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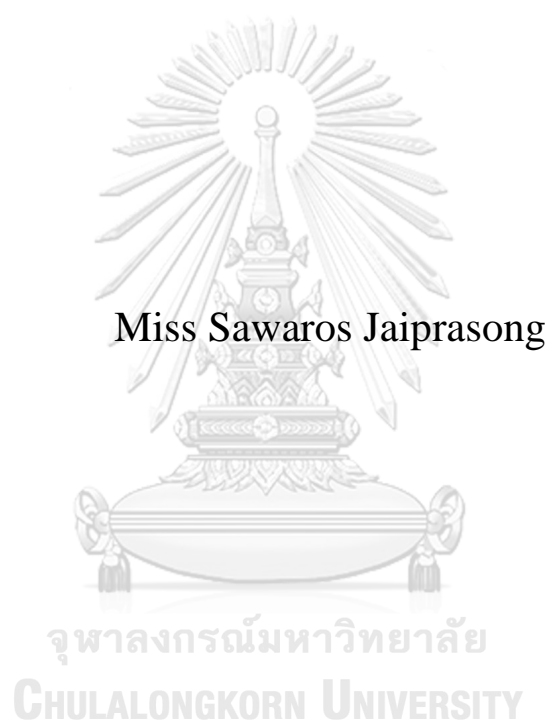
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AN INTERLANGUAGE STUDY OF L2 PERCEPTION AND
PRODUCTION OF ENGLISH WORD STRESS BY L1 THAI
LEARNERS



A Dissertation Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy in English as an International
Language

Inter-Department of English as an International Language

GRADUATE SCHOOL

Chulalongkorn University

Academic Year 2019

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การศึกษาภาษาในระหว่างของการรับรู้และการผลิตการเน้นพยางค์ในคำภาษาอังกฤษในฐานะภาษา
ที่สองของผู้เรียนชาวไทยที่มีภาษาไทยเป็นภาษาที่หนึ่ง



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรดุษฎีบัณฑิต
สาขาวิชาภาษาอังกฤษเป็นภาษานานาชาติ สหสาขาวิชาภาษาอังกฤษเป็นภาษานานาชาติ

บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย

ปีการศึกษา 2562

ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

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By	Miss Sawaros Jaiprasong
Field of Study	English as an International Language
Thesis Advisor	Associate Professor NATTAMA PONGPAIROJ, Ph.D.

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สารส ใจประสงค์ : การศึกษาภาษาในระหว่างของการรับรู้และการผลิตการเน้น
พยางค์ในคำภาษาอังกฤษในฐานะภาษาที่สองของผู้เรียนชาวไทยที่มีภาษาไทยเป็น
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PERCEPTION AND PRODUCTION OF ENGLISH
WORD STRESS BY L1 THAI LEARNERS) อ.ที่ปรึกษา
หลัก : รศ. ดร.ณัฐมา พงศ์ไพโรจน์

งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาการรับรู้และการผลิตการเน้นพยางค์ของคำภาษาอังกฤษของผู้เรียนชาวไทยที่มีภาษาไทยเป็นภาษาที่หนึ่งของคำภาษาอังกฤษสองกลุ่มที่แตกต่างกัน ได้แก่ คำภาษาอังกฤษที่มีคำปัจจัยต่างกัน (คำปัจจัยที่มีผลต่อการเปลี่ยนแปลงการเน้นพยางค์และคำปัจจัยเป็นกลาง) และคำประสม (คำนามประสมและคำกริยาประสม) งานวิจัยนี้มีวัตถุประสงค์สามประการ ได้แก่ 1) เพื่อเปรียบเทียบความเหมือนและเปรียบเทียบความต่างในการรับรู้การเน้นพยางค์ของคำภาษาอังกฤษที่มุ่งเน้น 2) เพื่อเปรียบเทียบความเหมือนและเปรียบเทียบความต่างในการผลิตการเน้นพยางค์ของคำภาษาอังกฤษที่มุ่งเน้น และ 3) เพื่อตรวจสอบว่ามีความสัมพันธ์ระหว่างการรับรู้และการผลิตการเน้นพยางค์ของคำภาษาอังกฤษหรือไม่ ผู้เรียนชาวไทยจำนวนสองกลุ่มซึ่งมีภาษาไทยเป็นภาษาที่หนึ่ง ชั้นปีที่ 1 ระดับปริญญาตรี ได้เข้าร่วมในการศึกษานี้ ได้แก่ ผู้เรียนชาวไทยจำนวน 30 คนที่มีภาษาไทยเป็นภาษาที่หนึ่งที่มีความสามารถภาษาอังกฤษระดับต้น และผู้เรียนชาวไทยจำนวน 30 คนที่มีภาษาไทยเป็นภาษาที่หนึ่งที่มีความสามารถภาษาอังกฤษระดับกลาง จากมหาวิทยาลัยศรีนครินทรวิโรฒ ผู้เข้าร่วมวิจัยได้ทำ 2 ชิ้นงาน ได้แก่ “การทำเครื่องหมายการเน้นพยางค์ของคำภาษาอังกฤษในประโยค” และ “การอ่านการเน้นพยางค์ของคำภาษาอังกฤษในประโยค” ผลการวิจัยพบว่า ผู้เรียนชาวไทยที่มีภาษาไทยเป็นภาษาที่หนึ่งที่มีความสามารถภาษาอังกฤษระดับกลางมีการรับรู้และการผลิตการเน้นพยางค์ที่ดีกว่าผู้เรียนชาวไทยที่มีภาษาไทยเป็นภาษาที่หนึ่งที่มีความสามารถภาษาอังกฤษระดับต้น นอกจากนี้ ผลจากงานวิจัยพบว่า มีความสัมพันธ์เล็กน้อยระหว่างการรับรู้และการผลิตการเน้นพยางค์ของคำศัพท์ภาษาอังกฤษทั้งผู้เรียนชาวไทยที่มีภาษาไทยเป็นภาษาที่หนึ่งที่มีความสามารถภาษาอังกฤษระดับต้นและผู้เรียนชาวไทยที่มีภาษาไทยเป็นภาษาที่หนึ่งที่มีความสามารถภาษาอังกฤษระดับกลาง จากงานวิจัย สามารถสรุปได้ว่า ปัญหาการกำหนดการเน้นพยางค์ภาษาอังกฤษเกิดจากปัจจัยระหว่างภาษาและปัจจัยภายในภาษา (Ellis, 2003; Haryani, 2006) กฎการกำหนดการเน้นพยางค์ของคำในภาษาอังกฤษและภาษาไทยแตกต่างกันอย่างมาก นอกจากนี้ตามสมมติฐานของภาษาในระหว่าง กลยุทธ์การเรียนรู้ภาษาที่สองอาจมีกระทบทางลบทำให้เกิดปัญหาดังกล่าว (Selinker, 1972; Corder, 1999) ผลของงานวิจัยมีผลต่อการเรียนรู้ภาษาที่สองเกี่ยวกับการเน้นพยางค์ของคำภาษาอังกฤษของผู้เรียนที่เรียนภาษาอังกฤษเป็นภาษาที่สอง ผลการวิจัยนี้ให้ประโยชน์ในด้านการสอนและการเรียนรู้การออกเสียงภาษาอังกฤษ

สาขาวิชา ภาษาอังกฤษเป็นภาษา

นานาชาติ

ปีการศึกษา 2562

ลายมือชื่อนิติ

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ลายมือชื่อ อ.ที่ปรึกษาหลัก

.....

5787860820 : MAJOR ENGLISH AS AN INTERNATIONAL LANGUAGE

KEYWORD: L1 Thai learners, suffixes, compound words, English word stress perception, English word stress production

Sawaros Jaiprasong : AN INTERLANGUAGE STUDY OF L2 PERCEPTION AND PRODUCTION OF ENGLISH WORD STRESS BY L1 THAI LEARNERS. Advisor: Assoc. Prof. NATTAMA PONGPAIROJ, Ph.D.

The aim of this study was to investigate L1 Thai learners' English word stress perception and production of two different groups of English words: English words with different suffixes (suffixes affecting stress shift and neutral suffixes) and compound words (compound nouns and compound verbs). Three objectives were 1) to compare and contrast the perception of English word stress focusing on words, 2) to compare and contrast the production of English word stress focusing on words and 3) to investigate whether there is a relationship between L1 Thai learners' perception and production of English word stress. Two groups of L1 Thai first-year undergraduate learners participated in this study: 30 L1 Thai beginners and 30 L1 Thai intermediate learners from Srinakharinwirot University. They completed two tasks: "Marking English Word Stress in Sentences" and "Reading English Word Stress in Sentences". The results showed the L1 Thai intermediate learners significantly outperformed the L1 Thai beginners in both perception and production. Moreover, a relationship between the learners' perception and production of English word stress was observed from the L1 Thai beginners and the L1 Thai intermediate learners. It was assumed that the problems of English stress assignment were caused by both interlingual and intralingual factors (Ellis, 2003; Haryani, 2016). Word stress placement rules in English and Thai differ substantially. Based on the Interlanguage Hypothesis, strategies of second language learning possibly have a negative impact on the problems (Selinker, 1972; Corder, 1999). The results contributed to second language acquisition and provided pedagogical implications for teaching and learning English pronunciation with respect to English word stress by L2 learners.



Field of Study: English as an International Language

Academic Year: 2019

Student's Signature

Advisor's Signature

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Sawaros Jaiprasong



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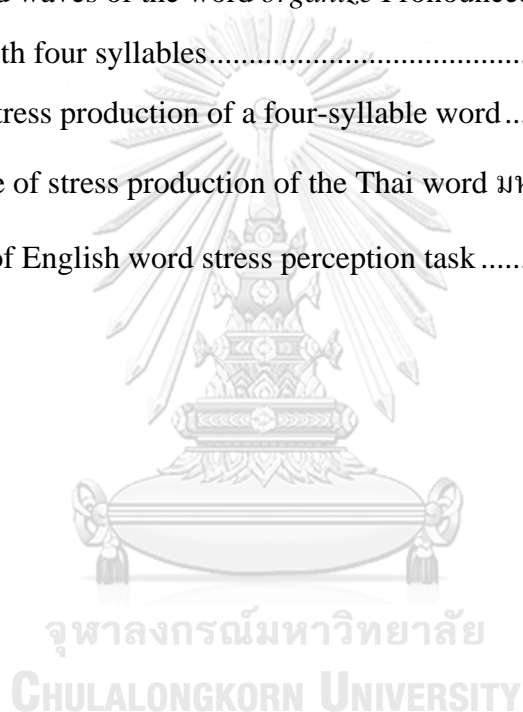
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CHAPTER I

INTRODUCTION

1.1 Background of the study

English has become one of the most important languages spoken by people around the world (Crystal, 2012). As everyone knows, four main skills are normally focused on when second language learners (L2) learn a language: listening, speaking, writing and reading. To be an effective English speaker, English pronunciation should be taken into consideration (Alghazo, 2015). As stated by (Gilakjani, 2012), pronunciation, which is a part of the speaking skill, is an important unit of L2 learning because it can predict learners' communicative competence as well as performance. Moreover, being able to communicate with other people using English with a systematic process of speaking, listening and understanding helps learners of any language to be successful in their education and careers (Ahmad, 2016).

Language learners' success can be found when their communication in that language is comprehensible. When learners of English misunderstand messages during their communication, one of the main causes is that their comprehension of English word stress is not enough for conveying information and understanding the conversation (Jones, 1966). In addition, Munro and Derwing (1999) stated that errors in English word stress assignment have a large impact on the intelligibility of L2 learners of English. (Solé Sabater, 1991) also claimed that perceiving English words with correct stress patterns results in learners' good intelligibility. So, when learning a language, learners should be aware of word stress for their better understanding in the communication. Lepage and Busà (2014) found from their study that incorrect word stress placement had a negative impact on L2 listeners' intelligibility.

Stress, a significant acoustic cue for word recognition and retrieval, is one of the features that can support learners of English in achieving successful English communication (Cutler, 2012; Tremblay & Owens, 2010). According to Solé Sabater (1991), word stress is a prosodic dimension that varies across languages. It is relative emphasis given to some syllables in a word or on a syllable which is the most prominent (Solé Sabater, 1991). In addition, stress is a suprasegmental feature of English pronunciation that can lead to effective communication and

miscommunication. Moreover, word stress is a phonological characteristic that has a contrastive function for distinguishing semantically distinct words (Friederici, Friedrich, & Christophe, 2007). Learners of English rely on the placement of English word stress for word identification in both connected speech and in isolation (Cutler, 2012; Tremblay & Owens, 2010).

English is a stressed-time language (Abercrombie, 1976). Not all syllables in an English word are assigned with equal stress. As there are a number of English word stress rules and those rules are quite complicated for L2 learners of English to acquire, they should learn and try to recognize patterns of English word stress. Mostly, English word stress patterns are affected by grammatical and morphological aspects. For example, the stress placement is different on noun-verb pairs, e.g. 'cónduct' (n.) and 'condúct' (v.), thus showing that stress placement on the syllables of each English word is governed by rules (Solé Sabater, 1991).

There are some important factors that have effects on learners' English word stress assignment. To begin with, in the English learning process used by L2 learners, similarities and differences between learners' L1 and L2 are normally found. These cause the occurrence of positive and negative transfer between the two languages (Malghani & Bano, 2014). Positive transfer facilitates L2 learners' language acquisition, whereas negative transfer hinders L2 learners' language acquisition (Lado, 1957). Normally, L2 learners identify and recognize L2 sounds with L1 sounds, even when both are acoustically different. It is assumed that this identification process using both languages at the perception level makes learners substitute L2 sounds with L1 sounds when they produce L2 words. According to Peperkamp and Dupoux (2002), with regard to English word stress, the more differences between L1 and L2 stress patterns there are, the more difficulties learners will have in L2 word stress acquisition. Moreover, learners whose L1 stress patterns are predictable will find it easier to acquire the language.

Additionally, it has been shown in many previous studies that English word stress is difficult for L2 learners of different language backgrounds to acquire; for example, learners have difficulties when they have to decide which syllables can be stressed. It is because English word stress assignment can be determined by several

factors, such as syllable structure, lexical class, and phonological similarity (Archibald, 1997). Furthermore, there are other factors involved in English the word stress assignment of L2 learners, such as differences in ages (Archibald, 1997; Guion, Harada, & Clark, 2004). According to (Şenel, 2006), it is usually found that learners whose English is native-like must have started learning English at a very young age.

Some research studies have been conducted related to the perception and production of English word stress by L2 learners of English from different English backgrounds. A few research studies have been conducted on English word stress perception focusing on different types of English words, which were English words with different numbers of syllables by Americans and Poles and by Korean learners of English (Chung, 2013), pairs of English words with different lexical roots (nouns and verbs) by American undergraduate learners (Mattys, 2000), nonsense words by L2 French Canadian learners of English and native English (Tremblay, 2009) speakers and by Chinese learners of English (Wang, 2008), non-words by Taiwanese learners of English (Ou, 2010) and English words in utterances by Swedish learners and adult speakers of Southern British English without Swedish background (Eriksson, Grabe, & Traunmüller, 2002). For English word stress production, varieties of words have been focused on in previous studies: pairs of English words that were morphologically related by English-speaking women and Spanish-speaking women (Flege & Bohn, 1989) and by Chinese learners of English (Bian, 2013), English words with different numbers of syllables by Chinese learners majoring in English and native speakers of English (Gao, 2012), by Persian speakers of English (V. Sadeghi, 2013) and by Iranian learners of English (Vafaei, Sadeghpour, & Hassani, 2013), English words with different stress locations by Turkish learners of English (Hismanoglu, 2012), real words and pseudowords by Hong Kong and Chinese learners of English (Chen, 2013) and compound words by English native speakers and L1 Spanish/L2 English speakers (Zubizarreta, He, & Jonckheere, 2013). A few studies have been conducted on both perception and production of English word stress with different categories of words, such as nonce words with varying syllables by speakers with different L1 backgrounds (Arabic, Chinese, French, Japanese, Korean, Spanish and Turkish) (Altmann, 2006), English non-words (nouns and verbs) by Thai adult learners of English (Wayland, Landfair, Li, & Guion, 2006), compound words by Vietnamese

learners of English (Nguyễn, Ingram, & Pensalfini, 2008) and English words with different numbers of syllables by Indonesian learners of English (Karjo, 2016). From all of the studies mentioned in this section, it could be concluded that English word stress assignment in terms of perception and production could be found to be quite challenging for L2 learners of English from several L1 backgrounds to successfully acquire. One of the most affecting factors was found to be L1 transfer that could hinder the L2 learners from acquiring English word stress.

Previous studies on English word stress in Thai contexts highlighted the stress production of English words with various syllables of L1 Thai university learners (Khamkhien, 2010), perception and production of English word stress with various syllables of L1 Thai secondary learners (Aungcharoen, 2006) and perception and production of English word stress of phrasal verbs of L1 Thai learners whose age were between 20-38 (Jangjamras, 2011). The previous studies found that L1 Thai learners had problems producing English word stress (Khamkhien, 2010) and producing and perceiving English word stress (Aungcharoen, 2006; Jangjamras, 2011). In this study, the researcher, therefore, focused on the perception and production of English word stress by L1 Thai learners in words with particular suffixes (suffixes affecting stress shift and neutral suffixes), and compound words (compound nouns and compound verbs). The learners' perception and production of English word stress was compared and contrasted. No earlier studies have included English word stress assignment of the English words formed by derivation by affixation and compounding in terms of stress perception and production. Moreover, there have never been any studies on perception and the production of English word stress in terms of English word stress of English words with different suffixes (suffixes affecting stress shift and neutral suffixes) and compound words (compound nouns and compound verbs) by L1 Thai learners and the relationship between perception and production of English word stress by L1 Thai university learners with different English proficiency levels. To the best of my knowledge, few research studies have been conducted in the area of L1 Thai learners' English word stress perception and production. The results of this study would provide better understanding of sources of problems of English word stress assignment of Thai learners.

1.2 Research questions

1. What are the similarities and differences between L1 Thai beginners' and intermediate learners' perception of English word stress?
2. What are the similarities and differences between L1 Thai beginners' and intermediate learners' production of English word stress?
3. Is there any relationship between L1 Thai learners' English word stress perception and production?

1.3 Objectives of the study

The objectives of this study were as follows:

1. To compare and contrast the perception of English word stress in words with particular suffixes (suffixes which shift stress to the syllables before the suffixes and neutral suffixes) and compound words (compound nouns and compound verbs) by L1 Thai learners with two different levels of English proficiency (beginner and intermediate levels).
2. To compare and contrast the production of English word stress in words with particular suffixes (suffixes which shift stress to the syllables before the suffixes and neutral suffixes) and compound words (compound nouns and compound verbs) by L1 Thai learners with two different levels of English proficiency (beginner and intermediate levels).
3. To investigate whether there is a relationship between L1 Thai learners' perception and production of English word stress.

1.4 Statement of hypotheses

1. L1 Thai learners who are intermediate learners will have better perception of English word stress.
2. L1 Thai learners who are intermediate learners will have better production of English word stress.
3. There is a relationship between L1 Thai learners' perception and production of English word stress.

1.5 Scope of the study

The scope of the study was as follows:

1.5.1 Population

The population of this study was Thai first-year undergraduate learners who were studying at Srinakharinwirot University, Bangkok, Thailand. The learners were divided into two groups which were beginners and intermediate learners based on their English proficiency levels categorized by SWU-SET (Srinakharinwirot University Standardized English Test).

1.5.2 Selection of the English words

1.5.2.1 Criteria and sources of textbooks

The English words were selected from English textbooks which have been used to teach Thai learners. The selection of textbooks was based on The Basic Education Core Curriculum B.E. 2551 (A.D. 2008) in terms of content and vocabulary. The following are the sources from where the chosen English words were taken for this study:

- *English Vocabularies of Grade 6, Grade 9 and Grade 12* (Service),
- *Access 1* (Evans & Dooley, 2008a) for seventh-grade learners (CEFR: A1),
- *Take Off 1* (K, 1996) for seventh-grade learners (CEFR: A1),
- *Expressions 2* (Nunan, 1990a) for eighth-grade learners (CEFR: A2),
- *Access 2* (Evans & Dooley, 2001) for eighth-grade learners (CEFR: A2),
- *Expression 3* (Nunan, 1990b) for ninth-grade learners (CEFR: A2),
- *Access 3* (Evans & Dooley, 2008b) for ninth-grade learners (CEFR: A2),
- *Extra Access 3* (Evans & Dooley, 2008c) for ninth-grade learners (CEFR: A2),
- *Upstream 3* (Evans & Dooley, 2008d) for ninth-grade learners (CEFR: B1),

- *Upstream 5* (Evans & Dooley, 2015) for 11th grade learners (CEFR: B1), and
- *Upstream 6* (Evans & Dooley, 2016) for 12th grade learners (CEFR: B1),.

The English word stress of each selected word was checked for its primary stress (both American and British word stress assignment) in *A Concise Pronouncing Dictionary of British and American English* (Lewis) and Cambridge Dictionary Online (<http://dictionary.cambridge.org/dictionary/>).

1.5.2.2 English word stress pattern categorization criteria

The following English word stress patterns were taken from the categorization of English word stress patterns by Celce-Murcia, Brinton, and Goodwin (2010), Kreidler (2008), Delahunty and Garvey (2003) and Ortiz (2000):

1) stress placement on words with one syllable, 2) stress placement on native and nativized words, 3) stress placement affected by prefixes, 4) stress placement on English words with neutral suffixes, 5) stress placement on the ultimate syllables (the last syllables of the words), 6) stress placement on the penultimate syllables (the syllables before the last ones), 7) stress placement on the antepenultimate syllables (the third to last syllables), 8) stress placement based on grammatical categories (noun-verb pairs) and 9) compound words. English word stress patterns in the following word types were focused on:

1.5.2.2.1 English words with suffixes

- English words with suffixes affecting stress shift
- English words with neutral suffixes

1.5.2.2.2 English compound words

- Compound nouns
- Compound verbs

1.5.2.3 English word stress patterns

As the present study was aimed at focusing on English words with suffixes and English compound words, the following suffixes and compound words were chosen.

Firstly, for English words with suffixes, the chosen suffixes that shift stress to the syllable before the suffixes were ‘-ic’ (i.e. ‘fantástic’ and ‘democrátic’), ‘-ity’ (i.e. ‘idéntity’ and ‘chárity’) and ‘-tion/ -sion’ (i.e. ‘eléction’ and ‘superstítion’). For stress placement on English words with neutral suffixes, the chosen suffixes were ‘-ly’ (i.e. ‘néatly’ and ‘fránkly’), ‘-er’ (i.e. ‘téacher’ and ‘fármer’) and ‘-ful’ (i.e. ‘cáreful’ and ‘yóuthful’). Five words were chosen for English words with each chosen suffix that shifts the stress to the syllable before the suffix and neutral suffixes.

Secondly, the chosen types of English compound words were 1) compound words consisting of compound nouns derived from a noun + a noun (i.e. ‘báthtub’ and ‘bóokstore’) and compound verbs derived from a verb + a preposition (i.e. ‘find óut’ and ‘set óff’). Five words were chosen for compound nouns and compound verbs.

1.6 Definitions of terms

1. Speech perception is the set of operations that changes an auditory signal into mental representations of a type which relates to internally stored information (Poeppe, Idsardi, & Van Wassenhove, 2008). In this study, this was the perception of English word stress by Thai first-year undergraduate learners studying at Srinakharinwirot University.

2. Speech production is the process by which words or syllables are selected to be produced. It consists of phonetics which are formulated and finally articulated by the motor system in the vocal apparatus (Thomas, 1986). In this study, this was the production of English word stress by Thai first-year undergraduate learners studying at Srinakharinwirot University.

