ACCOUNTING FOR L2 LEARNERS' ERRORS IN WORD STRESS PLACEMENT

Clara Herlina Karjo
Universitas Katolik Atma Jaya
claraherlina@yahoo.com

Abstract
Stress placement in English words is governed by highly complicated rules. Thus, assigning stress correctly in English words has been a challenging task for L2 learners, especially Indonesian learners since their L1 does not recognize such stress system. This study explores the production of English word stress by 30 university students. The method used for this study is immediate repetition task. Participants are instructed to identify the stress placement of 80 English words which are auditorily presented as stimuli and immediately repeat the words with correct stress placement. The objectives of this study are to find out whether English word stress placement is problematic for L2 learners and to investigate the phonological factors which account for these problems. Research reveals that L2 learners have different ability in producing the stress, but three-syllable words are more problematic than two-syllable words. Moreover, misplacement of stress is caused by, among others, the influence of vowel lenght and vowel height.

Keywords: stress placement, word stress, vowel length, vowel height, production, recognition

INTRODUCTION

One element of the L2 prosodic system that mostly causes difficulty for learners is the placement of stress (Burges & Spencer, 2000; Jenkins, 2000). Learners often have difficulty in perceiving and producing L2 words with correct stress placement. This difficulty ensues because stress placement in English is highly 'rule-governed' and learners often have problems in acquiring these 'rules', particularly when the rules of the L1 are both different and less complex. Jenkins (1998) also mentions that these 'rules' are highly complex, containing manifold exceptions and differences among L1 varieties and according to syntactic context that reliable rules cannot be easily formulated, let alone learnt.

English is a stress-timed language (Roach, 2009; Carr, 1999) implying that the meaning of a certain utterance is determined by the correct placement of stress in a word. For example the word 'present' is used as a noun if the stress is placed on the first syllable while it is a verb when the stress is placed on the second syllable. As an illustration, to determine the placement of stress in the word 'present', we have to take into account at least four factors. First, the grammatical class of the word, whether it is a noun, a verb, an adjective or an adverb or broadly categorized as a content word. In general, content words are stressed because they carry information while function words are generally not stressed. Secondly, the morphological form of the word. Words can be categorized as simple or complex as a result of either containing one or more affixes, thus affecting the stress

placement. Third, the phonological structure of the syllables. Syllables that contain a schwa /ə/ and short vowels are usually unstressed. Finally, the number of syllables also determines the stress placement. Two, three or four-syllable words require different treatment in placing stress. Therefore, what Roach (2009) describes as simple word stress rules are actually not simple at all. It is the complexity of stress rules that makes it difficult for learners of different language backgrounds to assign the correct placement of word stress (Benrabah, 1997; Archibald, 1997; Flege, Bohn, & Jang 1989; Low & Grabe, 1999).

Studies on how adult L2 learners perceive and produce L2 word stress patterns have been numerous. Wayland, Guion, Landfair, and Li (2006) study the perception of English stress by Thai learners. Guion, Harada, and Clark (2004) study the influence of syllable structure on the perception of English stress by Spanish-English bilinguals. Archibald (1997) investigates Chinese and Japanese speakers's production of English stress and Low and Grabe (1999) does research of Singaporean learners' production of English stress. Indonesian students, assumingly, also have similar problems in acquiring English word stress pattern. A study by Weda (2009) reported that Indonesian speakers of English cannot identify stress for polysyllabic words. Basri (2010) also mentioned that Indonesian speakers tend to carry the stress pattern of Indonesian to English.

Previous studies have identified several factors which influence L2 learners to assign stress on certain syllable. Guion et al. (2004) mention three

factors, namely word class, syllable structure and phonological similarity. Kawagoe (2003) examined the influence of syllable weight and Kondo (2009) discovered the vowel quality.

The present study, tries to what extent Indonesian learners' are able to assign stress accurately on English words and accordingly to find out the phonological factors which cause stress placement errors.

LITERATURE REVIEW

Basically, a stressed syllable can be identified by three parameters: **loudness, length** and **pitch** (Goldsmith, 1990; Clark and Yallop, 1998). Roach (2009) adds another parameter, i.e. **quality.** Thus, a stressed syllable should be produced louder than the others. It is pronounced longer and with a higher pitch, and finally it has a vowel which is different in quality to the neighboring syllables. Generally, these four factors work together in combination, although one syllable can be made prominent by means of only one or two factors.

