually know how to place stress in every word they come across even without learning the patterns individually, but such is difficult among L2 users who usually find stress placement in English changing; a difficulty which can be traced back to their L1 where, like Erei for instance, all the syllables in a word are allotted with the same amount of energy (Ukam, 2015).

How therefore could L2 speakers of English know which syllables are to be stressed in English since wrong position of stress might change the meaning of the word contextually? Different authorities (Kreidler, 1989; Onuigbo, 1996; Roach, 2000) have provided clues on how learners could identify a stressed syllable on a word. Roach (2000) suggests, for instance, that learners must know if the word is simple or complex. If it is a simple monosyllabic word, it will be

stressed. But if complex, the learners must know the grammatical category of the word. A word which is used as a noun in one context with the primary stress on the first syllable could be used as a verb in another context by shifting the primary stress to the second syllable. The shift in the stress might also affect the quality of the vowel altogether. In another instance, the learner must also recognise how many numbers of syllables are there in a word before advancing to know which are stressed and which are not. Although the rules, according to Roach, are difficult and have several exemptions, yet, he instructs that "it seems more adequate for the foreign learner to learn the stress pattern of a word when the word is learnt" (p. 89). As the learner goes further in mastering English, he would gradually know the rules of stress placement and "correctly stress the most words he might come across" (p. 97).

The effect of stress at the segmental and lexical levels shows its significance to correct pronunciation in English not only on the segmental and non-segmental levels, but also on intelligibility and comprehensibility. Stress, therefore, creates confusion for L2 users of English since unlike Erei, every syllable is allotted with equal prominence (Ukam, 2015; Ukam, Uwen & Omale, 2017). Roach (2000) therefore, suggests that teachers should introduce a system of teaching the "correct stress pattern of a word immediately the word is first learned… it would be easier to go back to the idea of learning the stress for each word individually" (p. 76). Erei-English bilinguals must be conscious of the word stress in English, as it is a very completely different feature from their L1, but a very vital feature for intelligibility in English language.

2.4 Tonal Nature of Erei

Two tones are used in Erei, namely high (ˊ) and low (ˌ) which help listeners to differentiate words (Inya, 2011). Just as stress is phonemic in English (such as, ex-port switching from noun to verb, if the stress shifts from the first syllable of a disyllabic word to the second), tone is also phonemic in Erei. A word may have two distinct meanings by simply changing the tones (Ukam, 2015). Erei-English bilingual speakers transfer these tones in their process of speaking English.

The primary stress is equated to a high tone, whereas all others become low tone with no secondary stress (Ukam, 2015).

3. Theoretical Framework

3.1 Metrical Theory

The metrical theory came up as a rejection of Chomsky and Halle's (1968) model of phonological representation which regards all distinctive features equal. Thus, no single segment has control over the other segments or units. The theory is propounded by Lieberman (1975) and further elaborated by Lieberman and Prince (1977), Selkirk (1980) and Hayes (1981). It is mainly concerned with the parameters that decide the position of stress which is a strength connection between distinct syllables in words. In this theory, Hayes (1995) constructs the idea that stress contains rhythm, that is, stress patterns are organised and distributed rhythmically. Syllables comprising equal level of stress are likely to occur at equal interval; rhythmic distribution of phonological properties other than stress is rare. Like the prosodic theory, metrical theory deals with phonological hierarchies such as the organisation of segments into syllables, syllables into feet and feet into other higher levels. The theory shows that stress occurs in intermediate number of degrees: primary, secondary, tertiary and unstressed. In this theory also, any stressed syllable (main or subsidiary) always counts as strong, whereas unstressed syllables count as weak.

The theory shows further that stress is different from other phonological features through the following: first, stress is not a segmental feature; rather it is the hierarchical rhythmic organisation of utterances. Second, stress is different from both tone and pitch accent in that it is culminative, that is, every content word or phrase has at least a single strong syllable. Third, stress is rhythmically distributed in systems where the stressed and unstressed syllables alternate and where stress clashes and lapses are avoided. Other features are that stress is hierarchical since multiple stresses may occur in any utterance, and that stress does not assimilate to an adjacent syllable as it could produce clash (Udoh, 1998; Okon, 2000; Ukam, 2015).

