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AUDITORY REPETITION PRIMING FOR ENGLISH WORD STRESS APPLYING AUDITORY PRIMING IN TEACHING ENGLISH WORD STRESS

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Abstract

This paper discusses the implications of using the auditory priming method in teaching English word stress to Indonesian university students. In auditory priming experiment, 30 participants had to pronounce 80 English words after hearing the stimuli (i.e. pre-recorded 80 words with correct stress placement). The data was taken from the recordings of the students' responses, which were transcribed carefully to determine the stress placement. Research revealed that auditory priming effect was achieved although the result was not statistically significant. The result of this study was significant for Indonesian EFL teachers as it give insight for the implementation of the auditory priming method to teach English pronunciation.

Keywords : Auditory priming, word stress placement, priming effect

INTRODUCTION

Suprasegmental features of spoken language, such as stress, pitch, intonation and rhythm, are significant in carrying meaning in a spoken message and giving language its overall appearance (Celce-Murcia, Brinton & Goodwin, 1996). One of these features, word stress is an especially crucial factor in proper pronunciation and language communication in English (Mosheer & Amer, 2011). Failing to pronounce a word correctly or misplacing the stress will result in misunderstanding or changing the meaning of a word (Celce-Murcia, Brinton & Goodwin, 1996; Harmer, 2007).

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Stress placement is one element of the L2 prosodic system that mostly causes misunderstanding (Burges & Spencer, 2000; Jenkins, 1998). This is 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. English is a stress-timed language (Roach, 2000; Carr, 1999) implying that the meaning of a certain utterance is determined by the correct placement of stress in a word. 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).

Learning L2 pronunciation, including stress placement, needs a lot of repetition or pattern practice (Paulston, 1979; Trofimovich & Gatbonton, 2006). It is well known that repetitive practice increases speed and efficiency in performing cognitive skills (Schneider & Chein, 2003). There is also some evidence that intensive perception (input) training in which learners are exposed to multiple repeated instances of L2 sounds leads to improvements in L2 phonetic perception and production (Bradlow, Pisoni, Akahane-Yamada & Tohkura, 1999).

Repetition is also an integral part in auditory priming method, which is an experimental method commonly used in L2 research (McDonough & Trofimovich, 2009). Auditory priming, which is also known as repetition priming, refers to the facilitation in the processing of language *forms* (e.g. phonological or syntactic) due to the language users previous repeated experiences with these forms (Ellis & Ellis, 1998). Trofimovich (2005) defines auditory priming as "a time and/or accuracy benefit for repeated ("familiar") versus nonrepeated ("novel") words and word combination." The main claim of auditory priming is that repeated words will be processed more rapidly and accurately than non repeated words. This processing advantage is termed "auditory priming effect" by Trofimovich (2005).

Since the auditory priming method has some significant features that can be applicable to the teaching of L2 phonology, I use this method to teach English word stress placement to EFL Indonesian university students. In this paper, I present the findings of an experimental research study which examined the effect of auditory word priming towards the students' ability in producing English word stress. In doing so, this study aims to discover the possibility of using the auditory word priming method to increase the students' awareness and performance in word stress placement and also discusses the implications for using this method in the teaching of L2 phonology, in particular word stress placement.

ENGLISH WORD STRESS

Basically, a stressed syllable can be identified by three parameters: **loudness, length** and **pitch** (Goldsmith, 1990; Clark and Yallop, 1998). Roach (2000) 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.

Producing a stressed syllable might not be as difficult as choosing the correct syllable or syllables to stress in English words. Unlike other languages, such as French which has end-stress, English word stress is considerably more complex. In French, the words ex**treme**, alloca**tion**, ex**tra**, candi**date**, opi**nion**, all are stressed on the last syllable. On the contrary, in English the above words have different stress position, i.e. ex**treme**, allo**ca**tion, **ex**tra, **can**didate, o**pi**nion (Roca and Johnson, 1999). In *ex**treme,*** the stress falls on the final syllable; in *allo**ca**tion,* it falls on the third syllable; in ***ex**tra* and ***can**didate,* it falls on the initial syllable; and, in *o**pi**nion,* it falls on the second syllable.

One significant feature of word stress in English is that it can occur on virtually any syllable in the word (Celce-Murcia, Brinton, and Goodwin (1996). The stress placement in English words depends mainly on the number of the syllables, including mono or polysyllabic words, affixes and grammatical category of the words.