In summary, there are four parameters to decide on stress placement in English words as stated by Roach (2009:97):

a. *Morphological form of the words*. A simple word and a complex word require different stress placement. Complex words containing affixes or compound words are also stressed differently. For example, a simple word *photo* is stressed on the first syllable [ˈfəʊtəʊ], while a complex word *photography* is stressed on the second syllable [fəˈtɒɡrəfi].

b. *Grammatical category of the words*. Content words such as nouns, verbs, adjective and adverbs are generally stressed while function words are generally unstressed. Yet, the rules for each category also differ. An example of stress placement rules for two-syllable verb is that if the second syllable of the verb is a strong syllable, then that second syllable is stressed, as in the word *apply* [əˈplaɪ]. On the other hand, for two-syllable noun, the rule is that if the second syllable contains a short vowel, then the stress will usually come on the first syllable, as in the word *money* [ˈmʌnɪ].

c. *The number of syllables*. Words consisting of more than one syllable should adhere to various patterns of stress placement. For example, a two-syllable adjective *perfect* is stressed on the first syllable [ˈpɜːfɪkt], whereas its three-syllable noun counterpart *perfection* is stressed on the second syllable [pəˈfekʃn].

d. *Phonological structure of syllable*. The structure of syllable determines whether a

syllable is strong or weak. A strong syllable is generally stressed, while the weak one is generally unstressed. For example, in the word *reduce*, the first syllable [rɪ] is a weak syllable as it has no coda, while the second syllable [djuːs] is a strong syllable as it contains long vowel [uː] and a coda [s]. Consequently, the stress should be placed on the strong syllable, i.e. the second one.

Roach (2009) emphasizes that the last parameter *phonological structure of syllable* is the most important since it affects many of the other parameters. He classifies syllables into two types: strong and weak. A strong syllable has a rhyme which has a syllable peak which is a long vowel or diphthong, or a vowel followed by a coda (one or more final consonants). These syllables can be codified as:

CV: (Consonant + long vowel); CVV (Consonant + diphthong); CVC (Consonant + Vowel + Consonant); and CVCC (Consonant + Vowel + Consonant Cluster)

A weak syllable, on the other hand, has a syllable peak which is a short vowel and no coda unless the syllable peak is a schwa /ə/. Weak syllables can be codified as:

CV (Consonant + short vowel); and CəC (Consonant + Schwa + Consonant)

However, knowing which syllables are strong and which are weak sometimes is not enough to determine the correct syllables to be stressed. For example in the word *dialect* there are two strong syllables, the first 'di' [daɪ](CVV – consonant + diphthong) and the last one 'lect'[lekt](CVCC – consonant vowel consonant cluster). However, only one strong syllable can be stressed not both. In this case, the stress falls on the first syllable because there is another factor that can be considered to determine the stress location, such as the lexical class of the word. For the word *dialect,* which is a noun, the stress is usually put on the first syllable.

With such complexities, assigning stress on the correct syllable can be a tremendous task for L2 learners. Many writers have said that English word stress is so difficult to predict. Chomsky and Halle (1968) as well as Hayes (1981) suggest that stress placement can be predicted based on *vowel length* and the *number of coda consonant.* Thus, the syllables which contain long vowel or have coda consonant(s) are likely to be stressed. Prediction of stress placement can also be made based on lexical class. Kelly and Bock (1988) found that 94% nouns are stressed on the first syllable, while only 31% of verbs are stressed on that position. Their findings confirmed the mainstream of stress assignment as

proposed by Chomsky and Halle (1968) that bisyllabic nouns are more likely to have main stress on the first syllable than bisyllabic verbs. However, if prediction fails, Roach (2009) proposes that it is best to treat stress placement as a property of the individual word, which should be learned when the word itself is learned.

While in English, the problem occurs in the placement of stress, in Indonesian, it is still debatable whether lexical stress exists in Indonesian words. Indonesian words do not use phonetic cues such as intensity, duration and vowel quality to discriminate one word to another. In Indonesian it is possible to put the prominence on any syllable of a word, such as **mem**perbanyak, mem**per**banyak, memper**ba**nyak, memperba**nyak** (to increase) without changing the meaning. The only effect is that it doesn't sound Indonesian (Dardjowidjojo, 2009).

However, there are also linguists who advocate the existence of lexical stress in Indonesian. Yet, among these stress existence proponents, there is still an inconsistency concerning stress position in Indonesian. Commonly, stress is said to be on the penultimate syllable, but others say it is on the final syllable, and some others say it can be on any syllable!

Traditionally, most authors claim that the **penultimate** syllable is stressed. Cohn (1989) claims that monomorphemic words have main stress on the penultimate syllable no matter how many syllables a word has, as in the following example: **ca**t, **ca**ri, bi**ca**ra, bijak**sa**na, kontinu**a**si, erodina**mi**ka *(paint, find, talk, wise, continuation, aerodynamics)*.