There are two representations used in metrical theory: the tree and the grid. A tree structured node is marked either as strong or weak; the leaves of the tree are usually corresponded to the syllables. The tree expresses both structure and prominent relation. The grid, on the other hand, is essential in the description of word stress patterns, handling a phenomenon known as "repair strategies" which is used to add, delete or shift stresses to avoid stress clashes or lapses. A stress clash occurs when two adjacent strong syllables are close to each other, or when two syllables display successive rows in a grid in which their columns are adjacent. And a stress lapse arises when they are two or more unstressed syllables in a row, especially preceding a stressed syllable.

The application of metrical grid is marked by the symbol X, that is, it is characterised by aligning or lining up columns of stars with different height. The syllable nuclei, with a higher column, represent a more prominent syllable. The weight and beat of utterances are shown through the symbol X (see Ukam, 2015). There are two levels of representation in metrical grid: the vertical and horizontal levels. While the vertical level shows the length of the beat in the rhythm of the phrase, whereas the horizontal axis, numbered from 3-1, shows the actual beat from which alternation (stressed and weak syllables) could be read.

Udoh (1998) explains that the tree or grid must obey the following rules before it will be metrically accepted: first, there must be a sister node with which to relate (binary); second, there are no provisions for [SS] or [WW] for there must be prominent relation (asymmetrical); and finally, there is no [S] or [W] for a sister node is mandatory (irreflexive) (Okon, 2000; Ukam, 2017). In analysing the data and discussing the findings of this study, these features are considered.

4. Methodology

The study was conducted in four secondary schools located in Erei, Biase Local Government Area of Cross River State Nigeria. There are: Community Commercial School, Ibini (CCSIB); Community Secondary School, Abanwan (CCSAB); Community Secondary School, Ipene (CSSIP) and Community Secondary School, Urugbam (CSSUR). Four males and four females who were preparing for the Senior School Certificate Examination 2017-18, were tested. Two subjects (one male and one female) were selected from each of the schools. Eight lexical words of different varieties, ranging from two-syllabic words to five-syllabic words, were used for the analysis, although only three were metrically analysed, and were selected from Cruttenden's (2001) *Gimson's pronunciation of English*: 1(a). Insult (n.) (b). Insult (v.); 2(a). Combine (n.) (b). Combine (v.); 3. Listen; 4. Examination; 5. Vocabulary; 6. Japanese; 7. Deceive; and 8. Screwdriver. The subjects were asked to read aloud the selected words which were also recorded on tape in order to test accurately the application of English lexical stress as well as their performance in spoken English. The respondents were subjected to 12 weeks pre-test examinations, exposing them to the knowledge of English lexical stress.

The data were subjected to the contemporary computerised linguistic analysis through the use of Praat software in order to show the intensity readings of the respondents. The reason why the data were subjected and analysed acoustically through the use of computer is to reduce elements of subjectivity and human errors because the human ears might not collect all the sounds that it hears. In order to further strengthen our analysis, a native English speaker of British accent (BE) was also tested with the same equipments in order to serve as a control. A grid metrical analysis was adopted to show the recorded utterances as were read by the control, on one hand, and by Erei-English bilingual speakers, on the other.

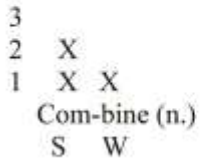
4.1 Data Analysis

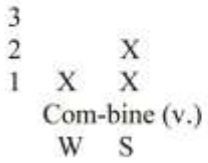
The degree of stress is represented by the height of columns (Udoh, 1998). The metrical analysis of Erei-English bilinguals is carried out using the metrical grid (not the tree) since it shows both the beats and the internal structure of the syllables. The intensity readings, ranging from 50 to 100 decibels (dB), are used to show the degree of stress prominence placed on each syllable and the height of the columns (Okon, 2000; Ukam, 2015). The grid structure contains domains in rows from one to three. Line 1, the lowest layer which is less prominent than others, is the unstressed row. Line 2 shows the secondary stress, and is more prominent than those in Line 1. It is called "foot row" (Ukam, 2015), marking the head of feet and bears the stress; it has an X only above those syllables that are unstressed. The overall syllable in third row, called "word row" (Okon, 2000), is shown by more Xs on Line 3, receiving the primary stress. It has an X which appears only above the syllable that receives the secondary stress of the word.