Word stress placement in English is arbitrary in the sense that it is difficult to predict. Mosheer and Amer (2011) assert that it is best to treat stress placement as a property of an individual word, that is to be learned when the word itself is learned. Learners would often face difficulty in determining which syllables to stress in English words. However, they will be able to produce word stress correctly if they at least know some stress placement rules in English. Roach (2000) identified four parameters to decide on the stress placement in English words as follows:

1. 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.
2. Grammatical category of the words: Noun, verb or adjective have different stress rules.
3. The number of syllables: Disyllabic and trisyllabic words might be stressed differently.
4. Syllabic structures: The structure of syllable determines whether a syllable is strong or weak; thus stressed or unstressed.

THE TEACHING OF PHONOLOGY

Phonology has to do with the rules and patterns of sounds in a language. The sound system of a language is complex and our knowledge of it is also largely unconscious (Archibald, 2002). Knowing a language means knowing abstract things about the combination of sounds. Thus, phonology is not the subject that can be easily taught to L2 learners, especially adult learners whose L1 linguistic knowledge has been internalized.

The task of non-native language learners can be characterized as a shift from a system that is tuned uniquely to the sound structure of the native language (L1) to a flexible system that can be tuned to the sound structure of both the native and the non-native languages (L2) (Iverson et al., 2003).

Shifting from L1 to L2 sound system cannot happen automatically. L2 language learners need some kind of familiarization to the non- native language sound structure. One way to do this is by giving them auditory training, in which language learners are trained to identify, differentiate and produce the non-native sounds. Auditory training, according to Bradlow (2008), can provide three general lessons: First, laboratory-based training can lead to successful non-native contrast learning even for the most difficult cases. Second, non-native listeners can develop functional, non-native language category representations for the purposes of word recognition in the absence of native-like sensitivity to specific acoustic features of the speech signal. Finally, exposure to highly variable training stimuli promotes, rather than interferes with, non-native contrast acquisition.

While Bradlow focuses on training L2 learners to discriminate contrast between two languages, Wrembel (2005) offers a metacompetence-oriented model of acquisition of second language which integrates cognitive, affective and psychomotor aspects of pronunciation learning to more mainstream activities involving conscious analysis of theoretical linguistic knowledge. Wrembel's (2005) methods include (a) awareness raising techniques, which involve investigating the general nature of pronunciation; (b) articulatory control that involves a higher degree of elaboration in providing declarative knowledge of the phonetic system of the target language; (c) informed teaching techniques that involve a theoretical training in the sound system of the target language, knowledge of rules and detailed articulatory descriptions to facilitate production of particular sounds; and (d) Multimedia learning aids, such as palatography, computer assisted instructional programs, and speech processing.

AUDITORY WORD PRIMING

In the context of language use, priming refers to "the phenomenon in which prior exposure to language influences subsequent language processing, which may occur in the form of recognition or production" (McDonough & Trofimovich, 2009: p.1). In the technical term, priming is defined as "facilitative effects of an encounter with a stimulus on subsequent processing of the same or a related stimulus" (Tulving, Schachter, & Stark, 1982).

Auditory priming is also known as *repetition priming*, which refers to facilitation in the processing of language *forms* (e.g. phonological or syntactic). In repetition priming, listeners essentially benefit from every repeated episode of their experience with speech (Ellis & Ellis, 1998). To clarify this notion, McDonough & Trofimovich (2009) offer an example, "the listeners are typically faster and more accurate at recognizing the spoken words they have heard in recent experience (repeated words) than the words they have not heard recently (unrepeated words)".

Auditory priming studies are usually carried out using experimental methodology. The basic idea of auditory priming experiments is "to examine how language users process (comprehend or produce) some aspects of language that are repeated as opposed to those that are encountered for the first time in the course of the experiment" (McDonough & Trofimovich, 2009).

Auditory priming experiments typically consist of two phases: the study phase and the test phase. In one of his studies, Trofimovich (2005) investigated whether auditory word priming was involved in the processing of spoken L2 words. He used 20 native English speakers learning Spanish as his participants. The materials consisted of two sets of 72 words, one set in Spanish and the other set in English. Each set of 72 words was further divided into two sets of 36 words to construct four study- test list pairs. In the study phase, the participants were asked to listen to the 36 study words. This phase was considered as the priming phase. In the test phase, the participants were instructed to listen to the 72 test words (36 words from the study list and 36 words from the test list) and to repeat each word as rapidly and as accurately as possible. The participants were tested in both languages (English and Spanish) on both repeated (primed) and unrepeated (unprimed) words. Results of this experiment revealed that, in both English and Spanish, the participants were faster at initiating word production in response to a repeated than unrepeated word.