3. Stress is a certain type of prominence, which in most languages, is present on a specific syllable of a word (Trask, 2004).

4. Accent is the potentiality of a syllable or syllables in one word to be realized as a stressed syllable(s) no matter whether it exists alone or with other words in an utterance (Abercrombie, 1976).

5. A suffix is a morpheme which is added at the end of a word to complete a word or change its meaning (Trask, 2004).

6. A compound word is a type of a word consisting of two roots. Those two roots can stand independently as one English word. A compound word can be seen in

three main written forms: being written as a word (e.g. ‘armchair’), being written as two roots separated by a hyphen (e.g. ‘open-minded’) and being written as two roots separated by a space (e.g. ‘school bag’) (R. Peter, 2009).

1.7 Significance of the study

This dissertation investigated L1 Thai learners’ problems of English pronunciation in both perception and production of English word stress. The results gained from this study contributed to second language acquisition with respect to the English word stress of L1 Thai learners. This dissertation, therefore, provides significance of the study as follows:

Firstly, the data obtained from this study could be sources of evidence of L1 Thai learners’ errors in English word stress. The evidence could lead to thorough analyses of sources of errors which were based on Error Analysis, Interlanguage Hypothesis and other related factors that might cause problems in English word stress.

Secondly, this study compared English word stress assignment patterns of the two different groups of the L1 Thai learners during an interlanguage stage; therefore, it provided valuable information for instructors in order to notice each group of the L1 Thai learners’ correct and incorrect English word stress perception and production. This could help instructors become aware of what might facilitate and cause problems to the L1 Thai learners’ English word stress perception and production.

Last, but not least, this study was significant in terms of pedagogical implications as this could help raise awareness of teachers with regard to English word stress instruction as part of English pronunciation in speaking classes. Furthermore, the results of this study were advantageous as the problems could be used as guidelines for preparing teaching procedures together with proper materials for L1 Thai learners to achieve English pronunciation, especially for English word stress perception and production.

CHAPTER II

LITERATURE REVIEW

This section provides related literature and theories on second language acquisition, which are contrastive analysis, error analysis and interlanguage, as presented in 2.1. Moreover, phonetic correlates of English word stress production in terms of acoustic and auditory phonetics are presented in 2.2. Accent and stress patterns in English and Thai are presented in 2.3. Subsequently, previous studies of both English word stress perception and the production of L2 learners are presented in 2.4.

2.1 Related theories on second language acquisition

This section provides related theories, which are 1) contrastive analysis, 2) error analysis, 3) interlanguage and 4) phonetic correlates of English word stress production in terms of acoustic and auditory phonetics. Moreover, stress patterns in English and stress patterns in Thai are explained. Subsequently, previous studies concerning the English word stress perception and production of L2 learners are illustrated.

This section is beneficial to this research study as contrastive analysis could shed light on the similarities and differences between English and Thai stress patterns that could help predict what might facilitate and cause problems of English word stress to the L1 Thai learners, error analysis could be used as guidelines to see sources of errors with the help of similarities and differences between English and Thai stress patterns and interlanguage could be employed to see elements of the L1 Thai learners' developmental stages in acquiring English word stress perception and production. Moreover, the previous studies described below could be used as evidence that English word stress perception and production of the L1 Thai learners was still in need of improvement.

2.1.1 Contrastive analysis (CA)

Contrastive analysis is a study of the comparison of learners' mother tongue and target language by identifying their structural differences and similarities systematically (Lado, 1957). The contrastive analysis hypothesis is used to explain the

effects of learners' first language on their second language acquisition (Fry, 1955; Lado, 1957). Contrastive analysis stems from behaviorist psychology. According to Bloomfield (1935), behaviorist theory shows that language learning is about habit formation that needs to be reinforced by existing habits.

Moreover, Lado (1957) claims that for the learners whose target language is a second or foreign language, those elements of the target language that are similar to his/her native language will be simple for him/her to acquire and those elements that are different will be difficult for them to acquire. According to James (1971), learning problems are going to occur where the features of two languages are different. The greater the differences between the two languages are, the greater the degree of learning difficulty there will be.

According to Wardhaugh (1970), there are two versions of the contrastive analysis hypothesis: strong and weak. The strong version is the ability to anticipate the learning difficulty through contrastive analysis (priori). The strong version predicts that second language learning can be interfered with by the learners' mother tongue language system. Thus, the strong version helps predict learners' second language acquisition. The weak version is used to explain learners' errors by accounting for the differences between the learners' mother tongue and the target language. Irons (1987) also states that the weak version is useful for finding the sources of errors for learners' language acquisition.

By using contrastive analysis, teachers can anticipate what might be problems for learners when learning a new language. However, contrastive analysis cannot be used to predict all learning difficulties.

2.1.2 Error analysis (EA)

Error analysis was established in the 1960s by Corder (1967). Error analysis is a process of observing, analysing and classifying the deviations of the second language (Brown, 1980). Error analysis is an alternative to contrastive analysis as the contrastive analysis itself is considered inadequate for predicting causes of learners' language errors or learning difficulties (Dulay, 1982).

Corder (1967) explained the importance of learners' errors in three different ways. To begin with, teachers of any language are aware of learners' errors as problems in teaching and learning processes. They can keep this in mind when they

are solving some of the learning problems which occur when learners learn a language. Likewise, it is good for researchers to study how each language is acquired by learners and what strategies or procedures learners employ when they learn a language. Last, error analysis is indispensable to learners as this is a device for acquiring a language.

There are three main causes of errors, classified by Richards (1974) and Ellis (1999). They are interlingual, intralingual and developmental errors. According to Richards (1974), interlingual errors are those which are due to first language interference or language transfer (L1 transfer). Interlingual errors can be found when features of learners' first language interfere with or prevent them, to some extent, from acquiring the patterns, systems or rules of the second language. Second, intralingual errors occur when the target language's patterns, systems or rules are very complicated for learners to acquire. According to Richards (1974), intralingual errors are those which the acquisition process of the target language itself contributes to. Besides, intralingual errors can be used to reflect the learner's competence at a particular stage, and it shows some of the general features of language acquisition instead of reflecting the incapacity of the learners to separate the first and second languages. Third, developmental errors can be found when a learner tries to create new rules of their L2 based on their limited experience (Ellis, 1999).

The procedure for error analysis has been divided into five steps:

- 1) collection of a sample of a learner's language, 2) identification of errors,
- 3) description of errors, 4) explanation of errors and 5) evaluation of errors (Corder, 1967).

To begin with, in collecting a sample of a learner's language, the sample can be classified as one of three types according to the size of the sample. First, 'a massive sample' is a collection of a number of samples of a learner's language to obtain many kinds of errors representative of all the population. Second, 'a specific sample' is a collection of samples of language use from a small group of learners. Last, 'an incidental sample' is a sample of language use from only one language learner. A good process of collection is important for the researcher in order to further study the related factors of those errors. After a sample has been collected, the identification of an error should be made. There are three aspects to be concerned

with. First, the norm of the identification process should be selected, e.g. a written language or a spoken language. Second, a collected sample needs to be identified as to whether it is an error or a mistake (Corder, 1971). An error occurs when a learner lacks the knowledge of a language, while a mistake can be found when a learner fails to perform the knowledge s/he already has. Last, it is necessary to identify whether a sample is an overt or a covert error (Corder, 1971). An overt error is a clear deviation in form of language use, e.g. *I goed to school. A covert error can be found in utterances with a well-formed structure but it does not convey meaning as the speaker or the writer previously aimed. Then, learners' errors should be described with regard to the learners' idiosyncratic utterances with reconstruction forms used in the target language. After that, errors need explanation focusing on sources of errors: psycholinguistic, sociolinguistic or discourse structures. This stage is substantial in L2 acquisition. Last, error evaluation is needed to see the levels of seriousness of each error. Some errors cause the communication to be unintelligible, which urgently needs to be focused on and improved (Corder, 1971).

However, there are some limitations of error analysis, as claimed by a lot of researchers (Bell, 1974; Long & Sato, 1984; Schachter & Celce-Murcia, 1977; Van Els, 1984). To start with, because the study of errors focuses only on errors at one point of time, it cannot give a whole picture of learners' language acquisition. In addition, as there has been less focus on errors that are found in different stages of learning, error analysis cannot be effectively used to understand L2 learners' acquisition of a language at different stages of development.

2.1.3 Interlanguage (IL)

According to Selinker (1972), interlanguage refers to a language intermediate between the native and the target language. It is a continuum between the target language and the learner's first language. Interlanguage can be found when the learners are learning the target language, and they build their own system of language which is different from their L1. In addition, it occurs when a learner has not accomplished learning his/her second language yet.

A phenomenon which is significantly focused on when mentioning interlanguage is "fossilization". Fossilization occurs when a learner develops his/her language at one particular stage and retains it, and this is still different from his/her

first and second languages (Selinker, 1972). No matter how much instruction and explanation learners obtain, their learning processes of interlanguage stop developing and become permanent.

Selinker (1972) claims that interlanguage is the outcome of five central processes of learning: 1) language transfer, 2) transfer of training, 3) strategies of second language learning, 4) strategies of second language communication and 5) overgeneralization of the target language.

To start with, Selinker (1972) believes that learners create some new language rules in their interlanguage which are affected by his/her L1. The errors in the target language (L2) result mainly from the native language (L1), and the differences between learners' L1 and L2 can cause language errors. Furthermore, the transfer of L1 can be positive or negative. Positive transfer is the transfer of similar features between L1 and L2, which is useful for second language acquisition. On the other hand, negative transfer is the transfer of features which differ between L1 and L2, and interfere with the learner's second language acquisition. Therefore, similarities between the L1 and L2 features will help facilitate learners' language acquisition.

Secondly, transfer of training results from how the learners have been taught. L2 use may become fossilized because of the lack of effective instruction in the L2 and also the inappropriateness of the textbooks teachers use to teach learners in the class. It also depends on the teaching approaches that teachers apply in their teaching processes.

Thirdly, strategies of second language learning emphasize the identifiable approaches which help learners acquire a second language. Learning strategies are the overall strategies that each learner adopts during the process of second language learning.

Fourthly, strategies of second language communication focus on strategies or approaches learners use when communicating with native speakers of a target language. If the learner pays too much attention to fluency but neglects accuracy, some language errors can be easily fossilized. Moreover, if a learner only focuses on the improvement of communicative competence but neglects language competence, his/her language competence can also be easily fossilized (Selinker, 1972).

Lastly, as stated by Ellis (1987a), overgeneralization of a target language is the process of extending the application of L2 rules to a new interlanguage form. This can be found when learners apply an L2 grammatical rule to all or some L2 grammatical rules without awareness of exceptions. In other words, when overgeneralization occurs, it shows learners' ignorance of some L2 rule restrictions. For instance, a child talks about the past using the regular past tense verb ending '-ed' (e.g. I walked to school.) with irregular verbs, for example, '*I writed' or '*I cuted'.

Interlanguage is a theory used to explain the development of language acquisition. However, there have been some critics who have criticized this theory. Ellis (1994) criticized the theory by stating that "language transfer" and "overgeneralization" should not be separate from "learning strategies" because they too can be parts of learners' learning strategies.

2.2 Phonetic correlates of English stress production in terms of acoustic and auditory phonetics

English stress production refers to the ability to produce stress effectively. It also refers to the ability to assign an accurate location of stress in a word, and also to articulate stress that allows native listeners to process stress easily (Jangjamras, 2011).

A stressed syllable is pronounced with a greater amount of energy than an unstressed syllable, and it is more prominent in a flow of speech. This usually involves pushing out more air from the lungs by contracting the muscles of the rib cage and perhaps increasing the pitch by the use of the laryngeal muscles. The extra activity may result in the sound having greater length (Ladefoged & Johnson, 2014). So far, there have been few research studies related to 'stress'. However, stress has been found to be a very significant component in second language acquisition because wrong stress placement which is a primary stress can lead to miscommunication (Altmann, 2006).

Normally, when we look at speech (sounds), we look at how it is

1) produced (articulatory phonetics), 2) transmitted (acoustic phonetics), and 3) perceived (auditory phonetics). When a sound is produced by a vocal tract, it can be described in terms of a number of parameters, such as fundamental frequency

changes, etc. These show the positions and states of various articulators that are manipulated. The relationship between an acoustic parameter and an articulatory parameter often shows a region in which the acoustic parameter is relatively stable and an adjacent region where an abruptness or discontinuity in the relationship can be found. There is also a relationship between acoustic parameters and auditory parameters. As an acoustic parameter is controlled, there are abrupt changes in the auditory response for certain graded values of the parameter. It affects a listener's perception (Stevens, 2000). In this paper, only acoustic and auditory phonetics related to English stress production will be discussed. Moreover, examples from English and Thai will be presented.

2.2.1 Acoustic phonetics

To start with, acoustic phonetics is concerned with measuring and analyzing the physical properties of the sound waves we produce when we speak (O'Grady, Dobrovolsky, & Katamba, 1997). There are three dimensions of acoustic correlates of stress: 1) fundamental frequency (f_0), 2) duration and 3) intensity (Berinstein, 1979).

Fundamental frequency (F_0) refers to the course of the lowest frequency in a harmonic vibration. Frequency is a technical term for an acoustic property of a sound, which means the number of complete repetitions (cycles) of variations in air pressure occurring in a second. It is composed of stages of compression and rarefaction. Therefore, this cycle is the portion of the sound wave extending from any point to the next point where air pressure begins to suffer identical changes. (L. Peter & Keith, 1975).

Regarding duration, a stressed syllable is longer than other syllables in a word (AC, 1962). The duration of the sounds of speech is measured in thousandths of a second, or milliseconds (ms).

With regard to intensity, a stressed syllable will be louder compared to an unstressed syllable. The intensity of a sound wave, which shows the loudness of the sound wave, is measured in decibels (dB) and amplitude, which is very subjective, is a measurement tool of loudness. This reason behind the loudness in a stressed syllable might be the fact that the it is pronounced with more force. According to (Theraphan, 1977), a stressed syllable will be longer when perceived by a listener.

The following is a further example of these concepts. Regarding the vowels in noun-verb pairs such as ‘cónvert’ (noun) vs. ‘convért’ (verb) and ‘décrease’ (noun) vs. ‘decréase’ (verb), Fry (1955) found that stressed vowels were associated with greater duration, and higher intensity and fundamental frequency than their unstressed counterparts.

Evidence from English and Thai

For this part, the evidence of pronunciation of English words with two syllables, three syllables and four syllables by native speakers of English and L1 Thai learners is presented to show the phonetic correlates in terms of acoustic phonetics of their English stress production. The reason that only English word stress patterns of polysyllabic words were chosen is because these rules exist in both languages (English and Thai). The evidence was taken from the studies of Aungcharoen (2006), (Jaiprasong, 2013) and the pronunciation of a native speaker of English who was an English teacher at a university in Thailand. Here are examples of English word stress production.

2.2.1.1 Words with two syllables

In English, the stress mostly falls on the first syllable of a two-syllable word, e.g. thóusand and táble (Wijk, 1966). The following is an example.

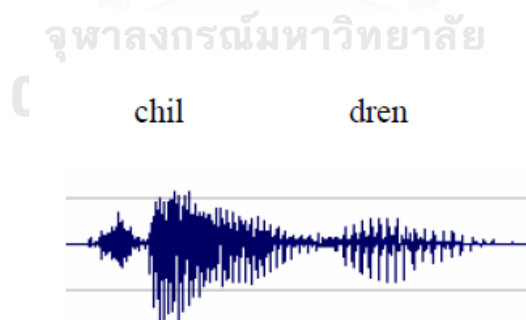


Figure 1 Sound Wave of the Word *children* Pronounced by an English Native Speaker

The sound waves of the word ‘children’ were adopted from Aungcharoen (2006). The sound waves illustrate that the first syllable of the word is a stressed

syllable as they show a higher pitch and longer vowel duration when compared to the last syllable of the word.

The sample below is the English stress production of a two-syllable word by an L1 Thai learner. In Thai, the stress mostly falls on the last syllable of a two-syllable word (Luksaneeyanawin, 1983). Here is an example.

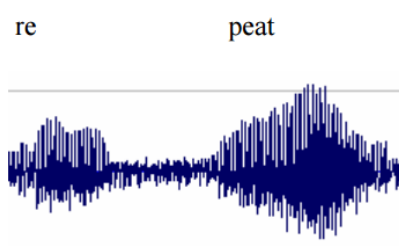


Figure 2 Sound Waves of the Word *repeat* Pronounced by a Participant

The sound waves of the word ‘repeat’ were adopted from Aungcharoen (2006). The sound waves produced by an L1 Thai learner illustrate that the last syllable of the word is a stressed syllable as they show a higher pitch and longer vowel duration when compared to the first syllable of the word. For this word, the stress location is correct, so it shows that a Thai stress pattern is one which mostly has stress put on the last syllable and might give positive transfer to produce correct stress pronunciation on an ultimate syllable.

2.2.1.2 Words with three syllables

In English, the stress mostly falls on the first syllable of a three-syllable word, e.g. criticize and elephant (Wijk, 1966). The following is an example.

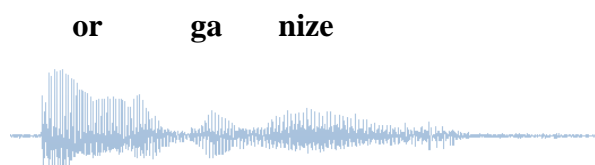


Figure 3 Words with three syllables

The sound waves of the word ‘organize’ were recorded by a native speaker of English. The sound waves illustrate that the first syllable of the word is a stressed syllable because they show a higher pitch and longer vowel duration of the syllable ‘or’ when compared to the other syllables of the word. This is English pronunciation with correct stress placement.

The sample below is English stress production of a three-syllable word by an L1 Thai learner. In Thai, the stress mostly falls on the last syllable of a three-syllable word (Luksaneeyanawin, 1983). Here is an example.



Figure 4 The sound waves of the word *organize* Pronounced by a Participant

The sound waves of the word ‘organize’ were adopted from (Aungcharoen, 2006). The sound waves produced by an L1 Thai learner illustrate that the last syllable of the word is stressed as they show a higher pitch and longer vowel duration when compared to other syllables of the word. This English stress production by an L1 Thai learner was incorrect.

2.2.1.3 Words with four syllables

In English, the stress is mostly found to be on the third syllable from the last, e.g. ambássador and demócracy (Wijk, 1966). The following is an example.

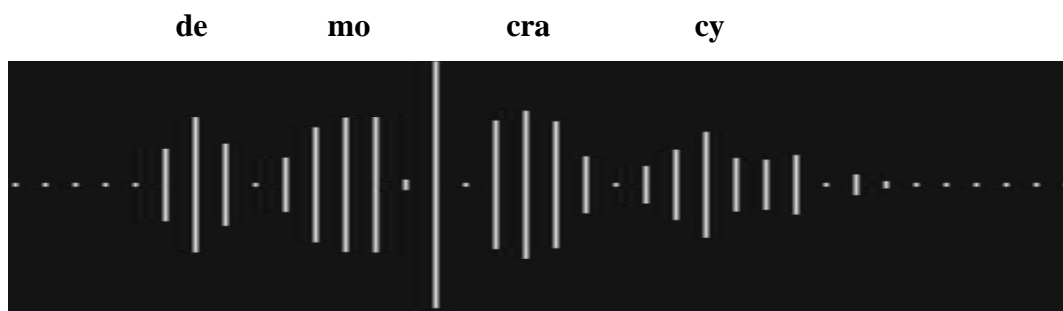


Figure 5 Words with four syllables

The sound waves of the word ‘democracy’ were recorded by a native speaker of English. The sound waves illustrate that the third syllable from the last of the word is a stressed syllable because they show a higher pitch and longer vowel duration of the syllable ‘mo’ when compared to the other syllables of the word. This is English pronunciation with correct stress placement.

The sample below is the English stress production of a four-syllable word by an L1 Thai learner. In Thai, the stress mostly falls on the last syllable of a four-syllable word (Luksaneeyanawin, 1983).

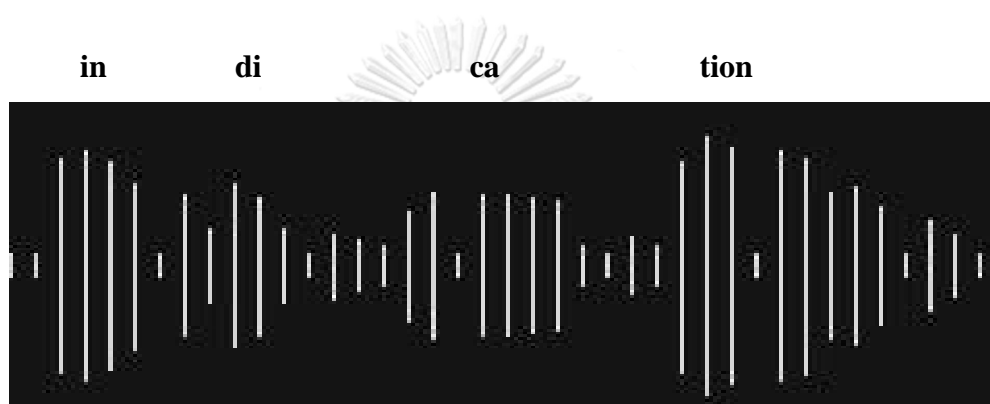


Figure 6 English stress production of a four-syllable word

The sound waves of the word ‘indication’ were recorded by an L1 Thai learner who was a participant of Jaiprasong (2013). The sound waves illustrate that the last syllable of the word is a stressed syllable because they show a higher pitch and longer vowel duration of the syllable ‘tion’ when compared to the other syllables of the word. This is English pronunciation with incorrect stress placement.

Next, a sample of stress production of the Thai word ‘มหาสารคาม’, which is ‘Maha Sarakham’ in English, is presented with sound waves produced acoustically.

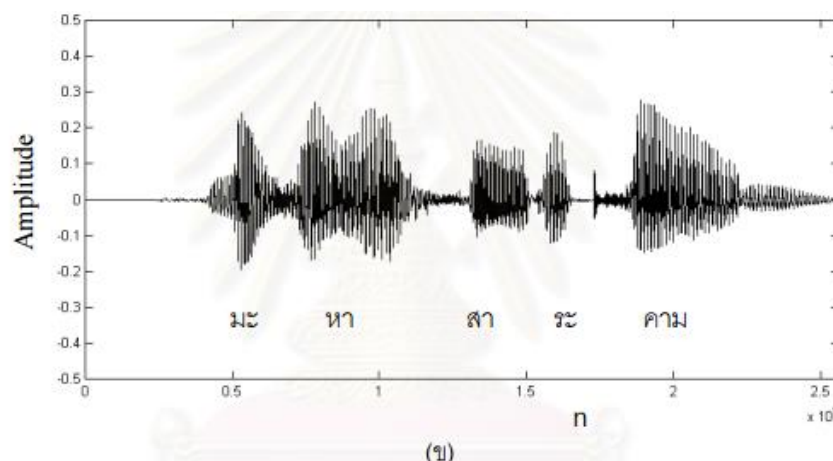


Figure 7 A sample of stress production of the Thai word มหาสารคาม

The sound waves of the word ‘มหาสารคาม’ in Thai, which is ‘Maha Sarakham’ in English, were from a recording of (Pansombat, Leelarasamee, & Luksaneeyanawin, 2002). The sound waves illustrate that the last syllable of the word is a stressed syllable because they show a higher pitch and longer vowel duration of the syllable ‘Kham’ when compared to the other syllables of the word. This shows that the stress placement is on the last syllable of the word.

2.2.2 Auditory phonetics

Auditory phonetics focuses on how humans perceive speech sounds, which is the perception of sounds or the way in which sounds are heard and interpreted. The normal auditory result of this increased effort is loudness (Jensen, 2004). According to Malmberg (1963), one of the early assumptions of stress, when taken from the point of view of the listener, is that a stressed syllable is louder than an unstressed syllable.