Metrical analysis of recorded English utterances by a native British speaker and Erei-English bilinguals

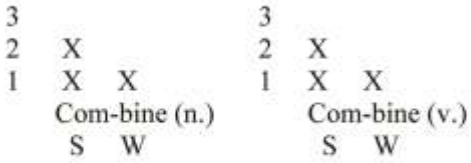
Word 2 (a & b)

BE speaker (control)

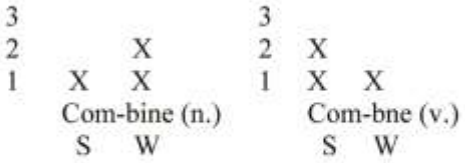




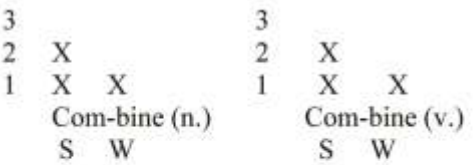
CSSAB male speaker



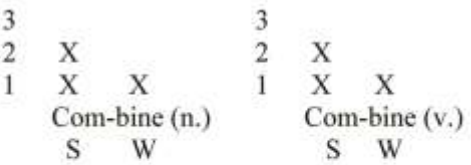
CSSAB female speaker



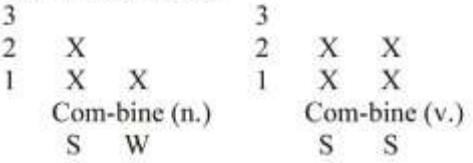
CCSIB male speaker



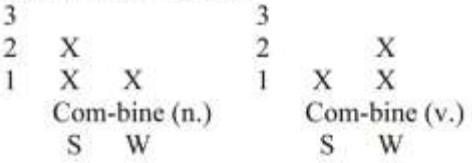
CCSIB female speaker



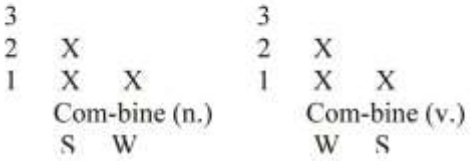
CSSIP male speaker



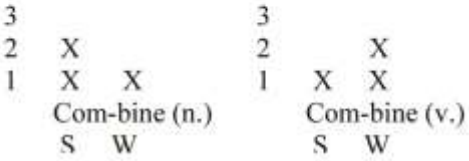
CSSIP female speaker



CSSUR male speaker



CSSUR female speaker

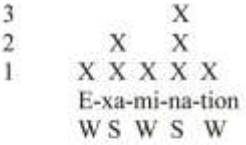


Word 4

BE speaker (control)

CSSAB female speaker

CSSAB male speaker



CCSIB female speaker

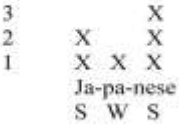
CCSIB male speaker

CSSIP female speaker

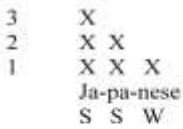
CSSIP male speaker

Word 6

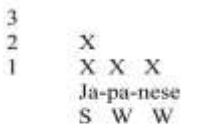
BE speaker (control)



CSSAB female speaker

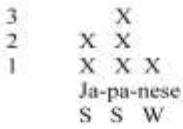


CSSAB male speaker



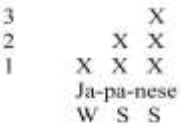
CCSIB female speaker

CCSIB male speaker

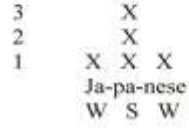


CSSIP female speaker

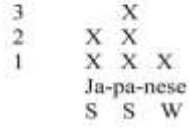
CSSIP male speaker



CSSUR female speaker



CSSUR male speaker



4.2 Discussion of Findings

The grid metrical analysis shown above indicates that there is a deviation and/or variation in the stress placement of some Erei speakers of English studied. In the speech of the native speaker of English, there is no such occurrence of strong syllables preceding each other. The variation in the speech outputs of Erei speakers is seen in the constant occurrence of two or more strong syllables preceding one another. This situation is not permitted in English, that is, the occurrence of two strong syllables adjacent to each other would produce stress clash, and the stress alternation rule does not allow for such a clash. In other words, the respondents placed stress wrongly; any syllable, whether strong or weak, receives primary stress or a strong form.