Using a similar methodology, Trofimovich & Gatbonton (2006) also showed that equivalent auditory priming effects were found in English and

Spanish for all participants. They concluded that L2 learners benefited from repeated L2 phonological information.

METHODOLOGY

This research was done to answer two research questions:
(1) How does the auditory priming method affect the production of English word stress?
(2) To what extent is the auditory priming method applicable for teaching English word stress?

The participants for this research were 30 native Indonesian speakers (22 females, 8 males). The participants, who ranged in age between 18 and 38 years, were the fourth semester students of English Department, Bina Nusantara University. The participants got college credit for their participation in this research.

The materials for the study were 80 English words which were filtered equally in terms of part of speech (nouns and verbs) and number of syllables (two and three syllables) and also the stress location (antepenult, penult and final). These words were divided into two sets consisting of 40 words each. Thus, either the study list or the test list consisted of 10 two-syllable nouns, 10 three-syllable nouns, 10 two-syllable verbs and 10 two syllable verbs. One set was used as a study list and the other set was used as the test list.

The data was taken by implementing an experimental procedure. The experiment which lasted approximately 65 minutes was conducted in a language laboratory. Each participant was seated at a desk with a personal computer and a headset. The instruction was given in English and repeated in Indonesian to avoid misunderstanding in performing the tasks during the experiment.

Following the auditory priming methodology as previously done by Trofimovich (2005), the experiment was carried out in three phases: the study phase, the distracter phase and the test phase. In the study phase, the participants were asked to listen to the stimuli (the 40 words in the study list) and were instructed to repeat the words as accurately as possible. The study phase was regarded as the *priming* phase. After the study phase, the participants were allowed to take a break. They could draw, listen to music, etc. The distracter task was given to allow some time pass between the study and the test phase. In the test phase, the participants were instructed to listen to 80 words auditorily presented through their headsets. The words presented here were 40 words from the study list plus 40 words which were on the test list. Upon listening to the stimuli, the participants were instructed

to repeat immediately the words as accurately as possible. Their responses were recorded to be used as the data for this experiment. The purpose of this experiment was to compare the results (i.e. the pronunciation/stress placement accuracy) of the primed/repeated words (40 words in the study list) to those of the unprimed/unrepeated words (40 words in the test list).

RESULTS AND DISCUSSION

The effect of priming or repetition was analyzed by comparing the response accuracy between repeated (the 40 words which had been primed in the study phase) and unrepeated words (the other 40 words which were not primed in the study phase). The response accuracy data were submitted to dependent samples T-Test in the SPSS program. Statistical analysis yielded a level of significance value p = .391, $p > .05$ for production task.

Task	Repetition Mean		Significance Percentage	
Production	Repeated 24.70	6.474	0.391 82.33%	78.43%
	Unrepeated 23.53	5.684	0.391 80.37%	
	Mean 24.11	6.548		

The table shows that the mean of stress placement accuracy for repeated words is 24.70, while the mean for unrepeated words is 23.53. These results indicated that repetition/priming has a slight influence the students' ability to place the word stress correctly. Students were able to produce stress location more accurately for repeated rather than unrepeated words. Thus, auditory priming effect was slightly shown for the production of stress. However, the statistical analysis using paired sample T-test yielded a *p -value* = .391, $p > .05$, which signified that the different results between repeated and unrepeated words were **not significant.**

PEDAGOGICAL IMPLICATION AND TEACHING SUGGESTIONS

The level of significance was not achieved in this research. This means that auditory priming did not significantly enhance the learners' ability in producing English word stress. This finding suggests that the learners' ability to produce word stress in English does not depend on the repetition factor alone.

There were several factors that may affect the results of this research. First, the experiment did not have enough data (in terms of the number of participants or the materials used). Second, the methodology of this research had some issues. . Had there been a pre-test and more participants involved in this study, a different research result might have been attained. With

additional data points, the statistical power of the test would also be improved.

Regardless of the result of the present research, previous studies have proven that auditory priming method offers promising results in learning a second language. Auditory priming is basically repetition priming which assumes that learners will get time or accuracy benefit for repeated versus non-repeated words (Trofimovich, 2005). Thus, in the case of learning L2 stress, learners will be more accurate in producing the lexical stress of words which have been learned or heard before.