While Cohn generalizes the location of stress on penultimate syllable for all monomorphemic words, other authors include the vowel schwa /ə/ as the factor that influences stress location. They claim that the penultimate syllable is stressed, unless this syllable contains a schwa *(pepet)*, in which case stress is final (Alieva, Ogoblin & Sirk, 1991: 63; Basri, 2010). For example: **ba**sah, **bo**tol, istira**hat**, ben**tuk**, per**lu** *(wet, bottle, rest, shape, need)*.

METHOD
Participants
The participants for this study were 30 English Department students of a private university in Jakarta. All were adult college-age (age range = 18-38 years old, *M* = 21.13) Although they originally came from various places in Indonesia with diverse ethnic language backgrounds such as Sundanese, Javanese, etc., they had been exposed to Indonesian since birth. All participants had also received primary and secondary education in Indonesian. Their exposure to Indonesian occurred sufficiently early to consider them native speakers of

Indonesian, at least with respect to their ability to perceive L1 speech accurately (Mack, 2003).

Prior to testing, the participants had completed an average of 6 semester English instruction in middle school and another 6 semesters in high school. Some of them had even got English instruction since elementary school. Thus, the average of learning English for all participants was 9.09 years. At the time of testing, the participants were enrolled in a fourth-semester course of English Phonology. The results of the testing in this study were also used as part of their academic score for this subject.

Materials
The experiment was designed to test whether Indonesian learners of English can place the lexical stress correctly for two-syllable and three-syllable English words. The materials used for this study were 80 English words. These words were chosen purposively from Academic Word List developed by Coxhead (2000). Academic Word List consists of 10 sub-lists which are arranged based on the most common words used in academic field. Eight words from each sub-list were selected by following two more criteria: they were either nouns or verbs and consisting of two or three syllables. As a result, 40 bisyllabic and 40 trisyllabic words were chosen as the materials for this study.

Table 1. List of words

Two syllable words		Three syllable words	
Research	Display	Principle	Policy
Technique	Resource	Conclusion	Element
Labor	Structure	Component	Document
Impact	Option	Perspective	Conference
Network	Device	Expansion	Attitude
Prospect	Symbol	Subsidy	Commitment
Drama	Author	Paragraph	Energy
Thesis	Format	Complement	Instruction
Symbol	Ethic	Institute	Dynamics
Decade	Topic	Theory	Depression
Involve	Request	Interact	Guarantee
Achieve	Invest	Enable	Contradict
Emerge	Rely	Prohibit	Distribute
Promote	Predict	Abandon	Contribute
Consult	Adapt	Constitute	Acknowledge
Attach	Restore	Finalize	Formulate
Equip	Collapse	Regulate	Normalize
Major	Schedule	Integrate	Concentrate
Injure	Lecture	Substitute	Modify
Target	Sequence	Minimize	Simulate

The selected English words were further categorized based on the stress location as assigned in the Oxford Advanced Learners Dictionary, 8th edition (2010). Thus, the two-syllable words consisted of 21 words with penult stress and 19 words with final stress. Similarly, the three-syllabic words consisted of 23 antepenult stress words, 14 penult stress words and 3 final stress words. The test items

are presented in the appendix. The stimuli for the experiment (the sound recording of these 80 words) were also taken from Oxford Advanced Learners Dictionary CD-ROM.

Procedure

The testing which lasted approximately 40 minutes was conducted in a language laboratory using a personal speaker and speech-presentation software. The task used for this study was immediate repetition task (Onishi et al., 2002). In this task, the participants were instructed to listen to 80 words auditorily presented with the loudspeaker and to repeat each word as accurately as possible, by paying special attention to the location of stress. The participants' responses were audiotaped and later processed with a speech-analysis software to determine the accuracy of stress placement.

RESULTS AND DISCUSSION

The results are presented into two main parts; first, the results of the accuracy of production of stress placement and secondly the phonological factors that cause the misplacement of stress. For ease of reference, problematic words which cause many errors in stress placement are discussed in detail for two-syllable and three-syllable words.

Production Results for two and three-syllable words

Table 2. Stress placement accuracy for two-syllable words

Stress location	Mean	Percentage
Total	27.13	90.43
Penult	25.43	84.76
Final	28.84	96.13

The table above shows that participants had no difficulty in placing the stress in two-syllable words as indicated by the high percentage of the total accuracy rate (90.43%). This result was more or less influenced by the method of data collection, i.e. immediate repetition task. Most of the participants can repeat accurately the tested items because the words still exist in their short term memory. For two-syllable words, there are only two stress locations, i.e. penult and final stress. As indicated by Table 2 above, final stressed words seemed to be easier to produce than penult stressed words for they obtained higher accuracy score 28.84 compared to penult stress words which obtained only 25.43.