Evidence from English and Thai

The following is an example of an English word stress perception task that shows the relationship between auditory phonetics and listeners’ perceptions. The example below is a perception task which was adopted from Chen (2012) in the study of *Hong Kong ESL Learners’ Acquisition of English Stress and Assessment of an Online Tutoring Programme*.

In this example, the study required the participants to choose which syllable had primary stress in the underlined words (focused words of the study). The answers

showed the judgment of stress location of the participants according to their perception of English word stress. Their judgment of a stressed syllable was based on the loudness of a syllable.

Perception Task I

Directions: Listen and mark the choice that shows the receiving the MAIN stress.

Example: Joe is a successful businessman.

a. SUCcessful b. sucCESSful c. successFUL

1. I have many hobbies and activities.
A. ACTivities B. acTivities C. activiTIES
2. I enjoy aerobics as well as photography.
A. AErobics B. aeRObics C. aeroBICS
3. I'm especially passionate about photography.
A. PASsionate B. pasSIONate C. passionATE
4. On my last vacation, I look pictures of children playing on the beach.
A. BAcation B. vaCation C. vacaTION
5. I also like to shoot majestic sites like The Grand Canyon.
A. MAjestic B. maJEStic C. majesTIC
6. The view from above was fantastic.
A. FANtastic B. fanTAStic C. fantasTIC
7. Those pictures were published in a photography magazine called. International.
A. International B. inTERnational C. interNAtional

Figure 8 Sample of English word stress perception task

In Thai, when a listener listens to a Thai word, a syllable that is judged to be stressed is a louder syllable (Jensen, 2004). It mostly falls on the last syllable of a word. A sample was given in Vairojanavong (1983) which was adopted from Luksaneeyanawin (1983). For the word ‘กิริยา’ in Thai, or ‘verb’ in English, in normal speech, stress is given to the third syllable, or the last syllable of the word.

To sum up, when we study English stress production, acoustic phonetics and auditory phonetics are two aspects that help us to understand more about the judgment of giving stress. With regard to acoustic phonetics, it shows the physical characteristics of sound waves which carry speech sounds between mouth and ear (transmission of sound) and the correlates are 1) fundamental frequency (f0),

2) duration and 3) intensity (Berinstein, 1979). Auditory phonetics is about how a listener perceives sounds in their ear, and loudness is a correlate that helps a listener to judge which syllable is stressed.

2.3 Accent and stress patterns in English and Thai

Despite being closely related, accent and stress are considered different terms. According to Abercrombie (1976) cited in Luksaneeyanawin (1983), accent is the potentiality of a syllable or syllables in one word to be realized as a stressed syllable(s) no matter whether it exists alone or with other words in an utterance. It can be found at a lexical level and is related to speakers' linguistic knowledge (Vairojanavong, 1983). Also, accent shows a prediction of which syllables in a word will be stressed (primary, secondary, and tertiary accented syllables). On the other hand, stress could be considered the actual pronunciation of one particular word both with and without context. Stress shows a subjective complex of some objective phonetic qualities: a higher degree of respiratory effort, length, pitch, and loudness (objective). Unlike accent, which involves three degrees, stress has been differentiated as stressed and unstressed syllables. Stressed syllables in a word contain the four aforementioned aspects, while the unstressed ones do not. Stress deals with a speaker's actual production or performance which is related to phonetic realization (Luksaneeyanawin, 1983). Accent concerns phonological levels of lexicons, while stress emphasizes phonetics. Therefore, these two terms are not interchangeable since the speaker's actual production of stress does not have to follow the accentual rules. Therefore, it could be interpreted that, in normal communication, not every accented syllable could be realized with stress (Luksaneeyanawin, 1983).

Stress is one aspect of suprasegmental features in phonology along with rhythm and intonation, and it is normally found in both production and perception of learners (Celce-Murcia et al., 2010). Stressed syllables are mostly defined as those syllables within an utterance that are longer, louder and higher in pitch. These are the most significant features of stress (Celce-Murcia et al., 2010). According to Trask (2004), stress is a certain type of prominence which can be found on a specific syllable of a word. R. Peter (1991) explained that "prominence" is the sum of different factors, such as loudness, length, pitch and quality.

Kreidler (2004) states that there are many languages in the world which have stress patterns that can be predicted. This means that the word stress assignment always follows certain stress placement rules. For instance, the first syllable of Finnish and Czech words always gets stressed. Another example is that the stress of any Polish word is on the penultimate syllable of the word (the second syllable from the last). In addition, stress is commonly given to the last syllable of a word in French. For the languages that have stress fixed to particular syllables, the meaning of each word cannot be differentiated by the stress.

However, for some languages, the stress placement cannot be predicted. For example, the placement of stress in English words is variable in polysyllabic words (words with more than one syllable). The stress can be placed on any syllable of a word with polysyllables. Therefore, English is a language with stress placement which is unpredictable (Kreidler, 2004).

2.3.1 Stress Patterns in English

English is a free accent system, which means that any syllable can be accented. In English, different accents result in different meanings – distinctive function. Change in the position of an English accented syllable results in a change of meaning. For example, the location of the accent in the word ‘object’ as ‘object’ (n.) (a thing that you can see or touch) and ‘object’ (v.) (to feel or express opposition) signifies different meanings and different functions of the words. It helps identify the grammatical functions of a word (Vairojanavong, 1983).

In English, the accented syllables are on the left-hand side. The English accentual rules specify that accented syllables may fall on any syllable of the word. Mostly, English accented syllables are likely to fall on the left-hand side positions in a word such as ‘criticize’, ‘thousand’ and ‘table’ (Wijk, 1966). English words have many origins, such as Anglo Saxon, Norman French, Modern French, etc. Normally, when English words are borrowed from French, which has the accentual pattern mostly on the last syllable of a word (right-hand side), the word will go through a process called ‘anglicization’ after it has been used for a while, which means that the accent is shifted to the left-hand side, e.g. ga’rage and ‘garage.

There are three main possibilities of stress in a word (Couper-Kuhlen, 1986). To start with, a primary stress (ˈ) is a rise-fall tone which is the most prominent. Second, a secondary stress (ˌ) is weaker than the primary stress but stronger than that of the unstressed syllables (,photo'graphic). Last, unstressed syllables (˘) can be identified by the absence of any prominence. Unstressed syllables normally have the short closed vowels /i/ or /u/ and the schwa (Gutiérrez-Palma, Defior, Jiménez-Fernández, Serrano, & González-Trujillo, 2016). Moreover, stress is considered as a distinctive function which can be used to distinguish the meaning between two words (words with same spelling that are different in meaning according to the shift of the stress), such as 'réport' (noun) and 'repórt' (verb).

In English, there are varieties of English word stress patterns. For example, the stress placement of a three-syllable word (polysyllabic word) is unpredictable. The stress can be assigned on the first syllable (e.g. 'próperty'), on the second syllable (e.g. 'poténtial') or on the third syllable (e.g. 'addressée'). For a language learner of English, if s/he places wrong stress on a syllable, the production is considered wrong pronunciation (Kreidler, 2004).

As mentioned above, there are three main different types of stress. However, in this study, only primary stress is reviewed and discussed.

The patterns of English word stress are categorized based on the categories of Celce-Murcia et al. (2010), Kreidler (2004), Delahunty and Garvey (2003), Ortiz (2000) and Luksaneeyanawin (1983), which are 1) words with one syllable, 2) native and nativized words, 3) stress placement affected by prefixes, 4) neutral suffixes, 5) stress placement on the ultimate syllables (the last syllables of the words), 6) stress placement on the penultimate syllables (the second syllables from the last), 7) stress placement on the antepenultimate syllables (the third syllables from the last), 8) stress placement based on grammatical categories (noun-verb pairs) and 9) compound words.

2.3.1.1 Words with one syllable

According to Luksaneeyanawin (1983), English words that are monosyllabic are either accented or unaccented depending on the grammatical functions of those monosyllabic words. If the word is a content word, e.g. a noun, it can be accented, e.g. 'John'. On the other hand, if the word is a grammatical word,

e.g. preposition, it can be unaccented, e.g. ‘on’. However, it depends on information saliency.

2.3.1.2 Native and nativized words

For English words that came from German and were borrowed to be used in English in the past, the stress is usually on the first syllable in cases where the first syllable is not a prefix, as shown by ‘fáther’, ‘móther’, ‘bróther’, ‘sístér’, ‘bíshop’ and ‘kítchen’.

2.3.1.3 Stress placement affected by prefixes

English prefixes have two origins: Germanic origin and Latinate origin Celce-Murcia et al. (2010). The prefixes from those two origins have **no** stress, as shown in Table 1 (Stress placement affected by Germanic-origin prefixes) and Table 2 (Stress placement affected by Latinate-origin prefixes).

Table 1 Stress placement affected by Germanic-origin prefixes

Prefix	Example	Prefix	Example	Prefix	Example	Prefix	Example
a-	awáke	fore-	forewárn	over-	overdó	up-	uphóld
be-	belíeve	mis-	mistáke	un-	untíe	with-	withdráw
for-	forgíve	out-	outrún	under-	understánd		

Table 2 Stress placement affected by Latinate-origin prefixes

Prefix	Example	Prefix	Example	Prefix	Example	Prefix	Example
a(d)-	adápt	dis-	disáble	in-	inhále	pre-	premedítate
com-	combúst	en-	enlíst	ob-	obstrúct	sub-	subsíde
de-	deáctivate	ex-	exhále	per-	persúade	sur-	surmóunt

2.3.1.4 Neutral suffixes

Neutral suffixes are suffixes that do not cause primary stress to be shifted and do not affect the stress assignment of English words (Minkova & Stockwell, 2009).

When any of the neutral suffixes of old English are added to any English words, there is **no** stress on such suffixes, as shown in Table 3 (Neutral suffixes getting no stress):

Table 3 Neutral suffixes getting no stress

Suffix	Example	Suffix	Example	Suffix	Example	Suffix	Example
-al	survival	-ess	éditress	-less	cáreless	-some	thréesome
-dom	bóredom	-ful	frúitful	-ling	drízzling	-wise	líkewise
-ed	invénted	-hood	adúlthood	-ly	réally	-th / -eth	báckcloth
-en	béaten	-ing	describíng	-ness	sádnness	-y	indústry
-er	téacher	-ish	brównish	-ship	cóurtship		

2.3.1.5 Stress placement on the ultimate syllables (the last syllables of the words)

For English words with the following endings, the stress is always given to the suffixes (the last syllables), as shown in Table 4 (Stress placement on the ultimate syllables (the last syllables of the words)):

Table 4 Stress placement on the ultimate syllables (the last syllables of the words)

Suffix	Example	Suffix	Example	Suffix	Example	Suffix	Example
-aire	doctrináire	-eer, -ier	voluntéer	-esque	grotésque	-ique	critíque
-ee	abductée	-esce	luminésce	-ette	roséte	-oon	doublóon
-e(e), -ete	discréte	-ese	legalése	-eur, -euse	masséur		

2.3.1.6 Stress placement on the penultimate syllables (the second syllables from the last)

If any English word is assigned with one of the following suffixes, the stress is shifted to the penultimate syllable (the second syllable from the last), as shown in Table 5 (Stress placement on penultimate syllables (the second syllables from the last)):

Table 5 Stress placement on penultimate syllables (the second syllables from the last)

Suffix	Example	Suffix	Example	Suffix	Example	Suffix	Example
-ctive	afféctive	-cent	áscent	-sis	crísis	-sian	precísian
-cial/ -tial	esséntial	-cian / -tian	mártian	-tion/ -sion	ténsion	-sive	pássive

2.3.1.7 Stress placement on the antepenultimate syllables (the third syllables from the last)

When an English word contains the following suffixes, the stress is placed on the antepenultimate syllables (the third syllable from the last), as shown in Table 6 (Stress shifted to the antepenult (the third syllable from the last)):

Table 6 Stress shifted to the antepenult (the third syllable from the last)

Suffix	Example	Suffix	Example	Suffix	Example
-al	tradítional	-cracy	buréaucracy	-ography	choreógraphy
-crat	búreaucrat	-dious	perfidious	-ology	cosmólogy
-ia	malária	-icide	pésticide	-rian	librárian
-iety	varíety	-ify	símplify	-ographer	geógrapher
-ity	authórity	-lian	bacchanálian	-omy	taxónomy
-neous/ -nious	cutáneous	-nian	dracónian	-uous	cóngruous

2.3.1.8 Stress placement based on grammatical categories (noun-verb pairs)

There are some pairs of two-syllable English words with the same spelling but different function. Moreover, different functions of words lead to different locations of stress, such as *réject* (noun) and *rejëct* (verb). This means that the stress placement depends on the categories of words: nouns and verbs. Mostly, the stress is given to the first syllable of nouns, while the stress is placed on the second syllable of verbs. The samples are shown in Table 7: (Stress placement based on grammatical categories (noun-verb pairs)).

Table 7 Stress placement based on grammatical categories (noun-verb pairs)

Noun	Verb	Noun	Verb	Noun	Verb	Noun	Verb
cónflict	conflićt	décrease	decreáse	pérmit	permít	rébel	rebél
cóntest	contést	défect	deféct	pérvert	pervért	súrvey	survéy

2.3.1.9 Compound words

A compound word is one type of a word consisting of two words. Those two words can stand independently as one English word (Roach, 2009). A compound word can be seen in three main written forms: as a word (e.g. ‘armchair’), as two words separated by a hyphen (e.g. ‘open-minded’) and two words separated by a space (e.g. ‘school bag’). In this study, only compound nouns and compound verbs are focused on. The following are some rules of stress placement for compound nouns and compound verbs.

1. Compound noun

A compound noun is a type of a noun consisting of two words. There are several forms of compound noun which are commonly found: noun + noun (e.g. ‘apple juice’), adjective + noun (e.g. (e.g. ‘goldfish’),), noun + verb (e.g. ‘hairdo’) and a compound noun which derives from a phrasal verb¹ (e.g. ‘workout’).

¹ A phrasal verb is a verb followed by a particle which can be either a preposition or an adverb (Clifford, 2009).

The primary stress is usually placed on the first syllable and the secondary stress is placed on the second syllable for compound nouns that come from 1) noun + noun, e.g. ‘bóokstore’, ‘séafood’ and ‘dóorbell’, 2) adjective + noun, e.g. ‘bláckboard’, ‘gréenhouse’ and ‘hárdware’, 3) noun + verb, e.g. ‘háircut’, ‘ráinfall’ and ‘brówbeat’ and 4) compound nouns that derive from phrasal verbs, e.g. ‘dríve-in’, ‘púsh-up’ and ‘hándout’ (Yurtbaşı, 2017).

2. Compound verbs

A compound verb is a verb consisting of two words or more which functions as a single verb. A compound verb comes from a verb and a preposition. The following are examples of prepositions:

<i>across</i>	<i>away</i>	<i>back</i>	<i>through</i>	<i>down</i>	<i>up</i>
<i>in</i>	<i>out</i>	<i>on</i>	<i>off</i>	<i>over</i>	<i>under</i>

(Kreidler, 2004, p. 207)

The information below presents the rule of stress placement and examples of compound verbs focused in this study (Yurtbaşı, 2017).

If a compound verb stands separately as a phrasal verb, the primary stress is placed on the adverbial preposition (the second syllable) and the secondary stress is placed on the lexical part of the verb (the first syllable), e.g. ‘back úp’, ‘put ón’ and ‘let dówn’.

2.3.2 Stress Patterns in Thai

Stress refers to the potentiality of a syllable or the syllables in a word to be realized with stress, either when the word occurs by itself in context or with other words in context (Luksaneeyanawin, 1983). Unlike English, the Thai fixed accent system specifies an absolute position of an accented syllable of a word. There are fixed rules which state that the accented syllable of a Thai word is the last syllable of the word, e.g. ‘กิริยา’ /ki²ri²ja:m²/ (‘OO’O) ‘a manner’ and ‘สาหัส’ /sa:’hat¹/ (‘O’O) ‘seriously wounded’. These show that the positions of accented syllables are predictable and that Thai accented syllables are non-phonemic. The following are the details about Thai word stress patterns.

2.3.2.1 Thai - Monosyllabic words

Mostly, Thai words are monosyllabic and they are accented, such as ‘กิน’ /kin^m/ - ‘to eat’, ‘ข้าว’ /kha:w^f/ – ‘rice’, etc. Thai monosyllabic words are stressed when they are pronounced in isolation. Furthermore, when they are put together in utterances, all content words are accented, e.g. nouns, verbs, adjectives and adverbs, but they do not always have to be stressed. On the other hand, all grammatical words are unaccented, e.g. auxiliary words, conjunctions, prepositions and particles (Hiranburana, 1971) cited in (Luksaneeyanawin, 1983). However, these words do not always have to be unstressed as the stress depends on the intention of the speakers (Luksaneeyanawin, 1983).

2.3.2.2 Thai - Polysyllabic words

Thai has polysyllabic words which can be found in everyday conversation and they can be categorized as monomorphemic polysyllabic words, reduplicatives, and compounds.

1. Monomorphemic polysyllabic words

A monomorphemic polysyllabic word of foreign origin is a word that the speaker is unable to identify with regard to the units or boundaries of the words but knows that there is a meaning (Surinpi boon, 1985). Polysyllabic words in Thai are found with double-accented patterns – primary and secondary accents. The primary accent can always be found, whether that syllable is pronounced in either casual or careful speech. However, the secondary accent can disappear when it is pronounced in fast casual speech.

To understand the accentual system of this type of words, the linker syllables (L) and non-linker syllables (O) should be described according to (Bee, 1972). Linker syllables (L) are the syllables containing the vowel phoneme /a/, which is realized as /ə/. It normally ends with a glottal stop and has a phonemic tone, e.g. /ba²¹/ from /ba²¹ran¹di:^m/, which separates the /br/ in the English word ‘brandy’ into two syllables. However, the tone can be adjusted depending on the environment in the speech. However, linker syllables are different from Thai monosyllabic words as they have a phonemic vowel /a/ with a glottal stop ending, e.g. /ka²¹/ meaning ‘to estimate’, /khla²¹/ meaning ‘to mix’, etc., while linker syllables have just a neutral tone.

Normally, linker syllables are unaccented. Other syllables that are not included in linker syllables are called ‘non-linker syllables (O)’.

The following are accent placement rules of the monomorphemic polysyllabic words (Luksaneeyanawin, 1983). To start with, a primary accent is given to the final syllable of a disyllabic word and a secondary accent is assigned to the other. So, the accentual pattern is O'O. However, there is a specific rule which states that if the first syllable is a linker syllable, the pattern is also like O'O. Secondly, a primary accent is given to the final syllable of a trisyllabic word. A secondary accent is given to the antepenultimate syllable if the two remaining syllables are of the same type (linkers or non-linkers). If the two remaining syllables are not of the same type, the secondary accent will be given to the non-linker syllable. For tetrasyllabic words, a primary accent is given to the last syllable and the penultimate syllable is always unaccented. There are two possibilities of secondary accent. First, if one of the two remaining syllables is a non-linker, it is accented. Second, if the two remaining syllables are of different types, either the first syllable or the antepenultimate syllable can be accented. However, the antepenultimate syllable is often assigned with a secondary accent. According to Luksaneeyanawin (1983), there are also penta-syllabic or hexa-syllabic words used in Thai but they are rarely found.

2. Reduplicatives

Reduplicatives are words consisting of syllables that are considered the same in every component or partly the same (some of their components are the same but others are not.). According to (Luksaneeyanawin, 1983), there are four accentual patterns of reduplicatives. ‘O’ means a base word and ‘R’ means a reduplicator.

2.1 R'O in simple reduplicatives

The base word is accented, while the other is unaccented, e.g. ‘dek 'dek’ meaning children (showing the plurality of a noun) and ‘di:^mdi:^m □ nicely (showing imperativity). The accent is given to the last syllable of a disyllabic simple reduplicative.

2.2 R'O in intensifying reduplicatives

Intensifying reduplicatives come from a base word and a reduplicator, and its consonants and vowels are the same as the base word. The reduplicator gets accented for syllable intensification and the other is unaccented, e.g. ‘i'bæ:n^m i'bæ:n^m

meaning ‘very flat’ (adjective intensification) (Haas, 1964). Only verbs, adjectives and adverbs can be used in an intensifying reduplication process (Luksaneeyanawin, 1983).

2.3 'O'R and 'R'O in partial reduplicatives

Both of these forms can be found in disyllabic partial reduplicatives. These reduplicatives consist of a base word and a reduplicator that is partially like a base word, i.e. their consonants or tones might be different. There is implied meaning found from this type of reduplicative, e.g. annoyance. For this type of reduplicative, a primary accent is given to the last syllable and a secondary accent is assigned to the other. Samples are shown as follows:

/'O'R/,	such as	'su:aj ^r 'sɔ:j ^r	สวຍเสย
/'R'O/,	such as	'moŋ ^m 'mu: ^m	มงมือ

2.4 'R'R in special reduplicatives

There are no base words in this type of reduplicative. They seem to be pairs of syllables that share common consonants, tones and syllable quantity. So, ‘R’ is used for both syllables (Surinpi boon, 1985). These pairs are never found as separate words by themselves. So, they are used in pairs. Samples are shown as follows:

'chɔŋ ^l 'cha:ŋ ^l ,	which means	โถ่งถ่าง
'tɔk ^h 'tɔj ^r ,	which means	ต๊อกต้อย

3. Thai compounds

There are two types of compound in Thai. First, there is a compound that consists of two free base words, e.g. รองเท้า /rɔ: ŋ^m 'tha:w^h/, which comes from ‘to put beneath (v)’ and ‘foot (n)’. The meaning of a compound can be a new meaning related to the original meaning and sometimes the meaning is not clear or very different from the base word. Second, there is a compound that consists of a free base word and another word with no meaning. Another element was called ‘lexical prefix and ‘lexical suffix’ by Noss (1964), as cited in Luksaneeyanawin (1983). These compounds are affected by the syntactic changes which result in changes in meaning; for example, the lexical prefix ‘ผู้’ /phu:^f/ in ‘ผู้ร้าย’ /phu:^f 'ra:j^h/ shows that it is a noun. Most disyllabic compounds in Thai consist of two monosyllabic words, or one

monosyllabic base word and one monosyllabic lexical affix. These are normally non-linker syllables which comprise the O'O accentual pattern of these compounds, as shown by the sample below.

'ta:^m (base) + 'ma:^m (base)

ta:^m 'ma:^m

Meaning: the old ma

Moreover, an accentual pattern that is favored in polysyllabic words is 'the double accented pattern'. That is, a primary accent is on the last syllable. Secondary accent placement depends on the syllable structure of the other syllables apart from the last syllable. The example below, 'ตู้กับข้าว', shows that the syllable that comes before a morpheme boundary (.) and is originally accented will get a secondary accent. Therefore, this means that the derivation of the words helps the learners to know the location of secondary accent.

'ตู้กับข้าว' /tu:^f kap^l kha:w^f/ means 'a cupboard with screened doors to keep cooked food'

Derivation

Base

/tu:^f/

(a cupboard or a cabinet
or a chest of drawers)

Compounded Base

Base + Base

/kap^l/ /kha:w^f/

(with) (rice)

/kap^l.kha:w^f/

(different dishes to eat with rice)



/tu:^f. kap^l.kha:w^f/

Adopted from Intonation in Thai, by Luksaneeyanawin (1983)

Even though the word is formed from two words, it becomes one lexical unit with its own specific accentual pattern Noss (1964), as cited in Luksaneeyanawin (1983).