Auditory word priming is observed when the processing of a spoken word is facilitated due to a language user's prior experience with this word (Trofimovich, 2008). The facilitation is often observable as a time and/or accuracy benefit for repeated versus non-repeated spoken words. In the case of the production of stress, the auditory input was directly aiding the processing of the spoken words.

Thus, auditory priming method is worth a try in teaching phonology (pronunciation), especially in the provision of auditory stimuli. This method will give students more opportunity to be exposed to the original sounds of English so that there is a chance that they will be able to produce more accurate English.

There are two key words in auditory word priming methodology, i.e. 'auditory' and 'priming'. In the context of language teaching, 'auditory' aspect can be translated as auditory input for the language learners; while 'priming' can be translated as repetition. Jones (2002) even affirms that 'listen & repeat' has long been used as the main method of pronunciation teaching. These 'listen & repeat' concepts are in accordance with the 'auditory & priming' concepts.

Repetition, according to Schneider & Chein (2003), is known to increase speed and efficiency in performing cognitive skills. Pennington (1996) also says that immitation (the term used to mean repetition) has an important role in the teaching of pronuciation because it can lead to automatic and routine articulation. Gass, Mackey, Alvarez-Torrez, & Fernandez-Garcia (1999) also show that L2 learners' previous repeated experience with a task resulted in improved overall proficiency, grammatical accuracy, and lexical complexity in their later performance on the same task. In these studies, the learning gains were attributed to the beneficial effect of repetition on learners' processing capacity.

In the same vein, auditory input (listening) followed by repetition of the input can result in increased accuracy in perception and production (Jones, 2002). Similarly, there are also evidences that intensive perception (auditory input) training in which learners are exposed to multiple repeated

instances of L2 sounds leads to improvements in L2 phonetic perception and production (Bradlow, Pisoni, Akahane-Yamada & Tohkura, 1997). Auditory input is especially beneficial in learning L2 phonology related materials, such as sound segments, syllables and intonation. Learners can be given authentic materials such as recordings of actual conversation, or specially designed materials such as audio dictionary. By listening and repeating these auditory inputs, learners can develop sensitivity towards the L2. There also seems to be an important causal relationship between short term working memory capacity and the listeners' ability to repeat (Papagno, Valentine, & Baddeley, 1991).

To increase the students' awareness of the 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 characterised by loudness, intensity and pitch. Teachers can point out these characteristics of stress by providing various auditory samples. By giving a lot of practices, students are expected to improve their ability in discriminating stressed syllables

After students know how to differentiate stressed and unstressed syllables, teachers can introduce stress placement rules in English. This explicit teaching should also be accompanied with controlled or guided practice. The purpose of these activities is to make sure that students can predict where stress falls in words. Thus, their perception ability in discriminating stress will also improve

It is also necessary to increase the students' awareness of stress placement in English words. Increasing students' awareness can be done by immersing students in a lot of exposures to English speeches and sounds. These exposures can be provided from films, TV, radios, etc. Auditory exposures (Kenworthy, 1997) are especially beneficial to improve students' awareness in discriminating stress.

Teachers can also provide meaningful input in improving the students' awareness of stress placement by giving metalinguistic feedback (Hardison, 2005) or by giving recast (Lyster, 1998). Recast is teacher's reformulation of students' incorrect utterance. This technique will promote noticing by the learner, so that they can correct their own pronunciation errors.

CONCLUSION

This study revealed that the application of auditory priming method can increase the students' ability in discriminating word stress in English words. Even though the statistical results did not show significant difference between repeated and unrepeated words, the implementation of priming

method is worth trying in the teaching of English phonology. The provision of auditory input in this method is in line with the other traditional methods of phonology teaching. However, it is advisable that the auditory priming method is also supported with other teaching methods, such as giving explicit explanation or metalinguistic feedback. A combination of several teaching methods can increase the chance of students' understanding of English word stress placement.

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REFERENCES

Archibald, J. (2002). Teaching implication of L2 phonology research. In C. Davison (Ed.), *International handbook of English language teaching* (pp.811-826). Toronto: University of Columbia.

Archibald, J. (1997). The acquisition of English stress by speakers of nonaccentual languages: Lexical storage versus computation of stress. *Linguistics 3*(1) , 167 - 181.

Benrabah, M. (1997). Word stress—a source of unintelligibility in English. *IRAL 35*(3), 157 - 165.