Table 3. Stress placement accuracy for three-syllable words

Stress location	Mean	Percentage
Total	19.76	59.20
Antepenult	23.34	77.80
Penult	22.64	75.46
Final	13.33	44.43

Unlike two-syllable words, three-syllable words showed significantly lower accuracy rate. The total accuracy rate for the three-syllable words was only 59.20 %, meaning only 19.76 out of 30 participants can produce stress accurately. Trisyllabic words have three stress locations: antepenult (first), penult (second) and final (last). The Table 3 above indicated that final stressed words were the most problematic because they were causing many errors in stress placement. Even though there were only three words that have final stress, the mean of accuracy was only 13.33. That means, only 13 out of 30 students can pronounce these words accurately by placing the stress on the last syllable.
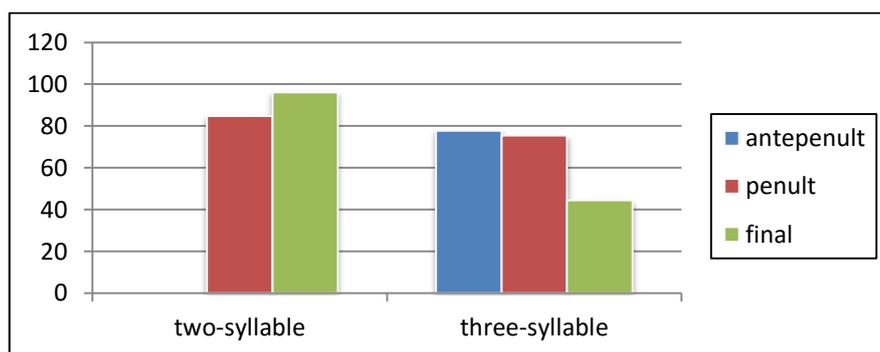

Figure 1. Comparison of production results for two and three-syllable words

Figure 1 denoted that generally two-syllable words triggered more correct answers than three-syllable words. This achievement is understandable since in two-syllable words, there are only two choices, either penult or final syllable that should be stressed. On the contrary, in three-syllable words, there are three choices: antepenult, penult or final syllables to be stressed. Thus, for trisyllabic words, the participants need longer time to make a decision on which syllable to stress rather than for disyllabic words.

Phonological factors for the misplacement of stress

The errors in the production of stress placement can be caused by different factors due to the modality

involved. In this study, participants were given auditory stimuli before they were instructed to produce the words with correct stress placement. Consequently, they can rely on their short term memory to produce the word stress correctly, provided that they can accurately identify the stress location of each word in the stimuli. However, learners also used their cognitive processing ability to compute the location of stress in each word. As a result, misplacement of stress still occurred, probably because they failed to perceive the stress in the stimuli or because they were unable to compute the stress location.

Using the framework of Roach (2009), particularly the fourth parameter, i.e. *the phonological structure of syllable*, the subsequent part describes the causes for misplacement of stress. Phonological factors which account for errors in stress placement are derived from the detailed discussion of problematic words. The words discussed in this section were chosen because more than 10 or 33% of the participants made mistakes in producing them, i.e. they placed the stress on the wrong syllable.

The discussion of problematic words will be divided according to the number of syllables and accordingly to the stress location. Further, stress placement errors of similar phonological causes are grouped and discussed in details.

Problematic two-syllable words
Out of the 40 disyllabic words used in this study, 21 words have penult stress and 19 words have final stress. Only six (6) words were causing a lot of stress misplacement, i.e. the stress was placed on the wrong syllables. The problematic words can be seen in chart 2 below.
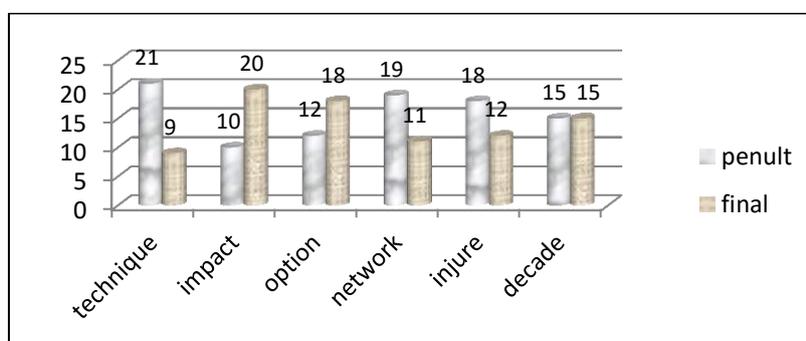

Figure 2. Problematic disyllabic words

Figure 2 above shows six problematic dissyllabic words: *technique, impact, option, network, injure* and *decade.* Two-syllable words only have two stress locations, i.e. penult and final. Out of six words, only the first word *technique* has final stress, while the others have penult syllable stress. The chart also indicates that the final stress word was the most problematic as it caused the most stress placement errors.