2.4 Stress in sentences

2.4.1 Tonality

Tonality refers to the distribution of an utterance into smaller units of information or tone groups. A tone group is a set of information based on the speaker's perception of it as one information unit (John Christopher Wells, 2006).

For this research, the focus is on 'neutral tonality', which is "the tone group that corresponds to a clause or grammatical unit. One clause is one tone group, unless there is a good reason for it to be otherwise". A clause comes from simple sentences, main clauses, co-ordinate clauses and some types of subordinate clauses. Moreover, in reading aloud or in formal speech form, it tends to have compound or complex sentences (clauses which can be divided into a number of tone groups). For this case, the information needs to be divided into smaller units (Halliday, 1970).

//He kept his hat on and// took his shoes off.// (Halliday, 1970)

2.4.2 Tonicity

In each foot, one of the syllables is more prominent or stronger than the other syllable(s) and it is called the strong syllable.

(1) // My /mother has/ bought a /new /house in the / heart of the /city //.

In this example, the content words are mother, bought, new, house, heart and city, and the function words are my, has, a, in, the, of and the.

In one tone group, there is normally one word that is the most prominent among others and it is called the "tonic prominence". The stressed syllable of the tonic prominence is called a "tonic syllable", which is often longer and may be louder than other syllables in a tonic word. So, in the sample sentence above, city shows tonic prominence and 'ci' is a tonic syllable.

As the focus of this research is on neutral setting, the tonic syllable is assigned to the last content word of the utterance (Halliday, 1967).

2.4.3 Tune

Tune is a contrastive pitch of an utterance, realized mainly on the pitch movement of the tonic word. According to (Halliday, 1970), there are five main tunes in English, which are as follows. In this study, as the focus is on neutral context, the tunes used are falling and low-rising.

2.5 Tones

Among the languages spoken around the world, they are divided into two types: tonal language and non-tonal languages or intonation-only languages (Gussenhoven & Peters, 2004). Tonal languages can be normally found in sub-Saharan Africa, in Southeast Asia and in Central and South America. For non-tonal languages or intonation-only languages, they exist in Europe and Central, South and West Asia, and among Australia's aboriginal areas. However, according to Pike (1948), even though the languages around the world are classified into two main groups as mentioned above, the tonal languages still have intonation. Therefore, intonation can be found in all languages. On the other hand, tones can also be used in non-tonal languages or intonation languages that tones are used syntactically and emotionally, not lexically as they are seen in tonal languages.

Thai is considered a tonal language which is categorized by the pitch patterns. This means that tone is a significant feature for differentiating the meanings of the words. This phenomenon is normally found in Thai, Chinese, Vietnam, etc. In other words, pitch is lexically important for understanding Thai words. For instance, there are five contrastive tones in Thai which gives different meanings. The following samples illustrate the word [k^h:a] with five different meanings.

Tones	Words	Meanings
High	/k ^h a:3/	„to engage in trade’
Mid	/k ^h a:0/	„to get stuck’
Low	/k ^h a:1/	„galangal (a type of spice)’
Falling	/k ^h a:2/	„I, price, to kill’
Rising	/k ^h a:4/	„leg’

Adopted from Pongprairat (2011)

So, the word ‘tone(s)’ in this study refers to the lexical tones in Thai.

2.6 Previous studies relating to L2 pronunciation problems of English word stress

In this section, previous studies in the area of L2 perception and production of English word stress will be presented in 1, 2 and 3, respectively.

2.5.1 L2 perception of English word stress

Awedyk (1986) explored the perception of stressed syllables in natural stimuli, which was a contrastive experimental study of English and Polish. Participants were both females and males divided into two groups: 10 Americans and 10 Poles. Some were trained phoneticians and some of them already had some phonetic training. These factors were not included in this study. Natural stimuli were used for the participants to determine the role of fundamental frequency, intensity and duration in the perception of stressed syllables by native speakers of American English and native speakers of Polish. These three parameters were chosen because the researcher questioned whether there were any links between each of the parameters and the perception of stressed syllables. In total, 25 nonsense words consisting of 15 three-syllable words and 10 two-syllable words were used for testing the participants. All words were spoken by both native speakers of English and Polish. Each of the 25 words was recorded three times but only the second recording was used during testing. After that, the participants were asked to listen to the recording and make judgments on which syllables were stressed. The results showed that there were significantly different responses to the words in the test between the English participants and the Polish participants. Moreover, both English and Polish participants found it difficult to identify which syllable should be stressed when the pitch of those syllables were not much higher in the fundamental frequency. In perceiving the stress, duration was more effective than intensity for English speakers compared with Polish speakers. The results also indicated that fundamental frequency was the most important factor for the participants in perceiving the stress of a syllable.

Mattys (2000) explored the perception of primary and secondary stress in English. The participants were 40 American undergraduate students, consisting of 10 males and 30 females who had no auditory difficulties and were studying at the University of New York, Stony Brook. In total, 24 pairs of words similar to 'prosecutor-prosecution' were chosen for testing. Both words of each pair shared the

same lexical roots; that is, their first three syllables were identical and their last segments were different. Moreover, the stress patterns of these pairs were alike. The first word contained a primary stress on the first syllable and a secondary stress on the third syllable, e.g. ‘prosecutor’. The second word contained a primary stress on the third syllable and a secondary stress on the first syllable, e.g. ‘prosecution’. The participants were tested in a sound-shielded booth in groups of up to three. They listened to 94 fragments of each word recorded by native speakers of English; that is, just one of the two syllables of each word was chosen and cut for perception testing. Then, the students had to push the right button after they had decided which syllable was stressed. Moreover, they had to choose the origin of the chosen fragments. They had eight seconds to make a decision. The results showed that they were good at distinguishing the stress of two words sharing same roots. When the fragments were presented with more syllables, the participants were much better at guessing their full words. However, there was a regression analysis showing that some acoustic features of the syllable – which were frequency, duration and amplitude – were not sufficiently used by the participants. Moreover, there might have been other features used by the participants when distinguishing the stress of a word.

Eriksson et al. (2002) conducted a study of perception of syllable prominence by listeners with and without competence in the tested language. The goal of this study was to reflect aspects of word stress assignment that were not due to vocal effect but due to prosodic distinctness and other factors. Before experiments were conducted, participants were trained how to judge the prominence of each syllable. Three experiments were conducted in this study and the number of participants in each experiment was different. In experiment 1, 18 speakers of Swedish who were employees or undergraduate students at the Department of Linguistics, Stockholm University, were asked to identify the stress of each syllable of the utterance. In experiment 2, ten adult speakers of southern British English with no knowledge of Swedish were asked to identify the stress of each syllable in the same utterance as that used in experiment 1. In experiment 3, 18 adults who had the same background as the participants in experiment 1 were required to indicate the word stress level of each syllable of each utterance presented in writing form. After obtaining the syllables’ prominence rating from all participants, the results showed that the Swedish and

English participants had almost identical perception of the syllable prominence. However, the Swedish participants' perception tended to be influenced by their expectations. Both Swedish and English participants chose the same stress placement. However, the researcher stated that the results would have been much clearer if the speech material had been prepared more systemically by adding more variation to the linguistic structure so that it could not be guessed by the participants easily.

Wang (2008) investigated the phonetic details of the second language word stress perception of Chinese learners. This study focused on the perception of English lexical stress by Chinese learners of English to reveal the cues in their stress perception. The participants were divided into two groups: a control group and an experimental group. The control group consisted of 38 (17 males and 21 females) native English speaking volunteers. The experimental group consisted of 62 Chinese learners of English (19 males and 43 females). The tests were divided into two parts. The first part required the students to fill in questionnaires for the researcher to collect their background information on their use of dialects and knowledge of other foreign languages. Data on the learners' familiarity with the idea of English word stress were also collected. The second part was a perception test focused on the organization of the stimuli, which were words and nonsense words in the stress perception. Students were assigned to listen to the token words and identify whether the stress of each stimulus was on the first or second syllable. Then, the stress identification was compared against the stress patterns of native English speakers. According to the PAM (Perception Assimilation Model), Chinese learners could perceive stress because of the assimilation of stressed and unstressed syllables to different tones in their L1. However, the Chinese students' perception ability was flawed because they always tried to link stressed and unstressed syllables with tones. It could be concluded that the Chinese learners' strategy in stress perception was non-native. The findings showed that the Chinese learners of English showed systematic variation as a result of control of the two acoustic cues, which were duration and intensity. However, the Chinese learners of English had significantly lower duration and intensity reliance scores when compared with the native English speakers. The researcher concluded that it was difficult for second language learners to acquire lexical stress. Many Chinese learners of English misunderstood the difference between stress and tones.

Tremblay (2009) explored the phonetic variability and the variable perception of L2 word stress by French-Canadian listeners to see their development and achievement in the perception of English word stress. The participants were 75 French-Canadian L2 learners of English and 31 native English speakers. They were of three different English proficiencies (intermediate, low-advanced and high-advanced). The purpose of this study was to find whether a perceptual and processing inadequacy affected the participants' stress deafness. They were required to do an AXB perception of English word stress task. In this task, the contrast type of stress, and segmental and phonetic variability (with and without phonetic variability) were controlled. During the ABX task, the participants listened to groups of three nonsense words that contained different stress placement or segmental content, and identified whether the X stimulus was the same as or different from stimulus A and B. In the AX task, the participants listened to minimal pairs. Some pairs were different in stress and some pairs were not. Then, they had to state whether the words in each pair they had heard (stimulus A and X) were the same or different. After all the tasks had been conducted, the results showed that the L2 learners had more difficulty when they had to perceive English word stress in the presence of phonetic variability rather than in the absence of it. In addition, the participants from the three different levels of proficiency did not perceive English word stress differently.

Ou (2010) investigated Taiwanese EFL learners' perception of English word stress using non-word pairs which only differed in location of stress. The purpose of this study was to see whether native speakers of lexical tone languages over-relied on the cue of the pitch when identifying stressed and unstressed syllables while learning English as a second language. A sample of 58 Taiwanese EFL learners participated in this study and they were divided into two groups: 20 EFL graduate students who had been learning English for at least ten years and 20 EFL learners who had been learning English for less than five years. Moreover, 20 English native speakers were included as a control. The procedure of this study consisted of two stages: a learning stage and a testing stage. The participants were trained to match the sound stimuli with given pictures. The words that were used in the learning stage were the same as the words in the perception test. However, the words were included in sentences when testing. The participants were given a forced-choice picture selection task which

required them to choose a picture that referred to a non-word on the left side and another picture that identified the another non-word on the right side. While they were looking at the pictures, they were listening to sounds and they had to decide which of the pictures matched the sound they heard by pressing the buttons. After checking for the participants' correct and incorrect error perception, the results showed that their perception was nearly perfect, indicating that they had little difficulty in choosing stress for non-words. Furthermore, they were better in identifying stress with a higher pitch contour than a lower pitch contour.

Chung (2013) investigated the effects of L1 learners' prosodic system on the perception of English stress among Korean EFL learners. Two groups of students, a group of standard Korean speakers and a group of Korean speakers who spoke with a North Kyungsang dialect, participated in this study. Even though the participants of the two groups were Korean speakers of English, there were some differences in the characteristics of their L1. In standard Korean, there is no stress and tone. On the other hand, the North Kyungsang dialect of Korean is a tonal language. The participants were majoring in English and English literature. Another tool used to select the participants was having the participants do a perception test twice so that only successful students (95% above) would be selected for the experiment. After that, the participants were required to listen to audio recorded by a native English speaker of North America to locate stress on the chosen syllable of fifteen pairs of di-syllabic nonsense words. All of the chosen words were put into yes-no questions (rising intonation) and affirmative statement (falling intonation). This was to see whether the participants could locate the stress according to the type of intonation. It showed the relationship between stress assignment and pitch. The results showed that the participants gave a syllable stress based on prominence in pitch rather than duration and intensity. This occurrence could be found among the North Kyungsang Korean group rather than the standard Korean group. Moreover, the EFL learners whose language was tonal with no stress background relied on pitch when locating the stress.

2.5.2 L2 production of English word stress

Flege and Bohn (1989) performed an instrumental study of vowel reduction and stress placement in Spanish-accented English since the alteration of

morphophonology in English words such as ‘able’ and ‘ability’ had an impact on stress and vowel quality. The participants were divided into two groups. The first group consisted of seven English-speaking women with a mean age of 36. The other group was comprised of seven Spanish-speaking women, with a mean age of 32 years, who had stayed in the United States for approximately 2.3 years and studied English in schools for approximately 4.4 years. All participants had to produce four pairs of morphologically related words, which were divided into: a stressed (‘able’) and unstressed group (‘ability’). The first syllable of ‘able’ got stronger stress than the first syllable of ‘ability’ which was later the cause of the vowel reduction phenomenon, i.e. ‘botany’ (stressed) --> ‘botanical’ (unstressed). Next, the participants’ production was assessed for the stress and vowel quality of each word. It was found that stress placement seemed to be less problematic than vowel reduction for the native Spanish speakers. Furthermore, the participants could acquire stress placement earlier than vowel reduction and the ability to produce unstressed vowels. It was concluded by the researcher that L2 learners could acquire stress placement and vowel reduction in English on a word-by-word basis. However, the researcher concluded that this study could not be compared with other studies in the same field because the task in this study just required the participants to read the words in isolation. The task should be improved so that the participants need to read the words in sentences or context.

Khamkhien (2010) conducted a study of the English pronunciation competence of 90 Thai learners who were studying in the science field, from the Faculty of Liberal Arts and Science, Engineering, and Veterinary Medicine, Kasetsart University, Thailand. There were two parts to the testing. First, the students were required to complete questionnaires to elicit their personal information which was related to the factors affecting the English word stress assignment of the students the researcher was studying. Second, the students were assigned to read vocabulary focused on different patterns of word stress, which were two-syllable words, three-syllable words, four-syllable words and five-syllable words. The findings showed that most of the Thai learners did not perform with satisfactory competence in English pronunciation. Based on the data analysis, their word stress placement was

limited. Factors affecting Thai learners' word stress competence from this study were experience in studying English, gender and faculty.

Gao (2012) conducted an experimental study on the influence of Chinese experience on English phonetic acquisition from the perspective of word stress. Based on the perceptual assimilation model, which claims that L2 learners' perception and production is affected by language experience (Wen, Ran, & Shi, 2009), the purpose of this study was to study whether there was a relationship between the students' experience and suprasegmental perception and production. A sample of 30 students majoring in English participated in this study. They had been studying English for more than eight years. Three English native speakers also participated in this study. The task required the participants to read 30 two-syllable English words whose second syllable was assigned with tone 4² in Chinese. The participants were required to read these words. The results showed that the students mostly misplaced the stress in these polysyllabic words as it was located on the second syllable instead. The cause of this phenomenon was assumed to be L1 transfer (the last syllable is always stressed in the learners' L1). It was suggested that there should be more L2 auditory sessions provided for the students' phonological awareness.

Hismanoglu (2012) explored problems causing word stress patterns for Turkish EFL (English as a Foreign Language) learners and investigated if an Internet-based pronunciation lesson could be more effective than traditional pronunciation lessons in terms of enhancing the Turkish EFL learners' accurate production of stressed syllables in English words. The results showed that Turkish EFL learners had problems producing the primary stress on the last, penultimate (second syllable from the end) and ante-penultimate syllables (third syllable from the end) as well as on compound adjectives and verbs due to being unfamiliar with the word stress patterns of the L2 and the negative effect of the L1. This did not have any effect on producing the primary stress on the first syllables of words and compound nouns due to the learners' being accustomed to the stress patterns of commonly used words in English and transferring L1 compound word stress rules to L2 compound

2 Chinese tones are divided into 4 categories: 1) tone 1 (ˉ) – a long and steady tone, e.g. zhōng ('middle'), 2) tone 2 (ˊ) – a rising tone, e.g. rén ('person'), 3) tone 3 (ˇ) – a falling-rising tone, e.g. wǒ ('I, me') and 4) tone 4 (ˋ) – a falling tone, e.g. shì ('to be, am, is, are') (Thomas, 2007, p.23).

stress rules. However, the data analysis revealed that learners who had been exposed to Internet-based video lessons had better development in English pronunciation than when studying in traditional lessons.

Chen (2013) explored Chinese ESL learners' acquisition of English word stress and compared factors affecting their stress assignment with three factors of the findings of Guion, Clark, Harada, and Wayland (2003), which were syllable structure, lexical class, and phonologically similar words. A sample of 20 advanced ESL learners from Hong Kong and China were paid to participate in the experiment. They were native speakers of Cantonese aged between 19 and 25 years old and had never studied abroad in any English-speaking countries. They were English major undergraduates or postgraduates who had been studying English since first grade and had achieved a score of at least 6.5 on the IELTS or an equivalent score on another English proficiency exam (e.g. TOEFL CBT 225/PBT 560/iBT 85). The participants were tested in production and perception tasks based on 40 real words and 40 pseudowords of varying syllable structures in noun and verb sentence frames. Moreover, they identified words they considered to be phonologically similar to the pseudowords. There were five tasks in the experiment. From these five tasks, three tasks were perception tasks and the other two were production tasks. All of the tasks were conducted online in a language lab at a university in Hong Kong. The results showed that the participants performed well in the tasks related to real words, but there were asymmetrical abilities in the tasks involving pseudowords. Regarding the factors affecting the stress assignment, they were different from the findings of Guion et al. (2003). The stress assignment was not significantly influenced by syllable structure or the stress patterns of phonological similarity to real words. Only lexical class had an effect on main stress assignment.

V. Sadeghi (2013) examined the phonetic properties of lexical stress in English produced by Persian speakers learning English as their foreign language. A sample of 30 undergraduate students (15 females and 15 males) of English at Imam Khomeini International University (IKIU) in Iran were the participants in this study, and they were categorized by TOEFL scores and interviewed by the researcher to see their productive English skills. Their ages ranged from 21 to 26. They were all senior students studying in the 6th and 7th semesters, majoring in English translation or

TEFL. None of the subjects was a resident of an English speaking country. The participants were tested by being asked to read five pairs of disyllabic words in isolation and in context sentences. Each pair of words consisted of a noun and a verb that had identical spelling forms and differed only in terms of stress position, where the initial and final syllables were stressed in the noun and the verb respectively. The selected pairs of words were as follows: ‘contract’, ‘desert’, ‘subject’, ‘permit’, and ‘record’. The words were used to provide cross-language comparisons of results. The findings manifested that the English vowel space of stressed syllables was significantly higher than that of the unstressed syllables. Furthermore, female speakers produced significantly higher English vowel space, duration and intensity, approximately, than male speakers across stressed and unstressed conditions. The difference between the stressed and unstressed syllables was greater in female participants than male participants. In addition, the quantitative variations of average English vowel space across the stressed and unstressed syllables of the target stress pairs produced by the Persian participants were nearly comparable to those produced by English native speakers. Therefore, Persian speakers were able to transfer the use of these prosodic features from the lexical stress domain in Persian to the lexical stress domain in English.

Vafaei et al. (2013) explored the English pronunciation of Iranian learners, focusing on the effect of the stress pattern. Primary word stress has always been seen as one of the major problems of English pronunciation among L2 learners. The participants were 30 students who were studying English at an intermediate level. There was a production task for the participants to pronounce the selected words for analysis. The test consisted of 80 words chosen from Interchange Book 3 (Richard, 1998) as the words were familiar to the participants. Then, the chosen words were categorized into four groups based on the number of syllables and the assignment of the stress: 1) 20 two-syllable words with the stress on the first syllable, 2) 20 two-syllable words with the stress on the second syllable, 3) 20 three-syllable words with the stress on the first syllable and 4) 20 three-syllable words with the stress on the second syllable. The participants were asked to read the chosen words and the production was recorded. After the production of each word, the researcher asked the participants to tell the meaning of that word in order to distract the students from

being aware of the word stress patterns. The findings showed that the participants produced the words whose stress was on the first syllables better than those with the stress on the second syllables. The pronunciation of the participants was still problematic. The researcher stated that the teachers should provide more opportunity for their students to practice pronouncing words with correct stress. Besides, materials for teaching pronunciation should be properly prepared for teaching.

Zubizarreta et al. (2013) compared the production of stress patterns in various types of compounds by English native speakers and L1 Spanish/L2 English speakers. A sample of 16 native speakers who were undergraduate students at the University of Southern California (USC) and 16 L1 Spanish/L2 English speakers of English who were undergraduate or graduate students at USC or California State University-Fullerton, or who were Spanish lecturers or professors at USC or nearby institutions, participated in this study. The L2 speakers were from Spain, Mexico, and Peru. The mean age of the native speakers was 20. The mean age of the L2 speakers was 31.6. The participants were required to perform a reading protocol task which was reading short passages containing the target compounds. The recordings were divided and coded by two undergraduate assistants based on perception. All discrepancies were judged by a third undergraduate and then discussed in lab meetings to reach a consensus. The results showed that the English native speakers produced idiomatic compounds with fore-stress (strong-weak) patterns systematically, as did the second language speakers of English (Spanish as the native language). Significant differences were found between the two groups in their stress production of less familiar compositional compounds. There was a strong tendency for the English native speakers to produce fore-stress patterns in the form of argument-head combinations and a weak tendency to produce end-stress (weak-strong) patterns in the case of modifier-head combinations.

Bian (2013) conducted a study on the influence of Chinese stress on English pronunciation teaching and learning because the researcher saw the importance of stress for people's understanding when communicating with others and stress was still problematic for Chinese learners. Moreover, the contrastive analysis of stress patterns in English and Chinese was examined. Two experiments were conducted in this study. The number of participants in the two experiments was different. For the first

experiment, 10 first-year college learners (five males and five females) were randomly selected to participate in this study. They had been learning English as a foreign language for at least six years. Then, they were asked to read 10 words for a recording concerning stress on the first and the second syllable. The ten words were 'origin', 'forgot', 'unless', 'context', 'connect', 'obtain', 'content', 'original', 'congress' and 'opinion'. If they recognized that they had produced wrong pronunciation, they were allowed to repeat any words until they thought that their pronunciation was satisfactory. After that, an auditory analysis was performed by three professional Chinese teachers of English to check the participants' pronunciation. The reason why the Chinese teachers of English were responsible for judging the participants' production was that the researcher had studied the impact of L1 transfer (Chinese) on the learning and teaching of pronunciation. Therefore, these teachers' judgment was believed to be important. The results showed that Chinese learners of English tended to use strong forms of English vowels rather than /ə/ for the first unstressed syllable, e.g. 'forgot' [fə'gɒt], 'obtain' [əb'tein], 'original' [ə'ridʒɪnəl], 'unless' [ʌn'les], 'connect' [kə'nekt] and 'condition' [kən'dɪʃən]. Later, a second experiment was conducted in order to further study the interference of Chinese stress patterns on the Chinese students' learning of English compounds. In total, 40 learners (20 college learners and 20 middle school learners) participated in the second experiment. They had also been learning English as a foreign language for at least six years. They were required to read 20 compound nouns which had primary stress on the first component and double stress for some words. After that, they were asked to pronounce the given words with stress. The results illustrated that L1 transfer (Chinese stress patterns) occurred when the participants were producing English compound nouns with primary stress on the first syllable and it caused a high percentage of errors. Regarding double stress on words, the participants could produce it quite well. Chinese learners were prone to producing compound words with the w-s (weak-strong) pattern instead of the s-w (strong-weak) pattern in English. Consequently, instead of producing compounds such as 'doorstep', 'earthquake', 'hairbrush', 'drugstore' and 'dining room' with correct stress, the participants shifted the stress to the last syllable. It was concluded that English word stress was difficult for Chinese EFL learners to acquire because of their L1 influence. To improve this,

there should be more emphasis on English word stress patterns when L2 learners are learning English because stress plays a major part in people's comprehension when they are communicating with others using English.