In word examples 2(a & b), 4, and 6 where we have "combine" (n.), "combine" (v.), "examination" and "Japanese" respectively, there are successive strong syllables in the speech outputs of Erei speakers of English. For the British speaker in "combine", the strong syllable is manifested in the first syllable when the word functions as a noun. The same word receives the primary stress in the second syllable to show that it is a verb. It is possible that the application of primary stress on one of a disyllabic word in English can change the lexical category of that word. For instance, a disyllabic word with main stress on the first syllable indicates a noun or an adjective. The same word becomes a verb when the main stress shifts to the second syllable. This phenomenon is not noticeable in Erei since it is not stress-timed like English, and therefore, Erei speakers of English might find it difficult to observe such differences in their spoken English.

The word "combine" (n.) was rightly stressed by six subjects. Seventy-five per cent of the subjects got the stress right. They gave prominence to the first syllable as displayed in the native speaker's output. It was only one CSSAB female, who placed the stress on the wrong syllable, transferring it from the first to the second, and one other CSSIP male, who also stressed both syllables equal, resulting in stress clash. But the word "combine" (v.) was problematic to the respondents; six subjects (75%), found it difficult to place the right stressed syllable on the word, thereby disregarding its function as used in the verbal position. Only two testees, one CSSIP female and one CSSUR female (25%) placed the stress on the right syllable.

In the word "examination", only three subjects (CSSAB male, CSSIP male and CSSUR male speakers) out of eight (37.5%) rendered the correct primary and secondary stresses to the word, although one CSSUR male manifested a higher intensity on "-na-" instead, a secondary stress in the control's output. The waveform and the intensity reading of the British speaker is high in "-xa-", giving it a secondary stress but higher in the penultimate syllable "-na-" to show the strongest stressed syllable in the word, while the other syllables are reduced. For Erei-English speakers, particularly, CSSAB female speaker, CCSIB female speaker and CSSIP female speaker, they produce up to three strong syllables in that word, indicating that 62.5 per cent of the respondents stressed nearly all the syllables equal, a reflection of syllable-timed nature of Erei.

No respondent (0%) stressed the right syllables in "Japanese". Nearly all the three syllables in the word are given the strong form, which does not conform to the English metrical rule as shown in the control's output. In the control's output, we noted that the primary stress on the word is on the suffix "-ese" which has obligatorily attracted the main stress onto itself. The British speaker therefore, placed the secondary degree of stress for "Ja-" and the primary degree on "-nese", thereby weakening the second syllable "-pa-" to maintain rhythmic alternation. But for Erei speakers, the reverse is the case; they give equal prominent to nearly all the three syllables. Interestingly, for the CSSUR female, the first syllable (which receives a secondary stress in the control's output) and the third syllable (which also receives the primary stress) are both weakened; and the second syllable (an unstressed syllable in the control's output) receives the most prominence.

Furthermore, in word examples 1 and 2 where we have "insult" and "combine" respectively, Erei-English speakers find it difficult to use stress to differentiate both words in terms of noun-verb opposition. However, the contrast in the speech of the native British speaker is clear. Following the acoustic computerised analysis, we observe that the waveform and the intensity readings of the British speaker in the words "insult" and "combine" are higher in the first syllable than the second when the words are used as a noun. When used as a verb however, the intensity is transferred to the second syllable in both words. But this phenomenon is not always noticeable among some Erei speakers of English who have given almost equal prominence to both syllables.

From the readings of intensity tracing of both the control and Erei-English speakers, it is observed that Erei speakers displayed a different waveform and intensity from that of the control. While the British speaker displayed 83dB and 76dB respectively for insult (n.), and 78dB and 81dB for insult (v.), one CSSAB male speaker, on the other hand, rendered the same word as 83dB and 82dB (n.), and 83dB and 81dB (v.) respectively, thereby placing almost equal prominence on both syllables irrespective of the position (noun or verb) used. The second syllable of a disyllabic word

also does not receive the necessary prominence to indicate that the word is used in a verbal position. In other words, Erei users of English therefore, do not necessarily apply stress in their outputs in articulating English utterance.

Table 1 shows the general performance by the respondents, giving a very poor mean performance of 8.3 per cent. The resulting deviation from the standard as represented by the control is a clear indication of the poor application of English lexical stress among Erei speakers as L2 users of English. This statistic on performance of Erei-English bilingual students is undeniably very poor, corroborating the claims of Banjo (1970), Udoh (1998), Okon (2000) and Ukam (2015), among many others.