Problematic three-syllable words
The 40 disyllabic words used in this study were divided into 23 antepenult stress words, 14 penult stress words and 3 final stress words. There were twelve (12) words which were causing stress misplacement as can be seen in Figure 3 below.
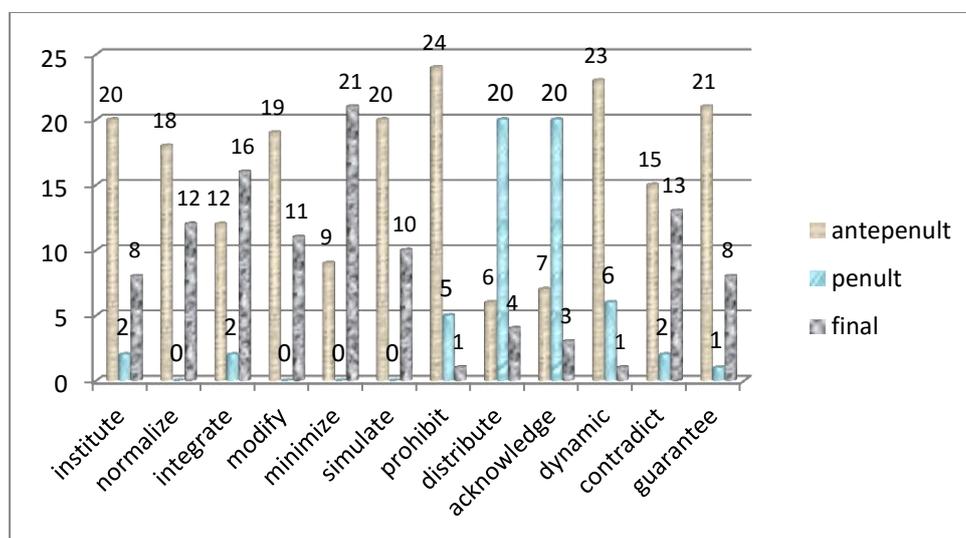

Figure 3. Problematic trisyllabic words

Figure 3 shows twelve trisyllabic words which were problematic. Three-syllable words have three stress locations, i.e. antepenult (first syllable), penult (second syllable) and final (last syllable). Out of the twelve words, six words have initial or antepenult stress, i.e. *institute, normalize, integrate, modify, minimize and simulate;* four words have penult stress, i.e. *prohibit, distribute, acknowledge and dynamics*; and the last two words have final stress, i.e. *contradict* and *guarantee.* The chart indicates that generally antepenult stress was replaced by final stress as for the words *normalize* and *integrate*. On the other hand, penult stress words like *prohibit* and *dynamic* were produced with initial stress. Similarly, initial stress was also used in the production of final syllable stress words as in *contradict* and *guarantee.*

A deeper analysis of the syllabic structure of each problematic word reveals that there are various phonological factors that can be accounted for the misplacement of stress. Each of these factors with one to three samples is detailed below.

Vowel height influence.
Vowel height refers to the location of vowels in the vowel chart with regards to the tongue position against the hard palate. The tongue height ranges from high to low vowels. For example, /i/ is categorized a high vowel, while /æ/ is classified as a low vowel. There are three words which can be included in this category; *technique, impact,* and *guarantee.*

Technique **(n.)** [tek'ni:k]
The word 'technique' [tek'ni:k] is a noun which has final stress. The second syllable contains long vowel [i:], while the first syllable contains the vowel [e]; both of which have a syllable structure of CVC. According to the theory, the second syllable qualifies as a heavy syllable which should be stressed. Chart 2 shows that 21 students mispronounced the word 'technique' by placing the stress on the first/ penult syllable. That means 70% of the students made mistake in producing the word 'technique'. One possible explanation is that they heard the vowel [e] as the peak in the first syllable. Thus, when the vowels in the first and second syllable were compared, they chose vowel [e] over the long vowel [i:] to put the stress on. Both vowels were front vowels but the location of vowel [e] is lower than the long vowel [i:]. The choice of vowel [e] over vowel [i:] is the first indication that students were more perceptive to the vowel height, in which **lower (more open) vowel** will be likely to be stressed by the learners.

Impact **(n.)** ['ɪmpækt]
The word 'impact' ['ɪmpækt] can be a noun or a verb, with different stress location. 'Impact' as a verb gets final stress; while 'impact' as a noun gets penult stress. In this study 'impact' is used as a

noun, thus the stimulus that the students heard was 'impact' with initial stress. The theory says that for two-syllable **nouns**, the **ultimate** syllable will receive main stress only if it has a long vowel or diphthong. The last syllable of this word does not contains either a long vowel or diphthong, thus it should be stressed on the first syllable. Chart 2 shows that 20 students pronounce the word 'impact' with final stress which was considered incorrect since 'impact' as a noun should be stressed on penultimate syllable. The result shows that students have not had the knowledge of stress placement based on the word class. On the contrary, the comparison between the vowels in the first and final syllables of the word 'impact' suggests that students chose vowel [æ] of the last syllable over vowel [ɪ] of the first syllable in assigning the stress. Both vowels are short front vowels, but vowel [æ] is in a lower position than vowel [ɪ], and it is likely identified as being stressed. Again, the students' choice of [æ] over [ɪ] implied their sensitivity to the **vowel height** in producing word stress.