2.5.3 L2 perception and production of English word stress

Aungcharoen (2006) explored the English word stress perception and production skills of Thai grade 12 students. In order to find out whether there was a relationship between the students' perception and production of English word stress placement, 160 12th-grade students were chosen for data collection. They were divided into two groups: low and high proficiency (categorized by their English grades in the previous semester). Three groups of English words were included in the perception and production tests: 1) words with stress on the last syllable (ultimate), 2) words with stress on the second syllable from the last (penultimate) and 3) words with stress on the third syllable from the last (antepenultimate). In the perception test, after listening to the recording of a native speaker of English, the participants' task was to locate a primary stress on a syllable. In the production test, the participants' task was to individually read the chosen words and be recorded. Later, a questionnaire on English exposure was used to obtain more data from the participants. The findings indicated that a positive relationship between the participants' perception and production of English word stress was found regardless of their English proficiency. Moreover, errors were mostly made in the English words with stress on the penultimate (the second syllable from the last) and antepenultimate (the third syllable from the last) syllables rather than on the ultimate syllable (the last syllable). The participants with high proficiency in English could produce and perceive the English word stress better than the participants with lower proficiency of English. Last, the female participants had better production and perception of English word stress than the male participants. It was recommended that more materials and activities are needed for student development.

Altmann (2006) conducted a cross-linguistic experimental study of the perception and production of second language stress of advanced learners of English with seven different L1's (Arabic, Chinese, French, Japanese, Korean, Spanish and Turkish) who were either studying at the English language institute or who had already graduated. This was carried out in order to study the effect of learners' first

language stress properties on their second language acquisition of primary word stress with two typological hierarchical models of stress: the Stress Deafness Model (SDM) Peperkamp and Dupoux (2002) and the Stress Typology Model (STM) (Altmann & Vogel, 2002). Ten participants were chosen for each language. The participants were tested individually by being asked to pronounce 125 nonce words, which varied from two to four syllables, after listening to them through headphones and seeing their spellings on the monitor at the same time, one word at a time. Then, they had to identify where the stress of each word was located. Only correct word stress was counted to see the participants' correct perception. The results indicated that 94% of the participants' responses were correct. Learners whose L1 stress patterns were predictable, e.g. Arabic, Turkish and French learners, had problems perceiving the location of stress. However, they had native-like English word stress production. On the other hand, learners whose L1 stress patterns were unpredictable, e.g. Chinese, Japanese, Korean and Spanish learners, had almost perfect English word stress perception, contrasting their English word stress production. It was found that good perception of English word stress did not result in good production of English word stress.

Wayland et al. (2006) explored native Thai speakers' acquisition of English word stress patterns. This study was aimed at assessing the students' production and perception to see whether syllabic structure, lexical class, and stress patterns of similarly known words affected their English word stress acquisition. In total, 10 Thai adult participants, whose first language was Thai and who had spent on average approximately 1.4 years in English speaking countries at the time of the study, participated in this study. They used English as their basic language while living there. The participants were asked to produce 40 English non-words, which were nouns and verbs, and do a perception judgment task on them. Each word had a different syllabic structure. Each of them was assessed in isolation and in a sentence frame – 20 words in a noun sentence frame beginning 'I'd like a

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and 20 words in a verb sentence frame beginning 'I'd like to'. The participants were asked to listen to a recording of the individual words and the words in the sentence frames recorded by a native speaker of English. After listening to the recordings of each word or each sentence, the participants had to respond to each test item by pressing a button

for stress assignment after a 500-millisecond delay. For the production task, the participants had to produce the chosen words in isolation and in sentence frames according to the recordings they had heard. The results showed that whether Thai speakers of English produced and perceived English word stress correctly or incorrectly was dependent on how familiar they were with the stress patterns of the English words. However, the acquisition of Thai native speakers of English was mostly affected by syllabic structure (e.g. a syllable with a longer vowel was stressed).

Nguyễn et al. (2008) explored the prosodic transfer in Vietnamese acquisition of English contrastive stress patterns. The focused stress patterns in this study were as follows:

- (a) *blackberry* = *bláckberry* (compound, meaning: a kind of fruit)
- (b) *black berry* = *bláck bérry* (broad-focus noun phrase, meaning: a berry that is black)
- (c) *black berry* = *bláck berry* (narrow-focus noun phrase, with an emphatic contrastive accent on *black*, as contrastive to *green berry*)

(Nguyễn et al., 2008)

The researcher conducted two experiments: production and perception. In the production test, there were two groups of participants. The two groups were 10 Vietnamese beginner learners of English and 10 Vietnamese advanced learners of English. The beginner group was in the first year of their bachelor's degree and the other group was postgraduate learners who had been exposed to Australian English for between eight months and 10 years. The participants were required to read the target sentences after listening to the recordings. Before producing the sentences, the participants were allowed to practice the sentences. They were allowed to read each sentence three times and only the third production was chosen for English word stress analysis. For the perception experiment, there were three groups of participants: 80 Vietnamese beginner learners of English, 20 advanced Vietnamese learners of English, and 29 native Australian speakers of English as a control group. The participants' task was to select the most suitable sentence, namely a correct stress pattern with a proper meaning to the sentence. The findings showed that there was a difference between native and non-native speakers in the use of acoustic patterns that

were relevant to their first language's phonological aspects. Regarding native speakers of English, the use of a combination of syntagmatic contrasts and duration was utilized to differentiate three stress patterns. Regarding Vietnamese learners, they had no problems controlling the intensity (dynamic, or forced stress) on accent-bearing syllables. However, they failed to deaccent the latter part of the compound and narrow-focus patterns (i.e. a part containing new information within the phrase is only focused on). However, the capability of the advanced speakers of English to compress the constituents (e.g. the syllable in a compound word is compressed by the word shortening effect) and not give the stress to the final nouns signified their good experience in learning the prosodic features of English.

Karjo (2016) investigated L2 learners' errors in word stress placement. A sample of 30 students from the English Department of a private university in Jakarta participated in this study. The participants were from different backgrounds but they had been learning Indonesian since they were born. At the time of study, they were studying on a course in English Phonology. To collect the data, the participants were asked to complete an immediate repetition task requiring the participants to repeat the words after hearing them by assigning lexical stress to 80 English words which were words with two and three syllables. Each chosen word was either a noun or a verb. The participants had to listen to the recorded words and then repeat the words. The findings showed that the participants had better English word stress production of two-syllable words than three-syllable ones. Moreover, the nouns were more accurately produced than the verbs. Five phonological factors were found to affect the participants' production of English word stress: vowel length, vowel height³, mispronunciation of vowel sounds, syllable structure change and orthographic forms of words. Furthermore, the researcher stated that explicit explanation of English words stress is highly required by L2 learners of English.

According to the previous studies mentioned above, the participants were tested on their English word stress perception, production or both perception and production focusing on only one particular type of English words, e.g. English words

3 Vowel height is the placement of vowels in the vowel chart which shows the tongue position against the hard palate, ranging from high to low. For instance, /i/ is a high vowel, whereas /æ/ is a low vowel (Karjo, 2016, p. 204)

with different numbers of syllables: two or three syllables (Awedyk, 1986; Gao, 2012; Vafaei et al., 2013; Wayland et al., 2006), compound words (Bian, 2013; Hismanoglu, 2012; Zubizarreta et al., 2013) and a word with two functions, e.g. a noun and a verb, called conversion words (A. Sadeghi, 2013). So, in earlier studies, although words with different numbers of syllables were tested in terms of English word stress perception and/or production, the explanations of those L2 learners' problems in perceiving and/or producing those particular words were not based on morphological processes such as the roots and the affixes. To the best of my knowledge, there have been no systematic studies investigating Thai learners' pronunciation problems of English word stress focusing on perception and production of English word stress of English words with different suffixes (suffixes affecting stress shift and neutral suffixes) and compound words (compound nouns and compound verbs) by L1 Thai university learners with different English proficiency levels. The results of this study would provide better understanding of the sources of problems of English word stress assignment of Thai learners. This study, therefore, investigated the L1 Thai learners' perception and production of the L1 Thai university undergraduate learners on the following types of words: English words with particular suffixes (suffixes causing stress shift and neutral suffixes) and compound words (compound nouns and compound verbs).

CHAPTER III

METHODOLOGY

This chapter presents details of the research methodology employed in this study: 3.1 the participants, 3.2 the instruments, 3.3 data collection, 3.4 data analysis and 3.5 the pilot study.

3.1 Participants

The participants were selected by using a convenience purposive strategy. The participants were 60 L1 Thai undergraduate learners who were studying in the second semester of the first year and came from various faculties, such as the Faculty of Humanities, Faculty of Pharmaceutical Sciences, Faculty of Social Sciences and Faculty of Science, Srinakharinwirot University, Bangkok, Thailand. They were divided into two groups: 30 L1 Thai beginners and 30 L1 Thai intermediate learners. The participants were categorized into the two groups according to their SWU-SET (Srinakharinwirot University Standardized English Test) scores as all first-year learners have to take this test in their first year of study.

The participants were considered homogeneous because they had completed their 12-year compulsory education based on the Basic Education Core Curriculum B.E. 2551 (A.D. 2008). Because of this, it was assumed that they knew all the selected words in this study as the words were taken from first-grade to 12th-grade English textbooks. The L1 Thai learners were purposively selected to participate in this study because of several reasons. First, they were studying in the same year (first year of a bachelor's degree). Second, they were Thais who had never studied in English programs or in English speaking countries. Third, their ages were between 18 and 19 years old. Last, they were studying in the same English course, named English for Effective Communication II, which is a compulsory foundation course for all first-year undergraduate learners of Srinakharinwirot University.

3.2 Instruments

Two research instruments were employed in this study: 1) a production task and 2) a perception task.

To begin with, since all first-year learners of Srinakharinwirot University are required to take a proficiency test called SWU-SET (Srinakharinwirot University Standardized English Test), all of them had SWU-SET scores. A total of 60 participants were selected and divided into two groups categorized by SWU-SET scores: 30 L1 Thai beginner learners (A1) of English and 30 L1 Thai intermediate (B1) learners of English. SWU-SET consists of 100 items, which are 20 items of listening, 20 items of vocabulary, 20 items of usage and functional language, 20 items of structure and 20 items of reading. Each test taker is allowed three hours to complete the test. The following are levels of English proficiency based on SWU-SET scores:

Table 8 Levels of English proficiency based on SWU-SET scores

SWU-SET Score	Levels of English Proficiency	Level name	Descriptors
21 and below	A1	Beginner	<ul style="list-style-type: none"> • The examinee can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. • The examinee can introduce him/herself and others, and can ask and answer questions about personal details such as where he/she lives, people he/she knows and things he/she has. • The examinee can interact in a simple way provided the other person talks slowly and clearly.

Table 8 (Continued)

SWU-SET Score	Levels of English Proficiency	Level name	Descriptors
22 - 49	A2	Elementary	<ul style="list-style-type: none"> • The examinee can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment). • The examinee can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. • The examinee can describe in simple terms aspects of his/her background, immediate environment and matters in areas of immediate need.

Table 8 (Continued)

SWU-SET Score	Levels of English Proficiency	Level name	Descriptors
50 - 77	B1	Intermediate	<ul style="list-style-type: none"> • The examinee can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. • The examinee can deal with most situations likely to arise while travelling in an area where the language is spoken. • The examinee can produce simple connected text on topics which are familiar or of personal interest. • The examinee can describe experiences and events, and dreams, hopes and ambitions, and can briefly give reasons and explanations for opinions and plans.

Table 8 (Continued)

SWU-SET Score	Levels of English Proficiency	Level name	Descriptors
78 - 100	B2 and above	Upper- intermediate	<ul style="list-style-type: none"> • The examinee can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialization. • The examinee can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. • The examinee can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.

Noted that SWU-SET was designed based on Common European Framework of Reference for Languages (CEFR).

(Language and Academic Services Center, Srinakharinwirot University, 2017)

3.2 Instruments

Two research instruments were employed in this study: 1) a production task and 2) a perception task.

For the testing session, a production task and a perception task were used to investigate L1 Thai undergraduate learners' production and perception of English

word stress. To start with, the production task was ‘Reading English Word Stress in Sentences’ and the perception task was ‘Marking English Word Stress in Sentences’.

Although there were two different main tasks employed in this study, the following describes the characteristics that each task shared. Firstly, the aspects of English word stress and the number of words in each category that were focused on in this study are as follows:

1. Five words were chosen for English words with each chosen suffix that shifts the stress to the syllable before the suffix: ‘-ic’ (i.e. ‘doméstic’ and ‘pessimístic’), ‘-ity’ (i.e. ‘personálicity’ and ‘hospitálicity’) and ‘-tion’ (i.e. ‘celebrátion’ and ‘superstítion’).
2. Five words were chosen for English words with each chosen neutral suffix: ‘-ly’ (i.e. ‘móstly’ and ‘réally’), ‘-er’ (i.e. ‘téacher’ and ‘kíller’) and ‘-ful’ (i.e. ‘péaceful’ and ‘hármful’).
3. Five words were chosen for compound nouns derived from a noun + a noun (i.e. ‘cámpfire’ and ‘bóokstore’).
4. Five words were chosen for compound verbs deriving from a verb + a preposition (i.e. ‘go dówn’ and ‘set óff’).

Secondly, for each task, the total number of chosen words was 40.

Thirdly, the English words were selected from the following sources:

1. *English Vocabularies of Grade 6, Grade 9 and Grade 12* (Service),
2. *Access 1* (Evans & Dooley, 2008a) for seventh-grade learners,
3. *Take Off 1* (K, 1996) for seventh-grade learners,
4. *Expressions 2* (Nunan, 1990a) for eighth-grade learners,
5. *Access 2* (Evans & Dooley, 2001) for eighth-grade learners,
6. *Expression 3* (Nunan, 1990b) for ninth-grade learners,
7. *Access 3* (Evans & Dooley, 2008b) for ninth-grade learners,
8. *Extra Access 3* (Evans & Dooley, 2008c) for ninth-grade learners,
9. *Upstream 3* (Evans & Dooley, 2008d) for ninth-grade learners,
10. *Upstream 5* (Evans & Dooley, 2015) for 11th-grade learners, and
11. *Upstream 6* (Evans & Dooley, 2016) for 12th-grade learners.

To ensure that the correct word stress of each word was used, the targeted words were checked for their primary stresses in *A Concise Pronouncing Dictionary of British and American English* (John C Wells, 1973) and Cambridge Dictionaries Online (<http://dictionary.cambridge.org/dictionary/>) with regard to both American and British word stress.

3.2.1 Production task

This part provides the information regarding the tasks used in this study. The production test was used to investigate the learners' production of English word stress. One production task was employed in this study: Reading English Word Stress in Sentences. A total of 40 English words were focused on for the production task. Next, the details of the production task are presented below.

The production task (Reading English Word Stress in Sentences) required the participants to produce English word stress on the targeted words included in the sentences. There were 40 chosen words – one word for each sentence. So, the number of sentences in total was 40. Moreover, the correct use of language in all sentences was checked by a native speaker of English. All sentences were provided to the participants in a test paper for the participants to read. None of the focused words were underlined or highlighted in order that the participants were not aware of the stress patterns of the English words they were going to be assessed on. The other words included in the sentences as distractors were chosen so that the participants would not focus on the 40 targeted words. The items below are samples of the production task (Reading English Word Stress in Sentences):

- (a) 1. Jim's parents have to **look áfter** him because he is sick.
2. There are a lot of bad effects on tourist **attráctions**.

Note that other words included in the sentences played roles as distractors.

The testing process was started with the production task because this made sure that the participants would be unaware of the stress patterns of the words they were going to be tested on and would not recognize them.

3.2.2 Perception task

A perception task, "Marking English Word Stress in Sentences", was employed to investigate the participants' perception of English word stress. The

details of the perception task (Marking English Word Stress in Sentences) are as follows.

To start with, this perception task was a paper-based task. After listening to a recording of words pronounced with correct word stress by a native speaker of English, the participants were required to identify the stressed syllable of the underlined English word (the focused word) by putting a cross onto a number below the stressed syllable of the focused word. Here is an example.

(b) 1. This is a difficult si / tu / a / tion.

1	2	<u>3</u>	4
---	---	----------	---

Note that other words in the sentence are distractors which are not focused on in this study.

The reason why the number was provided below each syllable is because it helped facilitate the participants while doing the test. As some focused English words might have had correct pronunciation which was too difficult for the participants to recognize, this method was able to help the researcher obtain actual data on how the participants perceived English word stress, not on their reading ability.

Before the recording was played, the participants were trained by the researcher on how to choose a stressed syllable in order to avoid the participants being confused about how to do the test. The length of the recording was approximately 10 minutes. They were allowed to listen to the voice recording only once without any preparation. It meant that the participants did not receive the test papers early and they did not realize what they were going to be tested on. In addition, the researcher also provided other English words, called “distractors”, which they had already learned before they studied at the university level. In each sentence of this perception task, one word was a focused English word and the other English words were distractors.

The participants were allowed 15 minutes to finish the task and they were not allowed to review and change their answers. After the participants had finished marking the stress, they had to submit the test papers to the researcher.

3.3 Data collection

The data collection was conducted at Srinakharinwirot University, Bangkok, Thailand. It took place in the second semester of the 2017 academic year (January – April, 2018). The researcher was responsible for administering and recording the participants' word stress production. It took two days to collect the data. There were two reasons why the data collection took two days to complete: 1) the participants might have been too exhausted to do two tasks continuously on the same day and 2) it was to avoid the participants' awareness of the English word stress patterns they were tested on.

On the first day, they were asked to do a production task named 'Reading English Word Stress in Sentences' in a classroom set up by the researcher. Before the testing session, the participants were informed of the instructions for doing the tasks. The participants were allowed to read sentences containing focused English words for 8-10 minutes, which was designed to allow participants to read each sentence only once (depending on the participants' reading speed). While each participant was reading, the researcher was responsible for recording each participant's English word stress production for further analysis.

One week later, the participants were required to do a perception task, which was 'Marking English Word Stress in Sentences'. The participants were asked to do the perception task in a classroom at Srinakharinwirot University after the participants' English class. The researcher distributed test papers to the participants, which were to be completed by choosing a stressed syllable of a focused English word. After the participants had listened to the recording of a native speaker of English reading the sentences containing the focused English words, they had to choose the syllable which contained the stress. The participants were allowed 15 minutes to do the perception task.

3.4 Data Analysis

With regard to the data obtained from the perception task, all test papers of English word stress perception were checked for accuracy by the researcher as the stress patterns for every chosen word had already been checked. If stress had been put on the right syllable of a word, 1 was marked in the table. However, if stress had been

inaccurately assigned, the researcher marked 0 in the table. After that, the data were presented as percentages of each word category according to the number of words with correct stress marked by each group of participants. The data were presented using percentages because the number of words in some categories was not identical. Thus, the percentages were used to statistically compare the perception and the production of English word stress by the L1 Thai beginners and the L1 Thai intermediate learners.

To obtain the data from the production task, all the recordings were listened to by the researcher for English word stress production as all of the focused English words had been checked for English word stress assignment in the dictionary. Then, all production was checked, and scores were marked in the table of data analysis according to whether each word had been stressed correctly or incorrectly. If the production of each word was correct, 1 was put in the table. If such a word was pronounced with the wrong stress, the rater put an alphabetic symbol assigned by the researcher in the table to explain more about the details of each word's mistake. Here are descriptions of each alphabetic symbol.

1) A = Wrong stress put on the last syllable

The rater used this symbol when a selected word was pronounced with wrong stress on the last syllable as the correct stress of that word should have been on a syllable other than the last one. When this type of English word stress production and perception was observed, the rater rated the accuracy of the words as shown below:

(d)	e.g.	invitátion	=	1
		invitatíon	=	A
		personálicity	=	1
		personalitý	=	A

3) -B = Wrong pronunciation

The rater put -B in the table when the participant produced a word without any sense of correct pronunciation.

4) -C = Word skipping

When a participant skipped a word for any reason, -C was put in the table by the rater.

After all the data were coded and marked with symbols, only the data regarding correct pronunciation and the A symbol (wrong stress on the last syllable) were selected for data analysis with the SPSS program, where a t-test at a 0.05 level of significance was used to compare the ability of the two groups of participants with regard to English word stress production and perception.

In order to answer Research Question 3, Pearson's correlation coefficient was used to see whether there was a relationship between the perception and the production of the L1 Thai learners. It has been employed by a number of researchers as it is a statistical tool which could define the relationship between the English word stress perception and production of the learners based on the provided evidence. There are some studies that the researcher applied the correlational analysis for finding the relationship between two variables in language studies in both international contexts from the studies by Peperkamp and Bouchon (2011), Kusumoto (2012), Elvin, Williams, and Escudero (2016) and Zhang and Peng (2017) and Thai context from the studies by Ruangjaroon (2015), Altmann (2006) and Aungcharoen (2006).

The correlation coefficient, denoted by r , is a measure of the strength of the straight-line or linear relationship between two variables. The correlation coefficient takes on values ranging between +1 and -1. The following points are the accepted guidelines for interpreting the correlation coefficient:

1. 0 indicates no linear relationship.
2. +1 indicates a perfect positive linear relationship: as one variable increases in its values, the other variable also increases in its values via an exact linear rule.
3. -1 indicates a perfect negative linear relationship: as one variable increases in its values, the other variable decreases in its values via an exact linear rule.
4. Values between 0 and 0.3 (0 and -0.3) indicate a weak positive (negative) linear relationship via a shaky linear rule.
5. Values between 0.3 and 0.7 (-0.3 and -0.7) indicate a moderate positive (negative) linear relationship via a fuzzy-firm linear rule.
6. Values between 0.7 and 1.0 (-0.7 and -1.0) indicate a strong positive (negative) linear relationship via a firm linear rule.

7. The value of r squared is typically taken as “the percent of variation in one variable explained by the other variable,” or “the percent of variation shared between the two variables”.

3.5 Pilot study of perception and production tasks

The pilot study was conducted to try out the two tasks that were eventually used in this study in order to see whether the chosen words, sentence writing and the design of the task were appropriate and valid to the study. Moreover, the pilot study was aimed at highlighting any problems or difficulties which could occur at the time of testing. This pilot test was conducted from February to March 2018 at Srinakharinwirot University, Thailand.

3.5.1 Participants

The participants in the pilot study were 10 first-year undergraduate learners who were studying at Srinakharinwirot University, Bangkok, Thailand. They were from various faculties, such as the Faculty of Humanities and the Faculty of Physical Education. The participants were categorized into two groups: five beginners and five intermediate learners. They were grouped by SWU-SET scores (Srinakharinwirot University Standardized English Test) as every first-year learner is required by the university to take this test at the beginning of their first year of study.

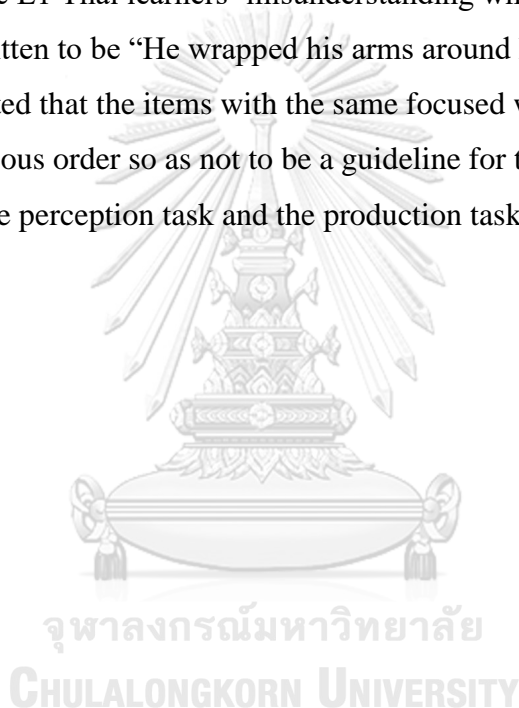
The characteristics of the selected participants for the pilot study were similar to those of the main study. Some characteristics of the participants are homogeneous, as mentioned in 3.1, in that they had completed their 12-year compulsory education. In addition, they were studying in the same year of the university (first year of an undergraduate level degree). They were Thai people who had no experience in studying in English programs or exposure to speakers from English-speaking countries before. Last, they were studying on the same foundation course, English for Effective Communication II, which is a compulsory course provided by Srinakharinwirot University, Bangkok, Thailand.