Table 1. Analysis of performance by the respondents

Words	**Right stressing**	**Wrong stressing**
Insult (n.)	7(87.5%)	1(12.5%)
Insult (v.)	1(12.5%)	7(87.5%)
Combine (n.)	6(75%)	2(25%)
Combine (v.)	2(25%)	6(75%)
Listen	2 (25%)	6(75%)
Vocabulary	2(25%)	6(75%)
Examination	3(37.5%)	5(62.5%)
Japanese	0(0%)	8(100%)
Deceive	3(37.5%)	5(62.5%)
Screwdriver	4(50%)	4(50%)

The words “in-ˈsult” (v.), “com-ˈbine” (v.) and “Ja-pa-ˈnese” for instance, record the lowest in terms of performance; they are the words most incorrectly stressed and therefore poorly pronounced, with none of the syllables receiving any special stress. Rather, all the syllables nearly almost receive equal prominence, a kind of rehash of the syllable-timed rhythm of the Erei language (see Onose, 2010).

The words ˈin-sult (n.), recorded 87 per cent, and ˈcom-bine (n.), recorded 75 per cent, do not create much difficulty for the speakers. It does not necessarily matter to an Erei speaker whether these words are used in a nominal or verbal position since they are not aware of the fact that a change in stress placement of a disyllabic word might change the grammatical category of the word from nominal to verbal position or the reverse. Also the word “Japanese” is often heard as ˈJapanese, Jaˈpanese, ˈJaˈpanese, Jaˈpaˈnese or Jaˈpaˈnese with any syllable receiving prominence, instead of ˌJapaˈnese as rendered in the control’s output where the first syllable receives the secondary stress, the second syllable is weak and the last syllable attracts the primary stress to obey English alternation rules.

The next are “examination” and “deceive” which too like “insult” (v.), “combine” (v.) and Japanese” receive stresses on the wrong syllables by the native Erei-English speakers, even though these words are very common in everyday usage in the environment. In “examination”, one often hears 'exa'mina'tion instead of eˌxamiˈnation. Also one often hears voˈcaˈbulary, ˈvoˈcaˈbuˈlaˈry or ˈvocabuˈlary with any syllable receiving the highest intensity instead of voˈcabulary as it is noticeable in native British speaker’s output. Dadzie and Awonusi (2004) report that this indication is a general attitude experienced by Nigerian speakers of English: “In our pronunciation of English, therefore, stress is realized largely by pitch, in keeping with our inherent tonal pattern... our sentence intonation gives fairly equal spacing to every syllable (p. 189). The word “screwdriver”, is not only apportioned stress on the wrong syllable, it is also assigned a tone on each of the syllables.

The statistic shows that most Erei-English speakers studied give nearly equal prominence to all the syllables in a word so that none of them is marked as strong in relation to others, or place both the primary and secondary stresses on the wrong syllables. This results in taking more time to produce a word or sentence by native Erei speakers of English than by native British speakers (see Ukam, 2015, p. 109). The words are rendered like such Erei local names as Okpokpo, Efamasi, Ebe, Ugo, Edadi and Okpomoro, among many others, where all syllables have equal prominence, and where all vowels receive full realisation. Although different linguistic groups may exhibit peculiar traits in the quality of their spoken outputs, especially as L2 users, the most prominent characteristic among Erei-English speakers is that they generally render equal amount of energy to all the syllables in a word, or have the main stress transferred to the wrong syllable.

5. Conclusion

Lexical stress is a prosodic feature that is very vital for intelligibility (able to be understood by listeners) in English. But wrong application by Erei-English speakers suggests that their utterances differ considerably from native English speakers in a number of features which may drastically impair the intelligibility of their spoken English, as well as conveying information and meanings that the speakers did not intend. If we agree with Okon (2000) and Ukam (2015), who both conclude that L1 has a greater influence on L2 speakers, the performance of the subjects under study reveals that their spoken English has made English in the Nigerian environment to have peculiar pronunciation characteristics. The reason is that nearly all the syllables are placed with the same equal prominence both in words and sentences so that none is marked, giving rise to monotony. The statistic reveals that the progress achieved by Erei-English speakers at the segmental level of English phonology has no counterpart in the level of non-segmental phonology. Our experimental research has served to prove that the teaching of English supra-segmental features, especially the feature of stress to speakers of such syllable-timed languages like Erei may be a hard task, and that further researches should therefore, take that into consideration.