Guarantee **(v.)** [gærən'ti:]
The word 'guarantee' [gærən'ti:] has the long vowel /i:/ in the last syllable which makes this syllable qualifies as the stressed syllable. However, chart 3 shows that only 8 students opted for the last syllable; while 21 students chose the first syllable to put the stress on. The initial stress assigned for this word is influenced by the vowel /æ/ as the peak of the first syllable. Again this proves students' **preference of lower front vowel** over close front vowel in assigning stress.

Mispronunciation of vowel
Mispronunciation of vowel refers to inaccurate production of vowels. This mistake generally happens when learners overgeneralize the pronunciation of an English sound. For example, there is a tendency to pronounce words containing letter 'a' with /æ/ or /e/ as in 'any', and 'that'. However, not all words written with 'a' are pronounced with those sounds, such as in 'woman' or 'all'. In other words, there is no one to one relationship between sound and spelling, as the learners might have expected. Moreover, mispronunciation also happens because participants lengthen the pronunciation of certain vowel, resulting in placing the stress on the wrong syllable containing that vowel. There are three samples which show this kind of error.

Option **(n.)** ['ɒpʃn]
The word 'option' ['ɒpʃn] has penult stress since the last syllable contains syllabic consonant, so it is considered as a weak syllable. Chart 2 reveals that 18 students still made mistakes in producing this word, by placing the stress on the second syllable. Most of them made mistakes by

lengthening the vowel [ə] in the last syllable, so the pronunciation became [ɒpˈʃəːn]. **Mispronunciation** by prolonging the pronunciation of the wrong vowel may cause misplacement of word stress. Thus, when confronted with two options of vowel to lengthen [ɒ] or [ə], they chose the latter, because if the vowel [ɒ] in the first syllable was lengthened, it would not sound like English word for the students.

Prohibit **(v.)** [prəˈhɪbɪt]

The word 'prohibit' [prəˈhɪbɪt] has the stress on the penultimate syllable. Chart 3 shows that only 5 persons correctly identified this word as having penult stress and produced it accordingly. As many as 24 students placed the stress on the first syllable and only one put it on the last syllable. The stimulus that the students heard is [prəˈhɪbɪt], in which the first syllable contains the schwa [ə] which normally cannot get stress. However, most students pronounced this first syllable as [pro] or [prou] which naturally shift the stress on that syllable. So, in this case, **mispronunciation of the vowel** also influenced stress placement.

Acknowledge **(v.)** [əkˈnɒlɪʤ]

Another interesting word is 'acknowledge' [əkˈnɒlɪʤ]. In chart 3, it can be seen that 7 students shifted the stress into initial position, even though the first syllable contains a schwa /ə/ which is supposedly unstressed. The reason is similar to the word 'prohibit' which contains a schwa in the first syllable. These students pronounced this word as [ˈæknɒlɪʤ], which automatically switched the stress to the first syllable. Thus, **mispronunciation of the vowel** will lead to misplacement of stress.

Vowel length influence

English has a large number of vowel sounds and they can have quite different lengths in different contexts. Some vowels such as /ɪ/ and /ə/ are relatively shorter than other vowels such as /i:/ and /ɜː/. There are ten incorrectly stressed words that can be accounted for the vowel length influence. They are: *network, decade, injure, institute, normalize, simulate, minimize, dynamics, integrate,* and *modify.* Three of these words are discussed below.

Network **(n.)** [ˈnetwɜːk]

The noun 'network' [ˈnetwɜːk] has the stress on the first syllable. As shown in chart 2, 19 students were able to produce this word correctly because the vowel /e/ occured in the first syllable. As analyzed in the previous words, vowel /e/ seemed to attract stress placement for its nature as a low vowel. However, 11 students made mistakes by placing the stress on the second syllable because the long vowel /ɜː/ was present in the second syllable. This **long vowel** also usually attracts stress placement.

Decade **(n.)** [ˈdekeɪd]

The next problematic word is 'decade' [ˈdekeɪd]. Unlike 'impact', which can either be a noun or a verb with differing stress location, the word 'decade' is a noun but it can have two stress locations. The stress can be put either on the first or the second syllable. However, since the word used as the stimulus is the one with initial stress and the students only had to identify the stress, putting the stress on the last syllable is considered incorrect. Chart 2 showed an equal 50-50 per cents for both stress locations. That means, 15 students put the stress on penult syllable, while the others stress it on the final syllable. The choice to put the stress on the second syllable is due to the peak of that syllable which is /eɪ/, a diphthong, compared to the first syllable's peak /e/, which is a short front close vowel. This equal result for both locations connotes that the students were sensitive to vowel length, in which they also considered placing the stress on the syllable which has **longer vowel or diphthong**.