3.5.2 Instruments

There were two instruments employed in the pilot study: a production task and a perception task. The production task was “Reading English Word Stress in Sentences” and the perception task was “Marking English Word Stress in Sentences”.

3.5.3 Validation of the production task and the perception task

The perception and the production task prompts were evaluated by three experts in the English language field by using the Index of Item-objective Congruence (IOC), giving a total IOC score of 0.88 for the perception task (see Appendix S) and 0.92 for the production task (See Appendix T). Moreover, the three experts gave some useful comments and suggestions which are illustrated as follows. To begin with, for the perception task, the sentence “Have you seen her lately?” should be changed to be a statement as this yes-no question attracts the second type of intonation which is rising. To avoid the L1 Thai learners’ misunderstanding while doing the test, the sentence was rewritten to be “He wrapped his arms around her tightly.” Furthermore, the experts suggested that the items with the same focused word group should not be placed in a continuous order so as not to be a guideline for the L1 Thai learners while they were doing the perception task and the production task.



CHAPTER IV

RESULTS AND DISCUSSION L2 PERCEPTION AND PRODUCTION OF ENGLISH WORD STRESS BY L1 THAI LEARNERS

This chapter is to present the results of the English word stress perception and production of L1 Thai learners and the discussion of possible causes of the problems found. To begin with, the rates of correct English word stress perception and production by L1 Thai beginners and L1 Thai intermediate learners are provided in section 4.1. In Section 4.2, the rates of correct word stress perception and production of the selected English words in different categories of English words are presented with erroneous samples, with regard to the following word categories: 4.2.1) English words with suffixes affecting stress shift, 4.2.2) English words with neutral suffixes, 4.2.3) English compound nouns and 4.2.4) English compound verbs. Lastly, Section 4.3 gives overall discussion with regard to L2 perception and production of English word stress by L1 Thai learners.

4.1 Correct English word stress perception and production by L1 Thai beginners and L1 Thai intermediate learners

In this section, the answers to the investigation of L2 perception and production of English word stress by the L1 Thai learners are provided.

The hypotheses were as follows:

- 1) L1 Thai intermediate learners would have better perception of English word stress than the L1 Thai beginners.
- 2) L1 Thai intermediate learners would have better production of English word stress than the L1 Thai beginners.

The overall rates of correct English word stress perception and production by the L1 Thai beginners and the L1 Thai intermediate learners are presented in Table 9.

Table 9 Overall rates of correct English word stress perception and production by L1 Thai beginners and L1 Thai intermediate learners

Task	Perception				Production			
Level	Beginner		Intermediate		Beginner		Intermediate	
Category	proportion	%	proportion	%	proportion	%	proportion	%
Suffixes affecting stress shift	239/450	53.11%	307/450	68.22%	56/450	12.44%	244/450	54.22%
Neutral suffixes	358/450	79.56%	404/450	89.78%	78/450	17.33%	302/450	67.11%
Compound nouns	91/150	60.67%	126/150	84%	14/150	9.33%	81/150	54%
Compound verbs	85/150	56.67%	80/150	53.33%	78/150	52%	89/150	59.33%
Total	773/1,200	64.42%	917/1,200	76.42%	226/1,200	18.83%	716/1,200	59.67%

The data presented in Table 9 reveal that the L1 Thai intermediate learners' perception and production of English word stress were better than those of the L1 Thai beginners. With regard to English word stress perception, the L1 Thai intermediate learners' rate of correct English word stress perception was 76.42%, whereas the L1 Thai beginners' rate of correct English word stress perception was 64.42%.

With regard to the four selected categories of English words, the perception of English word stress by the L1 Thai intermediate learners was found to be higher than that by the other group in the following categories: suffixes affecting stress shift (68.22% and 53.11%), neutral suffixes (89.78% and 79.56%) and compound nouns (84% and 60%). However, little difference was observed in the English word stress perception of compound verbs by the L1 Thai beginners and the L1 Thai intermediate learners, i.e. 56.67% and 53.33%, respectively.

It was found that the results of the participants' English word stress from the production task were different from those of the perception task. The 59.67% of correct English word stress production were made by the L1 Thai intermediate, while 18.83% of correct English word stress production were made by the L1 Thai beginners. From the overall results, it can be seen that the perception of English word

stress among the participants of the two groups was obviously better than their production of English word stress.

Regarding the four selected English word categories, more L1 Thai intermediate learners than L1 Thai beginners produced correct English word stress, in all of the English word categories: English words with suffixes affecting stress shift (54.22% and 12.44%), English words with neutral suffixes (67.11% and 17.33%), compound nouns (54% and 9.33%) and compound verbs (59.33% and 52%).

An independent-samples t-test was employed to compare the perception of English word stress by the L1 Thai beginners and the L1 Thai intermediate learners (Table 10).

Table 10 Independent samples t-test results of overall rates of correct English word stress perception by L1 Thai beginners and L1 Thai intermediate learners

Perception	Beginners		Intermediate Learners		t-test	df	Sig. (2-tailed)
	M	SD	M	SD			
Suffixes affecting stress shift	2.66	1.033	3.41	.715	2.819	59	.009*
Neutral suffixes	3.98	.788	4.49	.648	.571	59	.573
Compound nouns	3.03	1.218	4.20	1.157	3.554	59	.001*
Compound verbs	2.83	1.262	2.67	1.155	-.534	59	.596
Overall perception	3.13	.647	3.69	.517	3.595	59	.001*

* $p < .05$, $n = 60$

According to Table 10, a significant difference was found in the rates of overall correct perception between the L1 Thai beginners ($M = 3.13$, $SD = .647$) and the L1 Thai intermediate learners ($M = 3.69$, $SD = .517$), where $t(59) = 3.595$ and $p = .001$.

An independent-samples t-test was also conducted to compare the perception of English word stress by the L1 Thai learners to illustrate the t-test scores of the four selected word groups. The results are presented in the following paragraphs.

First, for the English words with suffixes affecting stress shift, the results of the independent (paired) samples t-test indicated a significant difference in the rates of correct perception of English word stress between L1 Thai beginners ($M = 2.66$, $SD = 1.033$) and the L1 Thai intermediate learners ($M = 3.41$, $SD = .715$), where $t(59) = 2.819$ and $p = .009$.

Second, in terms of compound nouns, a significant difference was found in the rates of correct perception of English word stress between the L1 Thai beginners ($M = 3.03$, $SD = 1.218$) and the L1 Thai intermediate learners ($M = 4.20$, $SD = 1.157$), where $t(59) = 3.554$ and $p = .001$.

On the contrary, no significant difference was observed in the perception of English word stress of English words with neutral suffixes between the L1 Thai intermediate learners ($M = 3.98$, $SD = .788$) and the L1 Thai beginners ($M = 4.49$, $SD = .648$), where $t(59) = .571$, and $p = .573$.

Moreover, with regard to compound verbs, the results of the independent samples t-test showed no significant difference in the rates of correct perception of English word stress between the L1 Thai beginners ($M = 2.83$, $SD = 1.262$) and by L1 Thai intermediate learners ($M = 2.67$, $SD = 1.155$), where $t(59) = -.534$ and $p = .596$.

With respect to English word stress production, an independent-samples t-test was also conducted to compare the production of English word stress by the L1 Thai beginners and the L1 Thai intermediate learners, as presented in Table 11.

Table 11 Independent samples t-test results of overall rates of correct English word stress production by L1 Thai beginners and L1 Thai intermediate learners

Production	Beginners		Intermediate Learners		<i>t</i> -test	df	Sig. (2-tailed)
	M	SD	M	SD			
Suffixes affecting stress shift	0.12	.021	0.54	.042	9.314	59	.000*
Neutral suffixes	0.17	.195	0.80	.275	10.546	59	.000*
Compound nouns	0.09	.155	0.54	.293	6.417	59	.000*
Compound verbs	0.52	.113	0.59	.153	1.943	59	.062
Overall production	0.23	.096	0.62	.169	10.386	59	.000*

* $p < .05$, $n = 60$

An independent-samples t-test was also conducted to compare the production of English word stress by the L1 Thai beginners and the L1 Thai intermediate learners. It showed that a significant difference was observed in the rates of correct English word stress production between the L1 Thai beginners ($M = 0.23$, $SD = .096$) and the L1 Thai intermediate learners ($M = 0.62$, $SD = .169$), where $t(59) = 10.386$, and $p = .000$. The following sections provide more detailed explanations in respect of the production of English word stress by both groups of L1 Thai learners.

To start with, for the English words with suffixes affecting stress shift, the results of the independent (paired) samples t-test show that a significant difference was observed in the rates of correct production of English word stress between the L1 Thai beginners ($M = 0.12$, $SD = .021$) and the L1 Thai intermediate learners ($M = 0.54$, $SD = .042$), where $t(59) = 9.314$, and $p = .000$.

For English words with neutral suffixes, a significant difference was observed between the rates of correct English word stress production by the L1 Thai intermediate learners ($M = 0.80$, $SD = .275$) and that by the L1 Thai beginners ($M = 0.17$, $SD = .195$), where $t(59) = 10.546$, and $p = .000$.

In addition, a statistical difference was observed between the production of English word stress of the compound nouns by the L1 Thai intermediate learners ($M = 0.54$, $SD = .293$) and the L1 Thai beginners ($M = 0.09$, $SD = .155$), where $t(59) = 6.417$, and $p = .000$.

However, no significant difference between the production of English word stress of the compound verbs by the two groups of participants was observed. The L1 Thai intermediate learners produced more correct English word stress of the compound verbs ($M = 0.59$, $SD = .153$) than the L1 Thai beginners ($M = 0.52$, $SD = .113$), where $t(59) = 1.943$, and $p = .062$.

Based on the results reported above, the L1 Thai intermediate learners' rates of correct English word stress perception and production were significantly higher than those by the L1 Thai beginners. Therefore, it could be assumed that both Hypothesis 1 and Hypothesis 2 are confirmed, in that the L1 Thai intermediate learners' perception and production of English word stress were better than those of the L1 Thai beginners.

4.2 Correct English word stress perception and production by L1 Thai beginners and L1 Thai intermediate learners of the English words in different categories

Section 4.2 presents the rates of correct word stress perception and production of different categories of English words. Moreover, examples on errors of English word stress perception and production are also given.

4.2.1 Rates of correct English word stress perception and production of English words with suffixes affecting stress shift

This part shows the results of English word stress perception and production with a specific focus on English words with suffixes affecting stress shift. Furthermore, the examples of both correct and incorrect English word stress perception and production of the selected English words with suffixes affecting stress shift are presented (see Table 12).

Table 12 Rates of correct English word stress perception and production of English words with suffixes affecting stress shift

Perception				Production			
Beginners		Intermediate Learners		Beginners		Intermediate Learners	
proportion	%	proportion	%	proportion	%	proportion	%
239/450	53.11%	307/450	68.22%	56/450	12.44%	244/450	54.22%

From Table 4, it can be seen that the L1 Thai intermediate learners' rates of correct English word stress perception and production of the English words with suffixes affecting stress shift were higher than those of the L1 Thai beginners. It can be seen that the rate of correct English word stress perception of L1 Thai intermediate learners (68.22%) was higher than that of the L1 Thai beginners (53.11%). With regard to the comparison between the perception and production of learners at the same English proficiency level, it was shown that the L1 Thai beginners' correct English word stress perception (53.11%) was higher than their correct English word stress production (12.44%). Similarly, the L1 Thai intermediate learners had a rate of correct English word stress perception (68.22%) which was higher than their rate of correct English word stress production (54.22%).

An independent-samples t-test was conducted to statistically compare the perception of English word stress on the English words with suffixes affecting stress shift between the L1 Thai beginners and the L1 Thai intermediate learners. As presented in Table 2, it was shown that there was a significant difference in terms of the rates of correct English word stress perception of the English words with suffixes affecting stress shift between the L1 Thai beginners ($M = 2.66$, $SD = 1.452$) and the L1 Thai intermediate learners ($M = 3.41$, $SD = .715$), where $t(59) = 9.314$, $p = .000$.

Table 4 also presents the results of the production of English word stress on the English words with suffixes affecting stress shift. It is clearly seen that the L1 Thai intermediate learners' production of English word stress was much better than that of the L1 Thai beginners. The L1 Thai intermediate learners' rate of correct production of English word stress on English words with suffixes affecting stress shift

was 54.22%, whereas the L1 Thai beginners' rate of correct English word stress production on the English words affecting stress shift was 12.44%.

To test the hypothesis, the results of an independent-samples t-test was employed to show the comparison between the English word stress production of the L1 Thai beginners and the L1 Thai intermediate learners. The results showed that there was a significant difference in the rates of correct production of English word stress between the L1 Thai beginners ($M = 0.12$, $SD = .021$) and the L1 Thai intermediate learners ($M = 0.54$, $SD = .042$), where $t(59) = 9.314$, $p = .000$.

From the results of perception of English word stress, where they were required to mark the stress immediately after reading to produce a record, it can be observed that the L1 Thai learners with higher English proficiency could mark the stress more correctly on English words with suffixes affecting stress shift than the lower English proficiency group. However, two patterns of errors were found from the learners' English word stress perception.

First of all, when they marked the stress incorrectly on a syllable, they mostly marked the stress on the last syllables of the selected English words. For instance, with regard to the suffix '-ity', the words 'necéssity' and 'commúunity' were assigned with stress on the last syllable of the word. With regard to the suffix '-ion', most errors were found in marking stress on the words 'situátion' and 'destinátion', on which the learners from the two groups made errors by assigning the stress to the last syllable. Even though this type of error was made the most by both groups of the learners, it was found more among the L1 Thai beginners than the L1 Thai intermediate learners.

Another incorrect pattern found from the learners' English word stress perception was when the stress was assigned to a syllable other than the last one. To illustrate, with regard to the English words with the suffix '-ic', the word 'specífic' was incorrectly assigned with the stress on the syllable 'spec' and the word 'energétic' was incorrectly assigned with the stress on the syllable 'e' or 'ner' by some of the L1 Thai learners. In addition, the stress was incorrectly assigned on the 'do' syllable of the word 'donátion' and on the 'si' syllable of the word 'situátion'. Regarding the English words with the suffix '-ity', the stress was incorrectly assigned to the 'com' syllable of the word 'commúunity' and on the 'fac' syllable of the word

‘facility’ by some of the L1 Thai learners. It was observed that this erroneous pattern was found more among the L1 Thai intermediate learners than the L1 Thai beginners. From the results, this type of error was made at higher rates by the L1 Thai intermediate learners than the L1 Thai beginners, which differed from the way in which incorrect stress was placed on the last syllable.

From the details previously mentioned, it could be assumed that most of the L1 Thai beginners were prone to perceiving the stress as being on the last syllable of the tested words. On the other hand, most of the L1 Thai intermediate learners perceived the English word stress as being on various positions but mostly on a syllable other than the last.

In addition to the L1 Thai learners’ English word stress perception, this section presents results on the English word stress production of English words with suffixes affecting stress shift. Two patterns of incorrect English word stress were found. Firstly, the stress was assigned on the last syllable of the English words when the L1 Thai learners pronounced the English words in the same way that they perceived them. The details about the patterns of incorrect English word stress production are given below.

The first incorrect pattern was that the learners incorrectly pronounced the English words with suffixes affecting the stress shift by putting the stress on the last syllable of the word. For example, with regard to the suffix ‘-ity’, in all of the incorrect production of the words ‘ability’ and ‘security’ by the L1 Thai beginners, stress was found on the last syllable of these two words (on the syllable ‘ty’), whereas this type of error was found in only some of the production by the L1 Thai intermediate learners. Regarding the English words ending with the suffix ‘-ion’, the words ‘condition’ and ‘nutrition’ were incorrectly produced, with the stress also on the last syllable (‘-ion’). The incorrect English word stress placement on the last syllable (‘-ion’) was performed more by the L1 Thai beginners more than the L1 Thai intermediate learners. To summarize, this erroneous pattern of English word stress production was seen more among the L1 Thai beginners than the L1 Thai intermediate learners.

The second incorrect pattern was surprising given that the learners incorrectly pronounced the English words with suffixes affecting the stress shift by putting the

stress on a syllable which was neither the correct syllable nor the last syllable of the words. The results reveal that this was seen more in the L1 Thai intermediate learners' English word stress production than in that of the L1 Thai beginners. Regarding the word 'condition', in most of the incorrect English word stress production by the L1 Thai intermediate learners, stress was placed on the 'con' syllable when they produced the given English words. This pattern was observed more among the L1 Thai intermediate learners in the selected English words when compared to the first pattern (pronouncing the last syllable of the word with stress). It could be interpreted that the learners with better English proficiency tended to produce a wider variety of incorrect English word stress patterns.

It could be observed from the production results that more L1 Thai beginners mispronounced the English words with suffixes affecting the stress shift than the L1 Thai intermediate learners did. Most of the L1 Thai beginners' incorrect English word stress production was found on the last syllable of the word, whilst the L1 Thai intermediate learners' incorrect English word stress production of the English words with suffixes affecting the stress shift was found more on a syllable other than the last than on the last syllable.

4.2.2 Rates of correct English word stress perception and production of English words with neutral suffixes

This section describes the results of English word stress perception and production with respect to English words with neutral suffixes. Furthermore, samples of incorrect English word stress perception and production with neutral suffixes are illustrated (see table 13).

Table 13 Rates of correct English word stress perception and production of English words with neutral suffixes

Perception				Production			
Beginners		Intermediate Learners		Beginners		Intermediate Learners	
proportion	%	proportion	%	proportion	%	proportion	%
358/450	79.56%	404/450	89.78%	78/450	17.33%	302/450	67.11%

The results in Table 13 demonstrate that the rate of correct English word stress perception of the English words with neutral suffixes by the L1 Thai intermediate learners (89.78%) was higher than that of the L1 Thai beginners (79.56%).

After an independent samples t-test was conducted, it was shown that the rates of correct English word stress perception by the L1 Thai beginners and the L1 Thai intermediate learners were not significantly different. The L1 Thai intermediate learners perceived the English word stress of the English words with neutral suffixes ($M = 4.49$, $SD = .648$) better than the L1 Thai beginners ($M = 3.98$, $SD = .788$), where $t(59) = .571$, and $p = .573$.

Table 5 also presents the L1 Thai learners' production of English word stress of the English words with neutral suffixes. It also shows that the rate of correct English word stress production by the L1 Thai intermediate learners (67.11%) was higher than that of the L1 Thai beginners (17.33%). However, the results of the production of English word stress of the English words with neutral suffixes differed from those of the perception of English word stress of the same word group because these rates of correct English word stress perception by both the L1 Thai beginners and the L1 Thai intermediate learners were higher than those of the perception of English word stress of English words with neutral suffixes.

An explanation regarding the erroneous pattern in English word stress perception and production of the English words with neutral suffixes is given in this part. As there were two syllables for each word selected for this category, there was only one incorrect pattern of English word stress perception and production - putting the stress on the last syllable of the selected word, as shown below.

The L1 Thai beginners group produced this erroneous pattern of English word stress perception by incorrectly putting the stress on the last syllable of the English words more than the L1 Thai intermediate learners did, in all of the selected words. Samples have been drawn to illustrate these errors. Regarding the perception task, there were similarities in that both groups of the L1 learners made the fewest errors in English word stress perception of the English words with the ‘-ly’ suffix and most of the errors were made in the English words with the ‘-er’ suffix, respectively. For the English words with suffix ‘-ly’, a few of the L1 Thai learners in this study assigned stress to the last syllable of the word ‘slówly’ and ‘qúickly’. For the English words with the ‘-ful’ suffix, some of the L1 Thai learners made errors by marking the stress on the last syllables: ‘-ful’ in the words ‘thóughtful’ and ‘péaceful’. Last of all, for the English words with ‘-er’ suffix, the L1 learners of the two groups put the stress on the last syllable of the words ‘léader’ and ‘fármer’. However, even though both L1 Thai beginners and L1 Thai intermediate learners made some errors regarding marking the English word stress of English words with neutral suffixes, both groups of learners made errors in less than 50% of the words in this category.

In addition, this part provides more information with regard to English word stress production of the English words with neutral suffixes. From the results, it was clearly seen that higher rates of incorrect English word stress production were found in both groups of the L1 Thai learners than in the perception task. Regarding the incorrect pattern of English word stress, it was identical to the perception task in that one incorrect English word stress pattern of English words with neutral suffixes was produced by the L1 Thai learners in the production task. That is, when the L1 Thai learners mispronounced the two-syllable words with neutral suffixes in terms of English word stress assignment, they chose to give more prominence to the last syllables, which were ‘-ly’, ‘-ful’ and ‘-er’. In particular, 86.67% of the English words ending with the ‘-ful’ suffix were incorrectly pronounced by the L1 Thai beginners. This is a huge rate of incorrect English word stress production. For instance, the English words ‘úseful’ and ‘chéerful’ were mispronounced with stress put on the ‘-ful’ syllable by the L1 Thai learners. In addition, with regard to the ‘-ly’ suffix, the words ‘súrely’ and ‘qúickly’ were pronounced with the stress on the last syllable of

the word. Lastly, with regard to the ‘-er’ suffix, the English words ‘t        ’ and ‘        ’ were pronounced with the stress on the last syllable of the word.

4.2.3 Rates of correct English word stress perception and production of English compound nouns

This part presents the rates of correct English word stress perception and production of English compound nouns by the L1 Thai learners. In addition, samples of incorrect English word stress perception and production of compound nouns are shown as follows. (see Table 14).

Table 14 Rates of correct English word stress perception and production of English compound nouns

Perception				Production			
Beginners		Intermediate Learners		Beginners		Intermediate Learners	
proportion	%	proportion	%	proportion	%	proportion	%
91/150	60.67%	126/150	84%	14	9.33%	81	54.00%

The results in Table 14 show that rate of correct English word stress perception of English compound words by the L1 Thai intermediate learners (84%) was higher than that of the L1 Thai beginners (60.67%). Moreover, the statistical results from the independent samples t-test show that there was a significant difference between the perception of English word stress of the English compound nouns by the L1 Thai beginners ($M = 3.03$, $SD = 1.218$) and that of the L1 Thai intermediate learners ($M = 4.20$, $SD = 1.157$), where $t(59) = 3.554$, and $p = .001$.

One incorrect pattern of English word stress perception of the compound nouns was obtained from the L1 Thai beginners and the L1 Thai intermediate learners. Among the five selected compound nouns, the L1 Thai beginners made more errors by assigning the stress to the last syllables of the compound words than the L1 Thai intermediate learners did. To illustrate, the compound words ‘wildlife’ and ‘raincoat’ were marked with stress on the last syllables of the words, which were ‘life’

and ‘coat’, by the L1 Thai beginners more often than by the L1 Thai intermediate learners, after they had listened to a recording.

With regard to production of the English word stress of English compound nouns, the results also show that the L1 Thai intermediate learners’ rate of correct production (54%) was much higher than that of the L1 Thai beginners (9.33%). Furthermore, a significant difference in the production of English word stress of English compound nouns was found as there were higher rates of correct English word stress production of English compound nouns by the L1 Thai beginners ($M = 0.09$, $SD = .155$) than by the L1 Thai intermediate learners ($M = .054$, $SD = .293$), where $t(59) = 6.417$, and $p = .000$.