6. Recommendations

1. Well-equipped language laboratories with sophisticated audio-visual aids, computerised speech equipment, among others, have today become a commonplace in language learning in most parts of the world, and should therefore, be introduced in Nigerian schools if we are to promote international intelligibility.
2. Instead of native-like competence traditionally valued, intelligibility, valued in communicative approach, should be the goal of phonological instruction. Teaching pronunciation from the point of prosodic features should be considered very necessary within the communicative approach to teaching English as an L2 rather than undue emphasis in teaching the segmental features
3. When teaching vocabulary, English language teachers should introduce a system of teaching the correct stress pattern of a word immediately the word is first learned, pointing out to learners where the primary, secondary and weak stresses fall in every word they come across, and especially exposing the rhythmic alternation of English to them. This method would help to constantly improve the learners' performance in spoken English.
4. To achieve proficiency in English, L2 learners should first be exposed to the teaching of non-segmental features when phonology is introduced before advancing to the segmental features (bottom-up approach). This method, if welcomed, would help greatly to ease communication and improve the performance of L2 learners of English.

References

Altmann, H. (2006). The perception and production of second language stress: A cross-linguistic experimental study. A Ph.D. Dissertation, University of Delaware.

Archibald, J. (1993). Metrical phonology and the acquisition of L2 stress. In F. R. Eckman (Ed.), *Confluence: Linguistics, L2 Acquisition and Speech Pathology*, 37-48. Amsterdam, NL: John Benjamins. https://doi.org/10.1075/lald.4.05arc

Archibald, J. (1997). The acquisition of English stress by speakers of nonaccentual languages: Lexical storage versus computation of stress. *Linguistics, 35*(1), 167-181. https://doi.org/10.1515/ling.1997.35.1.167

Archibald, J. (1998). Metrical parameters and lexical dependency: Acquiring L2 Stress. In: S. Flynn, G. Martohardjono, & W. O'Neil (Eds.). *The generative study of second language acquisition* (pp. 279-301). Mahwah: Lawrence Erlbaum Associates.

Banjo, A. (1970). The English language and the Nigerian environment. *JNESA*, 4(1), 45-51.

Bott, A. (2005). *Computer-aided self-access pronunciation materials designed to teach stress in American English*. Unpublished M.A. dissertation. Brigham: Brigham Young University.

Boyle, J. P. (1987). Perspectives on stress and intonation in language learning. *System, 15*(2), 189-195. https://doi.org/10.1016/0346-251X(87)90066-2

Brawerman-Albini, A. & Becker, M. R. (2014). Perception and production of English stress by Brazilian speakers. *Concordia Working Papers in Applied Linguistics, 5*, 73-84.

Byne, D. A. & Walsh, G. (1973). *Listening comprehension 1: Pronunciation practice teacher's book.* London: Longman.

Chen, S. (2013). Acoustic cues for English lexical stress perception by Mandarin native speakers: A critical review. In J. Levis & K. LeVelle (Eds.). *Proceedings of the 4th Pronunciation in Second Language Learning and Teaching Conference.* August 2012, (pp. 43-53). Ames, IA: Iowa State University.

Chen, Y. (2007). From tone to accent: The tonal transfer strategy for Chinese L2 learners of Spanish. *Proceedings of 16th International Congress of Phonetic Sciences, 16*, 6-10. Retrieved from http://www.icphs2007.de/conference/Papers/1043/1043.pdf

Chomsky, N. & Halle, M. (1968). *The sound pattern of English.* New York: Harper and Row.

Coniam, D. (2002). Technology as an awareness-raising tool for sensitising teachers to features of stress and rhythm in English. *Language Awareness, 11*(1), 30-42. https://doi.org/10.1080/09658410208667044

Couper-Kuhlen, E. (1986). *An introduction to English prosody.* London: Arnold.

Cruttenden, A. (2001). *Gimson's pronunciation of English.* (6th ed.). New York: Oxford University Press.