Bradlow, A. (2008). Training non-native language sound patterns. In M. Zampini, & J. Edward, *Phonology and second language acquisition,* (pp. 287 - 308). Philadelphia: John Benjamins.

Bradlow, A.R., Pisoni, D., Ahahane Yamada, R., & Tohkura, Y.I. (1999). Training Japanese listeners to identify English /r/ and /l/: Long term retention of learning in perception and production. *Perception and Psychophysics, 61*(5), 977 - 985.

Burges, J., & Spencer, S. (2000). Phonology and pronunciation in integrated language teaching and teacher education. *System 28* (2), 191 - 215.

Carr, P. (1999). *English phonetics and phonology.* Oxford: Blackwell.

Celce-Murcia, M., Brinton, D., & Goodwin, J. (1996). *Teaching pronunciation: A reference for teachers of English to speakers of other languages.* Cambridge: Cambridge University Press.

Clark, J. & Yallop, C. (1998). *An introduction to phonetics and phonology*. Oxford: Blackwell.

Ellis, H., & Ellis, A. (1998). Why we study.. repetition priming. *The psychologist 11*, 492 - 293.

Gass, S., Mackey, A., Alvarez-Torres, M., & Fernandez-Garcia, M. (1999). The effect of task repetition on linguistic output. *Language Learning 49(4)*, 549 - 581.

Goldsmith, J. (1990). *Autosegmental and metrical phonology*. Oxford: Blackwell.

Hardison, D.M. (2005). Second language spoken word identification: Effects of perceptual training, visual cues, and phonetic environment. *Applied Psycholinguistics, 26(4),* 579-596.

Harmer, J. (2007). *The practice of English language teaching*. Harlow: Pearson Longman.

Iverson, P., Kuhl, P., Akahane-Yamada, R., Diesch, E. Tohkura, Y. I., Kettermann, A., & Siebert, C. (2003). A perceptual inference account of acquisition difficulty for non-native phonemes. *Cognition, 87*(1), B47—B57.

Jenkins, J. (1998). Which pronunciation noms and models for English as an international language? *ELT Journal 52(2),* 119-126.

Jones, R.H. (2002). Beyond 'listen and repeat' pronunciation teaching materials and theories of second language acquisition. In Renandya, W. & Richards, J. (eds.) *Methodology in language teaching: An anthology of current practice.* (pp. 178-187). Cambridge: Cambridge University Press.

Kenworthy, J. (1997). *Teaching English pronunciation.* London: Longman

Lyster, J. (1998). Negotiation of forms, recasts and explicit correction in relation to error types and learner repair in immersion classrooms. *Language Learning, 48(2),* 183-218.

McDonough, K., & Trofimovich, P. (2008). *Using priming methods in second language research.* New York: Routledge.

Mosheer, A. & Amer, W. (2011). The role of explicit instruction in English word stress pattern in an EFL Arab University context. *Indonesian Journal of English Language Teaching, 7*(2), 71 - 87.

Papagno, Valentine, & Baddeley. (1991). Phonological short term memory and FL vocabulary learning. *Journal Memory and Language vol 30*(3), 331 - 347.

Paulston, C.B. (1979). Communicative competence and language teaching. *Guidelines, 1*, 1-21.

Pennington, M. (1996). *Phonology in English language teaching.* London: Longman.

Roach, P. (2000). *English phonetics and phonology*. Cambridge: Cambridge University Press.

Roca, I. & Johnson, W. (1999). *A course in phonology*. Oxford: Blackwell.

Schneider, W., & Chein, J. (2003). Controlled and automatic processing: Behavior, thoery and biological mechanism. *Cognitive Science, 27*(3), 525 - 559.

Trofimovich, P. (2005). Spoken word processing in native and second language: an investigation of auditory word priming. *Applied Psycholinguistics, 26*, 479 - 504.

Trofimovich, P. (2008). What do second language listener know about spoken words? Effects of experience and attention in spoken word processing. *Journal of Psycholinguistic Research, 37*(5), 309-329.

Trofimovich, P. & Gatbonton, E. (2006). Repetition and focus on form in L2 Spanish words: Implication for pronunciation instruction. *The Modern Language Journal, 90*(4), 519-535.

Tulving, E., Schachter, D.L., & Stark, H.A. (1982). Priming effects in word fragment completion and independent of recognition of memory. *Journal of Experimental Psychology: Learning, Memory and Cognition, 8*(4), 336 - 342.