This finding is similar to one found in the perception part in that there was one incorrect pattern of English word stress production by the L1 Thai learners. In particular, for the English word stress production of the word ‘bedroom’, the stress was pronounced with prominence on the first syllable of the word by approximately half of the L1 intermediate learners (56.67%), whereas the stress was assigned to the last syllable by nearly all of the L1 Thai beginners (3.33%). Moreover, the compound noun ‘firework’ was pronounced with stress on the last syllable, ‘work’, more than on the first syllable. This pattern could be seen more in the L1 Thai beginners’ production than in that of the L1 Thai intermediate learners.

4.2.4 Rates of correct English word stress perception and production of English compound verbs

The following section presents the rates of correct English word stress perception and production of English compound verbs by the L1 Thai learners (see Table 15). Then, samples of incorrect English word stress perception and production of compound nouns are shown.

Table 15 Rates of correct English word stress perception and production of English compound verbs

Perception				Production			
Beginners		Intermediate Learners		Beginners		Intermediate Learners	
proportion	%	proportion	%	proportion	%	proportion	%
85/150	56.67%	80/150	53.33%	78/150	52.00%	89/150	59.33%

The results in Table 15 on English word stress perception of the compound verbs revealed that the rate of correct English word stress produced by the L1 Thai beginners was slightly higher than that of the L1 Thai intermediate learners (56.67% and 53.33%, respectively).

The statistical results showed that there was no significant difference between the English word stress perception of compound verbs by the L1 Thai beginners ($M = 2.83$, $SD = 1.262$) and the L1 Thai intermediate learners ($M = 2.67$, $SD = 1.155$), where $t(59) = 2.745$, and $p = .010$.

As the English compound verbs in this study consisted of two words (a verb and a particle which is a preposition), there was only one type of incorrect perception of English word stress found. According to the stress assignment rule of the English compound verbs focused on in this study, the stressed syllable is the last element of the compound verb, which is part of the preposition (particle). To illustrate, the stress assignment of the word ‘go out’ must be on the particle ‘out’. However, the learners from the two groups made most errors in assigning the stress to this word by putting the stress on the word ‘go’ instead. Another example is the compound verb ‘come out’. Some of the L1 Thai learners assigned the stress to the first element, which is ‘come’. Both groups of the learners got low scores for this word. That is, the L1 Thai beginners had a 26.67% rate of correct stress and the L1 Thai intermediate learners had a 30% rate of correct stress. It could be said that the learners’ perception of English word stress was quite similar.

Regarding the English word stress production of the compound verbs, the L1 Thai intermediate learners’ English word stress production was slightly better than that of the L1 Thai beginners (59.33% and 52%, respectively). This is similar to the

results of the perception task of the compound verbs in that the L1 Thai learners' perception of the compound verbs was still limited; it could be seen that both groups had an error rate of nearly 50%.

According to the statistical results from the independent samples t-test, there was no significant difference between the English word stress production of the compound verbs by L1 Thai beginners ($M = 0.52$, $SD = 0.113$) and that by the L1 Thai intermediate learners ($M = 0.59$, $SD = 0.153$), where $t(59) = 1.943$, and $p = .062$. There was also only one erroneous pattern of English word stress production of the compound verbs by the L1 Thai learners which was the same as in the perception task. Instead of pronouncing the selected word with stress on the second component, the learners who made errors chose to put the stress on the first component of the word. For example, the word 'find out' was the most interesting case for this word group. None of the L1 Thai learners received a score for this word. It means that both groups of learners had a 0% rate of correct English word stress production of this word. Additionally, the L1 Thai learners made errors by pronouncing the word 'pick up' with stress on the first component, 'pick'.

To sum up, with regard to the results of the two tasks, it was found that the L1 Thai learners' perception and production of English word stress differed in all word categories. That is, both L1 Thai beginners and L1 Thai intermediate learners had higher rates of correct English word stress perception of English words with suffixes affecting stress shift, English words with neutral suffixes and English compound nouns than they did in the production. However, the L1 Thai intermediate learners' rate of correct English word stress production was higher than their corresponding rate of correct perception of the compound verbs.

4.3.3 Overall discussion with regard to L2 perception and production of English word stress by L1 Thai learners

This part presents an overall discussion regarding L1 Thai learners' perception and production of English word stress based on the following theories: 4.3.1 error analysis focusing on interlingual errors and intralingual errors, 4.3.2 interlanguage concerning language transfer, transfer of training and overgeneralization and 4.3.3 other affecting factors in L2 perception and production of English word stress

by L1 Thai learners which are different levels of English proficiency of the L1 Thai learners, lower exposure to English, memorization of English word stress and task effects.

4.3.1 Error analysis

This section discusses interlingual and intralingual errors found from the perception and the production of English word stress by L1 Thai beginners and L1 Thai intermediate learners. Moreover, examples of incorrect English word stress perception and production from both L1 Thai beginners and L1 Thai intermediate learners are illustrated below.

4.3.1.1 Interlingual errors

Interlingual factors came into play when errors in English word stress perception and production were observed. The results of this study show that the main Thai rule of putting stress on a syllable in a word was followed by learners of English when assigning English word stress. As the stress in Thai is normally assigned to the last syllable (Gandour, 1976; Peyasantiwong (1986); Nathong (2003); Warotamasikkhadit (1967), Wong-opasi (1992), this is negatively transferred to the English words with suffixes affecting stress shift, English words with neutral suffixes and compound nouns in this study. This was because the stress placement of the English words in these English word categories was not on the last syllables. This phenomenon was seen more among the L1 Thai beginners than the L1 Thai intermediate learners. The following paragraphs present samples of incorrect English word stress perception and production by the L1 Thai beginners and the L1 Thai intermediate learners.

With regard to English word stress perception, majority of the L1 Thai beginners incorrectly assigned stress onto the last syllables of the following word categories: 1) English words with suffixes affecting stress shift, which were suffix -ic, e.g. 'energetic' and 'specific'; suffix -tion / -sion, e.g. 'destination', 'donation' and 'situation'; and suffix -ity, e.g. 'community', 'necessity' and 'activity'; 2) English words with neutral suffixes, which were suffix -ful, e.g. 'grateful' and 'youthful'; suffix -ly, e.g. 'nicely' and 'deeply'; and suffix -er, e.g. 'winner' and 'singer'; and 3) compound nouns, e.g. 'sunscreen', 'doghouse', 'birthday', 'wildlife' and 'raincoat'. For the L1 Thai intermediate learners, fewer English words were incorrectly

perceived for the location of stress: 1) English words with suffixes affecting stress shift, which were suffix -ic, e.g. 'specific' and 'gymnastics'; suffix -tion/ -sion, e.g. 'destination' and 'situation'; and suffix -ity, e.g. 'activity' and 'community'; 2) English words with neutral suffixes, which were suffix -ful, e.g. 'youthful'; suffix -ly, e.g. 'nicely'; and suffix -er, e.g. 'hunter' and 3) compound nouns, e.g. 'sunscreen', 'doghouse', 'wildlife' and 'raincoat'.

Similarly, for the production of English word stress by the L1 Thai beginners and the L1 Thai intermediate learners, the results were consistent with those of the perception in that the incorrect English word stress production was mostly observed on the last syllable of the focused words instead of the first syllable. Here are samples drawn from the majority of L1 Thai beginners' incorrect English word stress production on the last syllables of the three word types as follows: 1) English words with suffixes affecting stress shift, which were the suffix -ic, e.g. 'economic', 'romantic', 'realistic' and 'fantastic'; the suffix -tion / -sion, e.g. 'indication', 'condition', 'nutrition', 'erosion' and 'attraction'; and the suffix -ity, e.g. 'calamity', 'ability', 'security', 'responsibility' and 'possibility'; 2) English words with neutral suffixes, which were the suffix -ful, e.g. 'peaceful', 'careful', 'useful', 'thoughtful' and 'cheerful'; the suffix -ly, e.g. 'brightly', 'neatly', 'clearly', 'quickly', and 'slowly'; and the suffix -er, e.g. 'teacher', 'leader', 'driver' and 'reader'; and 3) compound nouns, e.g. 'bookcase' and 'housewife'. For the L1 Thai intermediate learners, the English words were incorrectly perceived for the location of stress: 1) English words with suffixes affecting stress shift, which were the suffix -ic, e.g. 'characteristics', 'fantastic' and 'realistic'; the suffix -tion/ -sion, e.g. 'attraction'; and the suffix -ity, e.g. 'calamity' and 'possibility'; 2) English words with neutral suffixes, which were the suffix -ful, e.g. 'useful' and 'cheerful'; the suffix -ly, e.g. 'surely'; and the suffix -er, e.g. 'teacher' and 3) compound nouns, e.g. 'firework' and 'bedroom'.

Therefore, L1 transfer plays a big role in L2 learners use of English when accurately employing English word stress rules. At the lexical level, English listeners have to rely on word stress in order to decode the words and to locate the words in their mental lexicon, whereas in Thai, stress is not as significant as it is in the English language due to fact that Thai is a tonal language system, which makes stress in the Thai language a less prominent feature (Grosjean & Gee, 1987). In other words,

stress in Thai language does not have the same functions as it does in English. Stress functions differently in English and Thai. Stress in Thai cannot differentiate word meanings, whereas stress can play this role in English (Aungcharoen, 2006). It is the tone that differentiates and contrasts the meaning of Thai words as Thai is a tonal language in which the same string of segmental sounds initiates different word meanings when pronounced with different tones. Therefore, the differences in prosodic features between these two languages might be a cause of the problems L1 Thai learners faced in applying word stress rules to English words. It is possible that the learners, especially those who have not yet acquired the principles of English stress assignment, applied tones to the stressed and unstressed syllables (J. T. Gandour, 1976; Peyasantiwong, 1986). In other words, the learners in this study might have tried to use different tones to pronounce the stressed syllables. According to the data, some learners appeared to treat stress in a similar way to how they treated tones. For instance, in this study, stress in the word ‘winner’ was mostly perceived to be on the last syllable, ‘ner’, as the L1 Thai learners of English perceived that the syllable ‘ner’ had a higher tone (a falling tone) than the syllable ‘win’, which they may perceive to that the syllable ‘far’ contains a mid tone. Moreover, a similar phenomenon was found in the English word stress production by both groups of the L1 Thai learners. The majority of L1 Thai learners pronounced the following words by giving stress on the last syllable as they might assume that the other syllable(s) of the focused words contain lower tones compared to the tones of the last syllables, which were the suffix -tion / -sion, e.g. ‘indication’, ‘condition’, ‘nutrition’, ‘erosion’ and ‘attraction’; and the suffix -ity, e.g. ‘calamity’, ‘ability’, ‘security’, ‘responsibility’ and ‘possibility’ and 2) English words with neutral suffixes, which were the suffix -ful, e.g. ‘peaceful’, ‘careful’, and ‘cheerful’; the suffix -ly, e.g. ‘brightly’, ‘clearly’, ‘quickly’, and ‘slowly’; and the suffix -er, e.g. ‘teacher’, ‘leader’, ‘driver’ and ‘reader’. So, when the tone was higher, the L1 Thai listeners and speakers of English treated a syllable with a higher tone as a stressed one. Thus, it is possible that the influence of prosodic transfers from Thai tones to English word stress caused the English word stress problems observed among the L1 Thai learners in this study.

Furthermore, when the English polysyllabic words in this study were spoken by L1 Thai learners, those L1 Thai learners tended to assign every single syllable with

tones. This can be seen among the English words with neutral suffixes, which were the suffix -ful, e.g. ‘peaceful’, ‘careful’, ‘useful’, ‘thoughtful’ and ‘cheerful’; the suffix -ly, e.g. ‘brightly’, ‘neatly’, ‘clearly’, ‘quickly’, and ‘slowly’; and the suffix -er, e.g. ‘teacher’, ‘leader’, ‘driver’ and ‘reader’. Thai is a tonal language; therefore, the L1 Thai learners tended to assign every syllable with one of the Thai tones (a mid tone, a low tone, a falling tone, a high tone or a rising tone). This also affected the English word stress perception of both L1 Thai beginners and L1 Thai intermediate learners. Apart from assigning tones to the stressed syllable, they also assigned tones to the unstressed syllables of English words. To illustrate, according to the data drawn from this study, some of the L1 Thai learners pronounced the word ‘chéerful’ with a mid-tone for the syllable ‘cheer’ and a falling tone for the syllable ‘ful’ as Thai speakers of English tend to assign every syllable with a tone. This is in line with the results from (J. Gandour, 1979) in that the Thai participants in the study assigned every syllable of the English loanwords with Thai tones. As a result, it could be seen that the L1 Thai learners made errors in English word stress production by using a tone with every English word, which negatively led to incorrect perception of the stressed syllables of English words by the L1 Thai learners.

Therefore, because of the differences in rules of assigning stress to a syllable of an English word and the effects of an L1 system in terms of tones, it seemed hard for L2 learners of English whose native language was tonal to acquire rules of stress placement. These phenomena have been abundant among L2 learners of English such as Thai learners (Isarankura, 2018; Sahatsathatsana, 2017) and Chinese learners (Bian, 2013; Liu, 2017).

Besides, the problems regarding the L1 Thai learners’ perception and production of English word stress might be caused by the syllabic structures of Thai words, which were categorized into two main types: ‘smooth’ syllables⁴ and checked syllables⁵ (J. Gandour, 1979). All of the five Thai tones could be added to smooth syllables. However, if a checked syllable has a long vowel, the assigned tones could

4 Smooth syllables are syllables with the end of a long vowel or in sonorant segment such as /m, n, ŋ, j, w, r, l/ (Gandour, 1979).

5 Checked syllables are syllables with the end in a non-sonorant or obstruent segment such as /p, t, d, k, g, ʔ, f, v, θ, ð, s, z, ʃ, zh, tʃ, dʒh/ (Gandour, 1979).

be low and falling ones, whereas a checked syllable with a short vowel could be assigned with high and low tones. In this study, the words ‘súrely’ and ‘téacher’ were incorrectly produced. The L1 Thai learners in this study might have tried to assign a tone to each of the syllables in a word. The final syllables ‘-ly’ and ‘-er’ carried the rising-falling pitch contour as they are smooth syllables with a sonorant segment. A rapid change in pitch is considered one of the main reasons why the L1 Thai learners pronounced these two words with the stress on the last syllables. This is in line with the study of Isarankura (2018) in that most of the Thai learners in pronounced English disyllabic loanwords by putting stress on the last syllable, which contained the rising-falling pitch contour.

4.3.1.2 Intralingual errors

An intralingual factor could probably be one of the most influencing factors that caused the L1 Thai learners to make errors in both perception and production of English word stress. According to Johnson and Newport (1989), interlingual factors could not be the only influencing factors on the L1 Thai learners’ English word stress perception and production problems in his study. When the L1 Thai learners perceived and produced English word stress on an incorrect syllable, the difficulties found in acquiring the English accentual system itself might have been one of the causes of the problems for the L1 Thai learners. This mostly happened to the L1 Thai intermediate learners in this study as they probably assumed the stress to be mostly on the left-hand side in English words with suffixes affecting stress shift. The evidence could be found from the perception and the production of the selected words in this word category as the number of the syllables of each focused word ending with suffix -ity, suffix -tion/ -sion and suffix -ic was between 3 to 6 syllables such as ‘indication’, ‘specific’ and ‘ability’. For example, some of the L1 Thai intermediate learners pronounced the word ‘calámetry’ with the stress on the syllable ‘ca’ and the word ‘responsibility’ with the stress on the syllables ‘res’ or ‘pon’, which are on the left-hand side. However, when it came to the L1 Thai intermediate learners’ perception and production of English word stress of compound verbs, they also chose to put stress on the left-hand side, which was incorrect.

4.3.2 Interlanguage

The following section presents discussion about English word stress problems with regard to interlanguage aspects including language transfer, transfer of training and overgeneralization employed to explain the L1 Thai learners' problems in terms of English word stress perception and production.

4.3.2.1 Language transfer

From the findings, it could be assumed that language transfer could be one of the affecting factors towards correct and incorrect scores of the L1 Thai learners' English word stress perception and production. It was mentioned earlier that two types of transfer i.e. positive transfer and negative transfer were found and most of the erroneous English word stress perception and production by the L1 Thai learners were probably affected by negative transfer from the L1 Thai learners' main stress assignment rule by assigning stress onto the last syllable of the word to their English word stress perception and production. Negative transfer was observed more in the production task than in the perception task for both groups of the L1 Thai learners as the participants in this study were not allowed to listen to any of the pronunciation when they needed to read the sentences in the production task. A number of cases negatively affected by L1 transfer could be detected from these three following word groups: 1) English words with suffixes affecting stress shift, 2) English words with neutral suffixes and 3) compound nouns.

However, there were times when an L1 positive transfer of stress assignment (from Thai) to L2 word stress perception and production (English) could be seen. This could be found in compound verbs. Regarding the compound verbs selected for this study, whose stress is assigned to the last part (the particle as a preposition), knowing L1 Thai stress assignment rules of putting the stress on the last syllable of a word positively facilitates the learners' perception and production of English word stress of the compound verbs. The samples could be observed from the perception task and the production task. With regard to the perception task, the majority of the L1 Thai beginners could correctly assign stress on the right syllables of the following compound verbs, e.g. 'go out' and 'get up' and the majority of the L1 Thai intermediate learners were able to assign English word stress on the following words e.g. 'break down' and 'show up'. For the production task, most of the L1 Thai

beginners were able to accurately produce the words ‘fell down’ and ‘pick up’ and the L1 Thai intermediate learners could pronounce the words ‘look after’, ‘fell down’ and ‘pick up’ correctly. Therefore, it would be assumed that positive transfer might play an important role on the L1 Thai learners’ English word stress perception and production of the compound verbs.

4.3.2.2 Transfer of training

From the researcher’s observations in this study, some of the L1 Thai learners’ lower awareness of English word stress rules might be affected by the deficiency of pronunciation training since they started studying English when they were young. In the Thai context, most L1 Thai learners of English learn English with Thai teachers. In this study, learners who study in English programs, bilingual programs and international programs are excluded. Mostly, L1 Thai learners study in Thai programs where English courses are taught by Thai teachers. In English classes in primary and secondary schools, it has been observed that English pronunciation is less emphasized when compared to English grammar, which has been mainly focused on in lessons and exams. This is consistent with the study by Sahatsathatsana (2017). Additionally, when it comes to speaking sessions, teachers normally let the learners practice saying words after the teachers without any explanation of the rules in English word stress patterns (Sahatsathatsana, 2017). It is possible that the learners’ insufficient knowledge of differences between Thai and English word stress rules makes it hard for them to follow English word stress assignment rules.

Furthermore, textbooks have been one of the main sources for L1 Thai learners’ English learning but textbooks themselves could cause problems in learning about English word stress perception among L1 Thai learners. The researcher observed that in English commercial textbooks used to teach L1 Thai learners, English pronunciation was just a small part of each lesson/unit with only a few samples of pronunciation practice for the learners. This could be found in a number of English textbooks used to teach Thai learners such as *Focus 1* (Reilly, 2010), *Focus 2* (Brayshaw, 2008), *Focus 3* (Brayshaw, 2008), *Aim High 1-6* (Fcalla & Davies, 2010) used to Thai learners from grade 7 to grade 12. In each unit of *Aim High 3* (Davies, Hudson, & Falla, 2010), the focused vocabulary is presented along with the phonetic

transcription of the word such as ‘assist (/əˈsɪst/)’, ‘baggy (/ˈbæɡ.i/)’ and ‘interact (/ˌɪn.təˈrækt/)’. Even though the learners are provided with phonetic transcription of each focused word in the lesson, the curriculum and the lessons do not include lessons on English phonetics. Therefore, the presence of phonetic transcription might not help the learners to properly develop their English pronunciation competence. Moreover, when L1 Thai learners learn English pronunciation, it was found from the English textbooks used to teach L1 Thai learners that the rules regarding English word stress perception and production are never taught to the L1 Thai learners explicitly. In English textbooks used to teach L1 Thai learners such as, *Aim High 3* (Davies et al., 2010), it is commonly seen that few samples of English words are given for pronunciation practice. The English words are mostly focused vocabulary from the lesson/unit. So, it means that the samples of the English words are not categorized into groups and this makes the learners unaware of the patterns or rules of English word stress that govern those English words. Therefore, the fewer the number of English word stress samples there are, the less chance there is that learners can be aware of and acquire English word stress assignment rules. The interview with the participants in (Khamkhien, 2010) also raised the issue that the pronunciation content provided in English textbooks used in Thailand was limited or sometimes neglected. Furthermore, the learners interviewed in Sahatsathatsana (2017) stated that a teacher was sometimes the only source and role model of learning about English pronunciation and this sometimes made them confused by the incorrect English word stress production by Thai teachers of English. According to (Schmidt et al., 2001), it was claimed that learning is present if noticing is present. More inputs lead to more acquisition. So, insufficient numbers of samples and drills of correct English word stress could possibly mean that learners hardly acquire and apply them when it comes to real English word stress perception and production.

4.3.2.3 Overgeneralization of English word stress rules

From the results, overgeneralization could be assumed as one of the important aspects regarding English word stress problems by the L1 Thai learners. According to Ellis (1987b), it was claimed that overgeneralization occurs when a language learner extensively applies an L2 rule to a new linguistic form, causing an interlanguage

form. This case could be found in both groups of the L1 Thai learners in different ways. For the L1 Thai beginners, they seemed to apply the L1 Thai main stress rule by locating stress onto the last syllable of a word to many of the English word categories (English words with suffixes affecting stress shift, e.g. ‘community’ and ‘responsibility’, English words with neutral suffixes, e.g. ‘nicely’ and ‘lovely’ and compound nouns, e.g. ‘raincoat’ and ‘housewife’) in both perception and production tasks. For the L1 Thai intermediate learners, some of the errors were found when the L1 Thai intermediate learners incorrectly put stress on any syllable which was not the last. To illustrate, some of the L1 Thai intermediate learners mispronounced the word ‘indication’, ‘characteristics’ and ‘possibility’ by giving stress onto the first syllables of these words. However, correct English word stress placement of these words must have been on the second syllable from the last. It might be because that the L1 Thai intermediate learners knew that the English word stress placement could be on the left-handed position.

4.3.3 Other factors affecting English word stress problems of L1 Thai learners

Apart from the factors previously mentioned, there were other related factors that had impacts on English word stress problems by the L1 Thai learners: different levels of English proficiency of the L1 Thai learners, lower exposure to English, memorization of English word stress and task effects.

4.3.3.1 Different levels of English proficiency of the L1 Thai learners

It can be seen from the results that the levels of English proficiency of the learners had effects on the learners’ perception and production of English word stress. It can be observed that the learners whose English proficiency was higher (B1) had better English word stress perception and production than the learners with lower English proficiency (A1). This is because the learners with higher English proficiency seemed to apply more stress-assignment strategies towards English words. Thus, the learners with higher English proficiency might be better at differentiating the stressed syllable from others by recognizing the higher pitch or the longer duration of the stressed syllable compared to other syllables in a word, while the group of the L1 Thai learners with lower English proficiency tended to assign the stress in no particular pattern. That is, some of the L1 Thai beginners’ stress placement is randomly

assigned to various syllables of an English word with more than two syllables. Moreover, for the English words whose stress is not on the last syllables, the L1 Thai beginners made errors by assigning the stress on the last syllable of the English word, whereas more occurrences of stress assignment on different syllables could be found among the L1 Thai intermediate learners.

The results are in consistence with the studies by Aungcharoen (2006) and (Porzuczek & Rojczyk, 2017) in that the L2 learners of English with higher English proficiency could perform better in English speaking than the other group of L2 learners of English who had a lower English proficiency. According to (Porzuczek & Rojczyk, 2017), proficiency is one of the important predictors of English word stress realization by speakers of English. Therefore, the better the learners' English proficiency was, the better the learners did in both English word stress perception and production.