Cutler, A. (1984). Stress and accent in language production and understanding. In: D. Gibbon & H. Richter (Eds.) *Intonation, Accent and Rhythm: Studies in Discourse Phonology.* Berlin: Walter de Gruyter. https://doi.org/10.1515/9783110863239.77

Cutler, A. & Ladd, D. R. (Eds.). (1983). *Prosody: Models and measurements.* Heidelberg: Springer-Verlag. https://doi.org/10.1007/978-3-642-69103-4

Derwing, T. M. (2008). Curriculum issues in teaching pronunciation to second language learners. In J. G. Hansen-Edward, & M. L. Zampini (Eds.), *Phonology and Second Language Acquisition* (pp. 347-369). Amsterdam: John Benjamins. Retrieved from https://doi.org/10.1075/sibil.36.17der

Field, J. (2005). Intelligibility and the listener: The role of lexical stress. *TESOL Quarterly, 39*(3), 399– 423. https://doi.org/10.2307/3588487

Flege, J. E., Munro, M. J. & Mackay I. R. A. (1995). Factors affecting strength of perceived foreign accent in a second language. *Acoustical Society of America, 97*(5), 3125-3134. https://doi.org/10.1121/1.413041

Flege, J. E., Takagi, N. & Mann, V. (1995). Japanese adults can learn to produce English/ɹ/ and /l/ accurately. *Language and Speech, 38*(1), 25–55. https://doi.org/10.1177/002383099503800102

Guion, S. G. (2005). Knowledge of English word stress patterns in early and late Korean-English bilinguals. *Studies in Second Language Acquisition*, 27(4), 503-533. https://doi.org/10.1017/S0272263105050230

Hayes, B. (1981). *Metrical theory of stress rules.* Unpublished Ph.D. Dissertation. Cambridge: MIT.

Hayes, B. (1995). *Metrical stress theory.* Chicago: The University of Chicago press.

Inya, F. (2011). *How to read and write Erei.* Abakaliki: The Luke Partnership.

Juffs, A. (1990). Tone, syllable structure and interlanguage phonology: Chinese learners' stress errors. *International Review of Applied Linguistics, 28*(2), 99-118. https://doi.org/10.1515/iral.1990.28.2.99

Kreidler, C. (1989). *The pronunciation of English.* Oxford: Blackwell.

Ladefoged, P. (2006). *A course in phonetics* (5th ed.). Boston: Thomson Higher Education.

Lieberman, M. (1975). *The intonation system of English.* Ph.D. Dissertation, MIT, India University Linguistic Club.

Lieberman, M. and A. Prince (1977). On stress and linguistic rhythm. *Linguistic Inquiry, 8*(2), 249-336.

Mathews, P. (1997). *Oxford concise dictionary of linguistics.* London: Oxford University Press.

Mehler, J., Jusczyk, P., Lambertz, G., Halsted, N., Bertoncini, J., & Amiel-Tison, C. (1988). A precursor of language acquisition in young infants. *Cognition, 29*, 143–178. https://doi.org/10.1016/0010-0277(88)90035-2

Okon, B. A. (2000). *The intonational structure of Nigerian English.* Unpublished Ph.D. Dissertation. University of Ibadan.

Onose, I. I. (2010). Supra-segmentals in the spoken English of Nigerians. *Journal of Communication and Culture: International Perspective, 1*, 3.

Onuigbo, S. (1996). *Oral English for schools and colleges.* (3rd ed.). Onitsha: First Publisher.

Ou, S. C. (2004). An optimality-theoretic approach to word stress: Evidence from Mandarin-English interlanguage. Proceeding of 15th ICPhS at Barcelona.

Pater, J. P. (1997). Metrical parameter missetting in second language acquisition. In: S. J. Hannahs & M. Young-Scholten (Eds.) *Focus on phonological acquisition* (pp. 235-261), Amsterdam: John Benjamins.

Quirk, R. & Greenbaum, S. (1973). *A university grammar of English.* Delhi: Research Education.

Roach, P. (2000). *English phonetics and phonology: A practical course.* (3rd ed.). Cambridge: Cambridge University Press.

Selkirk, E. (1980). *The phrase phonology of English and French.* New York: Garland Publishing.

Udoh, I. I. (1998). *The effect of duration on the intonation of Anaang learners of English.* Unpublished Ph.D. Dissertation, University of Calabar.

Ukam, E. I. (2015). *Non-segmental features in the spoken English of Erei-English bilingual students.* Unpublished M.A. Thesis. University of Calabar.

Ukam, E. I., Uwen, G. O. & Omale, C. (2017). Application of stress, rhythm and intonation in the speech of Erei-English bilinguals. *Global Journal of Arts, Humanities and Social Sciences, 5*(7), 27-38.

Verdugo, R. D. (2006). A study of intonation awareness and learning in non-native speakers of English. *Language Awareness, 15*(3), 141-159. https://doi.org/10.2167/la404.0