Dynamics **(n.)** [daiˈnæmɪks].

The most striking error in production of stress occurs for the word 'dynamics' [daiˈnæmɪks]. This is a plural noun without a singular form. Its singular form is not a noun but an adjective which has the same stress location 'dynamic' [daiˈnæmɪk]. Surprisingly, chart 3 shows that 23 students identified the word as having initial stress [ˈdainæmɪks], thus they produced this word accordingly, which was incorrect. This deviant pronunciation might occur because of the occurrence of the diphthong [aɪ] as the peak of the first syllable, thus making the students thought that this syllable was stressed. The result for this word also showed that students chose syllable with diphthong over syllable with low front vowel to assign stress on. Their choices suggested that the students were more influenced by **vowel length** than by vowel height in assigning the word stress. This can be proven by the fact that they chose the long vowel/diphthong [aɪ] over the low vowel [æ].

Misidentification of syllable structure

Syllable structure which determines which syllables are weak or strong may also cause misplacement of stress. This error occurs because students were unable to identify the syllable boundary, for example, the last consonant (coda) of the first syllable may be used as the first consonant (onset) of the subsequent syllable, or vice versa. This kind of mistake occurred in the word *distribute* below.

Distribute **(v.)** [dɪˈstrɪbjuːt]

The word 'distribute' [dɪˈstrɪbjuːt] can have either antepenult or penult stress. However, since in this study, the stimulus given was penult stress, the stress placement other than on penult syllable was considered incorrect. Chart 3 shows that only 10

students made mistakes for this word which indicated that this word was not too problematic. Since the first and second syllable contains the same vowel [ɪ] as the peak, the wrong choice of the first syllable might be due to the misidentification of syllable structure. 6 students pronounced this word as [ˈdɪstrɪbjuːt], thus changing the structure of the first syllable 'di' [CV] into 'dis' [CVC]. The movement of the onset consonant /s/ of the second syllable became the coda consonant of the first syllable will change the first syllable from a weak syllable into a strong one. Automatically, stress shifted to the strong syllable. The other 4 students who put the stress on the last syllable might be influenced by the existence of **the long vowel** [uː] in the final syllable [bjuːt].

Orthographic influence

Orthographic form or the spelling of the words can also obscure the participants' decision in placing the correct stress. Mostly, this mistake occurred when students make generalization of the pronunciation of some sounds. In other words, they tried to find the correlation between the letter and the sound. There is one sample of this kind of mistake.

Contradict **(v.)** [kɒntrəˈdɪkt]

The word 'contradict' [kɒntrəˈdɪkt] is a noun which has a final stress. Chart 3 shows that only 13 students were able to put the stress correctly on the last syllable; while 17 others were not able to do so. 15 out 17 students who made mistakes placed the stress on the first syllable. The choice of the first over the penult syllable in 'contradict' is because the second syllable contains a schwa which naturally does not attract stress. Again, when confronted between choosing the vowel [ɒ] or [ə] to put the stress on, students will be likely to choose the vowel [ɒ] because this vowel is also represented by the letter 'o' in the first syllable. Thus, **orthographic form** of this word also influenced the participants to assign stress incorrectly.

Discussion of results and implications for pronunciation teaching

The findings of this study confirm that there are at least five factors which account for the misplacement of stress for Indonesian learners.

The first factor is the influence of **vowel length**. Learners tend to stress syllables that contain long vowel or diphthong. For example, the word 'dynamics' [daɪˈnæmɪks] in which the stress should be located in the second syllable that contains the vowel [æ] as the peak. Yet, most students stressed this word on the first syllable which has the diphthong [aɪ] as the peak. This finding is similar to Jangjamras and Wayland's study (2010) in which they also found that Thai speakers of English also tended to put stress on the syllables which have long vowel. However, it should be pointed out also, that Indonesian learners' choice for stress placement did not concur with Roach's theory. According to Roach (2009), the placement of stress for three syllable nouns such as "dynamics" depends on the syllable structure of the second (penultimate) syllable. The second syllable will receive main stress if it is strong, or if it contains long vowel, diphthong or ends with a consonant or a consonant cluster. Obviously, in this case, the students did not heed to this rule. They put the stress on the syllable that contains long vowels or diphthongs, no matter where those syllables were located.

The second factor is the influence of **vowel height**. The findings revealed that learners were also attracted to put stress on the syllables which contain lower vowels. The finding can be exemplified by the word 'technique' [tekˈniːk]. This word qualifies for a final stress because it is a verb and it has long vowel in the second syllable, which makes it a strong syllable. Literature prescribes that if the final syllable of a two-syllable verb has a long vowel or ends in at least two consonants, it is stressed (Hayes, 1982). However, the students thought that [e] sound was more appropriate to be stressed than [iː] sound. Thus, they chose [e] over [iː] to put the stress on.

The third factor that causes error in stress placement is **mispronunciation of vowel sounds.** This mispronunciation of vowels can also be attributed to the influence of the orthographic form of the word or the spelling. The most common mispronunciation error occurred to the letter 'a'. Generally students will pronounce 'a' as [æ] or [e] as in the word 'bag' or 'take'. The learners, as has been pointed out in the first and second factor above, tended to stress syllables which contained these sounds. This discovery can be exemplified by the word 'acknowledge' [əkˈnɒlɪʤ] which has the letter 'a' in the first syllable and which they thought should be pronounced as [æ] instead of [ə]. Thus, they mistakenly put the stress in this syllable.

The third factor that causes errors in stress placement is the **syllable structure change**. The change of syllable structure can be exemplified by the word 'distribute' [dɪˈstrɪbjut]. This word consists of three syllables with the structure of CV-CCCV-CCVC. The second syllable which takes the stress is a syllable with three-consonant clusters as the onset. When the students pronounced this word, some of them changed the pronunciation of the word into [dɪs-trɪ-bjut], by moving the initial consonant of the second syllable [s] as the final consonant of the first syllable, thus changing the syllable structure into CVC-CCV-CCVC. This syllable structure change turned out to shift the stress to the first syllable as well.

The last one is the influence of **orthographic form**, which was shown by the letter 'o'. Most students pronounce this letter as [o], [ɔ] or [ɔʊ]. The orthographic influence can be seen in the word 'contribute' [kənˈtriːbjut] which has penult stress.

Students who made mistakes in this word pronounced it as [ˈkɔntribjut] which automatically shifted the stress on the first syllable. This phenomenon also occurred for other words which were written with an 'o' letter, especially in the first syllable, such as 'contradict', and 'prohibit'. The effect of orthographic form toward the stress placement has been researched by Kelly and Verrekia (1998). The findings in this study seem to corroborate their findings that mispronunciation of vowel affect lexical stress assignment.

The above findings show that even though students were given auditory input prior to produce word stress, they were still making mistakes in placing the stress correctly. Thus, this finding purports that auditory input alone is not a sufficient mechanism for processing the recognition and production of word stress. To be able to perceive stress correctly and accordingly to produce it, learning word stress should be added with explicit explanation (Derwing, 1998). To increase the students' awareness of word stress placement, the first thing that teachers should do is to make sure that the students can hear the difference between stressed and unstressed syllable. Stressed syllable in English words is usually characterized by loudness, intensity and pitch. Teachers can point out these characteristics by providing auditory samples. By giving a lot of practice, students are expected to improve their ability in discriminating stressed syllables. As their perception ability improves, teacher can introduce the parameters to predict stress placement by explicit teaching. With controlled and guided practices, students are expected to have sufficient knowledge to be able to produce English stress accurately.

CONCLUSION

There are two major findings in this study. The first one confirms that stress placement is indeed problematic for L2 learners due to the unavailability of similar stress system in their native language (in this case Indonesian). However, when confronted with the task of placing stress for two or three-syllable words, Indonesian students found more difficulty in producing stress for three-syllable words. Moreover, in two-syllable words, the penult (initial) stress words were mostly misplaced, while in three-syllable words, the final syllable stress words were causing stress placement errors.

The second major finding of this study is that stress placement errors were caused by five phonological factors. The first factor was vowel height. Students often placed stress on the syllables which contain low front vowels as the peak (/e/, /ɛ/, or /æ/), thus it was because of the influence of vowel height. The second factor is mispronunciation of vowel. For example in the word 'prohibit' [prəˈhɪbɪt], students pronounce 'pro' as [pro]. The

third one is the influence of vowel length. Students tended to place stress on syllables with long vowels or diphthongs, as in the word 'dynamics' [daɪˈnæmɪks]. The fourth factor is misidentification of syllable structure as can be found in the word 'distribute' [dɪˈstrɪbjut]. And finally, the influence of orthographic form of the words, for example, students sometimes assigned stress on words containing the letter 'o' or 'a' as in 'contribute' [kənˈtriːbjut].

The findings of this study certify that auditory input alone is not enough in learning stress placement in English words. Explicit teaching of stress placement 'rules' are also needed to provide leaners with sufficient knowledge of English word stress placement. With auditory input, explicit teaching and controlled practice, it is expected that L2 learners are able to produce stress accurately.

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