4.3.3.2 Lower exposure to English

Besides, it was assumed that the learners' incorrect perception and production of English word stress was caused by the learners' lower exposure to input of English words with correct English word stress assignment. Basic education in Thailand is divided into six years of primary schooling (Prathom 1 to 6) followed by three years of lower secondary (Mattayom 1 to 3) and three years of upper secondary schooling (Mattayom 4 to 6). In 2003, compulsory education was extended to twelve years, with all students expected to complete Mattayom 6. Therefore, the learners might start learning English later than the critical period of learning a language. According to the theory of the critical period hypothesis by Long (1990), the critical period of learning L2 phonology is at the age of 6. Therefore, this might be a reason for the learners' improper English pronunciation. In other words, a learner who started learning English after the critical period of L2 phonology learning might not acquire a language appropriately and it could cause problems of making errors in English phonology, of which English word stress assignment is one of the significant phonological elements. Altmann (2006) stated that the errors of English word stress assignment of the L2 learners were caused by the insufficiency of correct English word stress assignment input for the L2 learners of English. The results were in line with the study of Aungcharoen (2006). This study suggested that the low ability of

English word stress perception and production by the L1 Thai learners was due to the insufficient opportunities for English-speaking practice.

Moreover, there were some inconsistent results showing insignificance differences in terms of both perception and production of the L1 Thai learners' compound verbs. The scores of the correct items from the perception task and the production task were around 50% which was not high. This might be because of the learners' lower exposure to English compound verbs. Of all the English words compulsory for L1 Thai learners to study from grade 1-12, it was found that there were 158 compulsory compound verbs out of 8,606 words, accounting for 1.83% (Service).

Moreover, there were a few cases where negative transfer of stress patterns from Thai to English might not have caused the learners of the two groups to have unsatisfactory production of English words with suffixes affecting stress shift, English words with neutral suffixes and compound nouns as higher proportions of the compulsory English vocabulary were English words with suffixes affecting stress shift (349 out of 8,606 words, or 4.06%), English words with neutral suffixes (449 out of 8,606 words, or 5.22%) and compound nouns (215 out of 8606 words, or 2.50%), causing the learners' higher exposure.

4.3.3.3 Memorization of English word stress

Furthermore, there were some interesting cases showing that positive transfer did not facilitate students when producing English compound verbs. It could be explained by the effect of memorization of the tested words, which was consistent with the explanation by Altmann (2006). Moreover, Plansangket (2016) reported in her research study that the L1 Thai learners learned English word stress assignment by memorizing the location of stress in each word from their teacher word by word, causing low scores in English word stress production. So, it means that if the learners received correct English word stress from their teachers in the classroom, it could cause the learners to correctly memorize the location of syllable stress of an English word.

In addition, Table 9 presented the results which showed that the participants of the two groups gained higher scores for some particular words in the perception task and the production. However, there were some words in the same word categories

incorrectly perceived and produced by the L1 Thai learners. This could be assumed as another piece of evidence to support that the L1 Thai learners possibly learned English word stress by memorizing a particular word, not as a particular pattern. Meanwhile, they tended to be less aware of the stimuli when reading English word stress in sentences as there were other words playing roles as distractors. This was in line with the study of Isarankura (2018).

4.3.3.4 Task effects

The last possible explanation for the L1 Thai learners' problems in English word stress obtained from the study could be the task effects. The effects of task types are discussed in terms of the learners' familiarity of the task. According to Griffin and Harley (1996) and Miyamoto and Takata (1996), the different types of tasks could lead to different performances. From the results, it could be seen that the overall scores of correct English word stress perception were higher than those of the production. In the perception task, the focused English word for the L1 Thai learners to assign the stress was underlined. Therefore, this might have helped facilitate the L1 Thai learners to concentrate only on those words when they were listening to a recording for perceiving stress. Furthermore, the L1 Thai learners were provided with syllable boundaries for the English words that were tested. As a result, the learners did not need to be concerned about syllable division of a word for assigning a stress. On the other hand, for the production task, the L1 Thai learners might have found it more difficult to do because the focused English words were not underlined for the learners. So, the L1 Thai learners did not know which words they were being tested on. Besides, no syllable division was given to the L1 Thai learners and they may have found it hard to choose where the stress would fall as they needed to do more tasks by dividing words into syllables and making decisions on English word stress placement. Therefore, it could be possible that the L1 Thai learners tried to pronounce every single word in each sentence (40 sentences in total for the production task) and this could have made them stressed and exhausted. These factors might have caused them to be more worried about pronouncing the words included in each sentence. This is in accordance with (Rohena-Madrado, 2011). When the participants in his study needed to complete more tasks (listening to three stimuli) in one task by listening and then

comparing the sound differences, the participants gained lower scores than when they focused on only listening to one word at a time.

To summarize, the overall results of the perception and the production of English word stress by the L1 Thai learners showed that the perception and the production of English word stress were still problematic. The problems of English word stress perception and production of the L1 Thai learners could be explained by error analysis, including interlingual factors and intralingual factors. Interlanguage focusing on language transfer, transfer of training and overgeneralization could possibly be one of the major aspects influencing the L1 Thai learners' incorrect perception and production of English word stress. There were other factors affecting word stress placement. Different levels of English proficiency could lead the L1 Thai learners to different types of English word stress problems as they were in a developing stage of acquiring word stress patterns, reflecting the idiosyncrasy of English word stress patterns perceived and produced by the L1 Thai learners. Moreover, insufficient exposure to English environments and insufficient content of English pronunciation provided in English textbooks were assumed to have affected the L1 Thai learners' learning of English word stress placement. Memorization of English word stress of each English word could be used to explain inconsistent results and problems among the learners. Lastly, different types of tasks could possibly affect the L1 Thai learners' competency to perceive and produce English word stress correctly.

4.4 Correlation between the perception and production of English word stress by L1 Thai Beginners and L1 Thai intermediate learners.

This chapter presents the results regarding the correlation between the L1 Thai learners' perception and production of English word stress. This chapter provides answers to the third hypothesis of this study, which is there is a relationship between L2 perception and production of English word stress by L1 Thai learners.

As Pearson's correlation coefficient was applied in the correlational analysis of English word stress perception and production by the L1 Thai beginners and the L1 Thai intermediate learners, the details regarding Pearson's correlation coefficient is illustrated in 4.4.1. Then, in Section 4.4.2, the results are presented in 4.4.2.1.

Moreover, discussion together with explanation of the results are illustrated in 4.4.2.2, respectively.

4.4.1 Details regarding Pearson's correlation coefficient

According to Mukaka (2012), the correlation coefficient, denoted by r , is a measure of the strength of the straight-line or linear relationship between two variables. In this study, the two variables are the perception and the production of the L1 Thai learners. The correlation coefficient takes on values ranging between +1 and -1. The following points are the accepted guidelines for interpreting the correlation coefficient:

1. 0 indicates no linear relationship.
2. +1 indicates a perfect positive linear relationship: as one variable increases in its values, the other variable also increases in its values via an exact linear rule.
3. -1 indicates a perfect negative linear relationship: as one variable increases in its values, the other variable decreases in its values via an exact linear rule.
4. Values between 0 and 0.3 (0 and -0.3) indicate a weak positive (negative) linear relationship via a shaky linear rule.
5. Values between 0.3 and 0.7 (-0.3 and -0.7) indicate a moderate positive (negative) linear relationship via a fuzzy-firm linear rule.
6. Values between 0.7 and 1.0 (-0.7 and -1.0) indicate a strong positive (negative) linear relationship via a firm linear rule.
7. The value of r squared is typically taken as "the percent of variation in one variable explained by the other variable," or "the percent of variation shared between the two variables."

4.4.2 Results and discussion

4.4.2.1 Relationship between perception and production of English word stress by L1 Thai learners

Table 16 Relationship between perception and production of English word stress by L1 Thai beginners

Word category	Learner groups							
	B	I	B	I	B	I	B	I
1. Suffixes affecting the stress shift	-0.196	0.056						
2. Neutral suffixes			0.146	-0.172				
3. Compound nouns					-0.017	0.179		
4. Compound verbs							0.291	-0.169

* Correlation is significant at the 0.05 level (two-tailed).

** B stands for L1 Thai beginners.

*** I stands for L1 Thai intermediate learners.

The following section presents the results of the correlation between the perception and the production of English word stress by the L1 Thai beginners by focusing on each word category: 1) English words with suffixes affecting stress shift, 2) English words with neutral suffixes, 3) English compound nouns and 4) English compound verbs.

To begin with, for English words with suffixes affecting stress shift, a negative relationship between the perception and the production of English word stress was observed; $r(60) = -0.196$, where $p < 0.005$. This means that there was an inverse relationship between the L1 Thai beginners' perception and production of English

word stress, suggesting that when there was a rise in the L1 Thai beginners' English word stress perception of the English words with suffixes affecting stress shift, a fall in the L1 Thai beginners' English word stress production of English words with suffixes affecting stress shift was found.

Next, for English words with neutral suffixes, there was a positive relationship between the perception and production of English word stress; $r(60) = .146$, where $p < 0.005$. It could be interpreted that the L1 Thai beginners' perception of English word stress of the English words with neutral suffixes had little relationship with their production of English word stress. The L1 Thai beginners' perception scores of English word stress of the English words with neutral suffixes had a slight relationship with their production scores of English word stress of the English words with neutral suffixes.

For English compound nouns, there was a negative relationship between the perception and production of English compound words; $r(60) = -.017$, where $p < 0.005$. It could be observed that there is an inverse relationship between the two variables (the L1 Thai beginners' perception and production of English word stress) of the English compound nouns. This means when the scores of the L1 Thai beginners' English word stress perception of the English compound nouns decreased, their scores of production of English word stress of the English compound nouns increased and vice versa. Conversely, when the scores of the L1 Thai beginners' English word stress production of the English compound nouns rises, their perception of English word stress of the English compound verbs declines.

Lastly, for English compound verbs, a positive relationship between the perception and production of English word stress was observed; $r(60) = .291$, where $p < 0.005$. It could be implied that as the L1 Thai beginners' perception of English word stress increases, there is a lower likelihood of there being a relationship with the production of English word stress of the English compound verbs.

Similarly, Table 8 also presents the results of the correlation between the perception and production of English word stress by the L1 Thai intermediate learners by emphasizing each word category: 1) English words with suffixes affecting stress shift, 2) English words with neutral suffixes, 3) English compound nouns and 4) English compound verbs.

To start with, for English words with suffixes affecting stress shift, there was a positive relationship between the perception and the production of English word stress by the L1 Thai intermediate learners; $r(60) = .056$, where $p < 0.005$. The results could be explained by the fact that the L1 Thai intermediate learners' perception of English word stress of the English words with suffixes affecting stress shift had little relationship with their production of English word stress. However, the L1 Thai beginners' scores of perception of English word stress of the English words with suffixes affecting stress shift possibly had a positive relationship with their scores of production of English word stress of the English words with suffixes affecting stress shift.

Secondly, for English words with neutral suffixes, a negative relationship between the perception and the production of English word stress with neutral suffixes was found; $r(60) = -.172$, where $p < 0.005$. This reflected an inverse relationship between the L1 Thai intermediate learners' English word stress perception and production of the English words with neutral suffixes. That is, when the scores of English word stress perception of the L1 Thai intermediate learners increased, there was a probable chance that the scores of English word stress production of the English words with neutral suffixes would be decreased.

Thirdly, for English compound nouns, there was a positive relationship between the perception and the production of English compound nouns; $r(60) = .179$, where $p < 0.005$. It could be interpreted that there was a possibility the L1 Thai intermediate learners had higher scores of English word stress perception of the English compound nouns when their English word stress perception scores of the English compound nouns were high. On the other hand, when the L1 Thai intermediate learners' English word stress perception scores of the compound nouns were lower, their scores of English word stress production of the same word category could possibly have been lower.

Last of all, a negative correlation between the perception and the production of the English word stress of English compound verbs was found; $r(60) = -.169$, where $p < 0.005$. From the results, it could be noticed that the L1 Thai intermediate learners' perception and production of English word stress on the English compound verbs were inversely related. It could be explained by the fact that when the L1 Thai

intermediate learners' English word stress perception of the English compound verbs was better, their production of English word stress on the English compound verbs became worse. Conversely, when the L1 Thai intermediate learners' English word stress perception of the compound verbs was worse, there was a chance that the L1 Thai intermediate learners' production of English word stress on the compound verbs became better.

To sum up, from the overall results of the correlation between the perception and production of English word stress of the selected words, it could be seen the L1 Thai learners' competency in locating the syllabic stress of an English word after listening to a recording had very little relation to their competency in English word stress production of the English words. This phenomenon could be found in both L1 Thai beginners and L1 Thai intermediate learners. Therefore, the results confirm the third hypothesis of this study, in that there was a correlation between the L1 Thai learners' perception and production of English word stress.

4.4.2.2 Discussion on the relationship between the perception and production of English word stress by L1 Thai learners

According to the results regarding the correlation between the L1 Thai learners' perception and production of English word stress, the following section provides examples together with explanation for the results of this study. The examples and the discussions are given based on the learner groups: the L1 Thai beginners and the L1 Thai intermediate learners.

4.4.2.1.1 Relationship between L1 Thai beginners' English word stress perception and production

To start with, for the L1 Thai beginners, there are several examples which support the negative correlation between the perception and production of English word stress of the English words with suffixes affecting stress shift by the L1 Thai beginners. One interesting example is the English words that end with the '-ic' suffix. For the word 'orgánic', almost all of the L1 Thai beginners correctly perceived the location of English word stress after they had listened to a recording, while a difference was found in the English word stress production of the word 'realístic' in that not one of the L1 Thai beginners could produce this word with correct stress. The

reason why the L1 Thai beginners' perception and production of English word stress of the English words with suffixes affecting stress shift were negatively correlated might be because there are no rules with regard to putting the stress on a syllable other than the last in the Thai accentual system. So, the L1 Thai beginners might not have been able to be truly aware of the rules of putting stress on a syllable of an English word ending with a suffix affecting stress shift.

Furthermore, a number of examples demonstrate how the L1 Thai beginners' perception of the English words with neutral suffixes was positively correlated. For example, for the English words ending with the '-ly' suffix, the L1 Thai beginners had a 100% rate of correct English word stress perception of the word 'shárp'ly', while some of them (36.67%) could produce correct English word stress of the word 'sló'wly'. Another example was the English words ending with the '-er' suffix. The L1 Thai beginners had a 76.67% rate of correct English word stress perception of the word 'pláyer' and some of the L1 Thai beginners (46.67%) could correctly produce the English word stress of the word 'fármer'. This could be explained by the fact that the Thai tones might have had effects on the L1 Thai beginners' perception of the English words ending with neutral suffixes. That is, when they listened to a recording, they might have compared the stressed syllable with a Thai rising tone, which was previously found to have more chance of receiving stress than the words with other tones. However, when it came to their production, they tended to apply the Thai rules of assigning stress to English word stress production. Therefore, they tended to make errors in assigning stress to the last syllable of the English compound nouns.

With regard to compound nouns, mostly, the L1 Thai beginners' English word stress perception score of the English compound nouns was more than 50%. However, for the production task, most of the English compound words were incorrectly produced. For example, about 60% of the L1 Thai beginners could accurately mark the stress on the syllable 'dog' of the word 'dóghouse', while 0% of the L1 Thai beginners could correctly produce the word 'hóusewife'. Most of the errors found in the L1 Thai beginners' production might be because of their tendency to assign stress to the last syllable of Thai words.

Lastly, as the rule of assigning the stress to an English compound verb was that it should be on the second part (i.e. the preposition), the learners' L1 Thai rules

could have possibly facilitated the L1 Thai beginners when they perceived and produced English word stress. For example, 80% of the L1 Thai beginners correctly perceived the stress of the compound verb ‘get out’ by marking the stress on the word ‘out’. This phenomenon could also be found in the English word stress production of the word ‘fall down’ in that 96.67% of the L1 Thai beginners accurately produced this word with stress on the particle ‘down’. It could probably be stated that the learners’ L1 rules of assigning word stress could facilitate both their perception and production of the word stress on English compound verbs.

4.4.2.1.2 Relationship between L1 Thai intermediate learners’ English word stress perception and production

To begin with, there was a positive correlation of the L1 Thai intermediate learners’ English word stress perception and production of the English words with suffixes affecting stress shift. For instance, nearly all of the L1 Thai intermediate learners could correctly perceive the English word stress of the word ‘organic’ on the syllable ‘ga’, and most of them could correctly produce the word ‘romantic’ with the stress on the syllable ‘man’. It might be interpreted that the learners with higher English proficiency could have good awareness of the locations of stress assignment to the English words with suffixes affecting stress shift. This was similar to the study by Sahatsathatsana (2017) in that the higher English proficiency an L2 learner of English has, the more they could be aware of the rules of assigning the stress to different English words.

Besides, there are a number of examples regarding the negative correlation between the L1 Thai learners’ English word stress perception and production of the English words with neutral suffixes. In regard to the English words ending with ‘-er’, nearly 100% of the L1 Thai intermediate learners could correctly perceive the position of stress of the word ‘lover’ to be on the syllable ‘love’ while only 30% of the L1 Thai intermediate learners could correctly produce the word ‘driver’ with stress correctly placed on the syllable ‘drive’. This means that most of the L1 Thai intermediate learners incorrectly produced the word ‘driver’ with stress on the syllable ‘er’. Furthermore, for the English words ending with ‘-ly’, all of the L1 Thai intermediate learners could correctly perceive the word ‘tightly’ with stress correctly

placed on the syllable 'tight', while only 43.33% of the L1 Thai intermediate learners could correctly pronounce the word 'brightly' with stress on the syllable 'bright'. Most of them incorrectly produced this word with stress on the syllable 'ly', which might be caused by the negative transfer of the learners' L1 rules and insufficient awareness of different rules in assigning stress to English words.

Moreover, a positive correlation between the perception and the production of English word stress of compound nouns by the L1 Thai intermediate learners was observed. The word 'wildlife' was correctly perceived by the L1 Thai intermediate learners in terms of the location of stress on the syllable 'wild' by 56.67% of them. For production, the words 'bedroom' and 'firework' were correctly produced with correct stress on the first syllables, which were 'bed' and 'fire', by an equal proportion of the L1 Thai intermediate learners (56.67%).

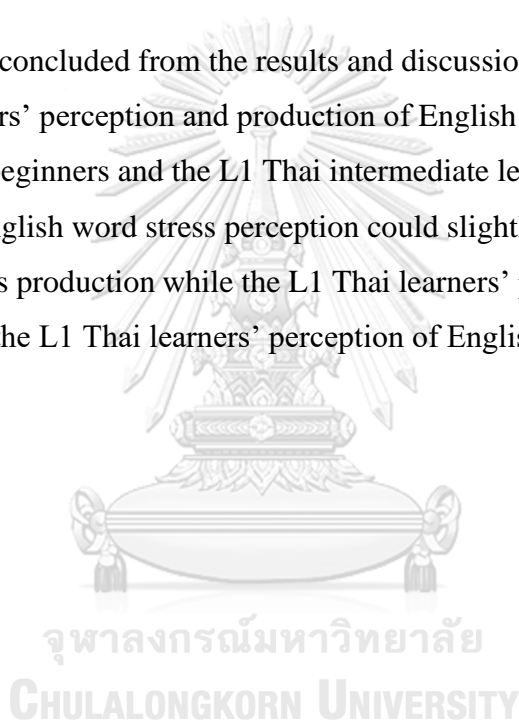
Lastly, for compound verbs, it could be observed from the result that the level of accurate English word stress perception could not be used to reflect that of the production. To illustrate, 93.33% of L1 Thai intermediate learners could correctly assign the word 'go out' with stress on the word 'out', whereas none of the L1 Thai intermediate learners correctly pronounced the word 'find out' with correct stress on the word 'out'. All of them incorrectly pronounced this compound verb with stress on the word 'find'. It could be interpreted that the L1 Thai intermediate learners might have had an awareness of various rules of assigning stress to English words, which mostly have stress on the left-hand side. However, when it came to the English words requiring stress on the last syllable, there might have been chances for them to make errors.

The results from this study were in line with those gained from Jarusan (1997). In Jarusan (1997), the learners in this study could identify the location of the primary stress of each word correctly and they also would be able to produce the English words with the primary stress of a word correctly. Furthermore, the results of Savithri (1999) confirmed that there is a relationship between English word stress perception and the production of those same stress patterns in the sense that learners with strong skills of lexical stress production also have strong lexical stress recognition skills. Duong (2017) also presented her results that the learners whose English word stress perception was good were also able to produce English word stress correctly. Llisterri

(1995) also claimed that the perception of English word stress of the learners could affect the levels of difficulties in the learners' production of English word stress.

From the results, a positive relationship between the perception and the production of English compound verbs existed among both L1 Thai beginners and L1 Thai intermediate learners. The findings indicated that there was a little chance for the L1 Thai learners who had strong skills in word stress perception also had strong skills in word stress production. Similarly, there was also a little chance that the L1 Thai learners with poor skills in word stress perception also had poor skills in word stress production.

It could be concluded from the results and discussion that a little relationship between the learners' perception and production of English word stress was observed from the L1 Thai beginners and the L1 Thai intermediate learners. It was assumed that the level of English word stress perception could slightly lead to the level of English word stress production while the L1 Thai learners' production could have a little influence on the L1 Thai learners' perception of English word stress.



CHAPTER V

CONCLUSION

This chapter presents the conclusion of the study. To start with, Section 5.1 summarizes the major findings obtained from this study. Section 5.2 and Section 5.3 explain some theoretical and pedagogical implications of this study, respectively. Section 5.5 gives more details about the limitations of this study together with recommendations for future studies.

5.1 Conclusion

This study investigated L1 Thai learners' perception and production of English word stress focusing on particular suffixes i.e. suffixes affecting stress shift and neutral suffixes, compound nouns and compound verbs. Based on the data obtained from the learners' perception and production, it was found that L1 Thai learners whose levels of English proficiency are intermediate had better English word stress perception and production than those whose levels of English proficiency are beginner. The results have confirmed the first hypothesis that the L1 Thai intermediate learners would have better English word stress perception than the beginners and the second hypothesis that the L1 Thai intermediate learners would have better English word stress production than the beginners. It was observed that the higher-proficient learners of English tended to assign stress on the left-handed positions while the lower-proficient learners who were found to mostly place stress onto the right-handed positions.

Furthermore, the overall results from the correlational analysis showed that both L1 Thai beginners and L1 Thai intermediate learners' English word stress perception signifies a positive correlation with their production. However, there were some word categories that the L1 Thai learners English word stress perception was not correlated with their English word stress production. The L1 Thai intermediate learners' English word stress perception of English words with suffixes affecting stress shift and compound nouns was not correlated with their production of the same word groups. It could be interpreted that the L1 Thai intermediate learners' perception and production of English words with suffixes affecting stress shift and compound

nouns was contrary. The L1 Thai beginners English word stress perception of English words with neutral suffixes and compound verbs was not correlated with their production of the same word groups. Similarly, the contradiction between the beginners' English words stress perception and production of the English words with neutral suffixes and compound verbs illustrated different directions in different word groups.

Therefore, it can be concluded that the L1 Thai learners' English word stress perception and production was still problematic and limited. It could be observed from this study that some causes have impacts on the L1 Thai learners' problematic English word stress perception and production. From this study, five possible factors were assumed to cause problems of English word stress perception and production by the L1 Thai learners which were different levels of English proficiency, interlanguage, interlingual and intralingual factors, exposure to English, and task effects. The overall results of the perception and the production of English word stress by the L1 Thai learners showed that the perception and the production of English word stress are still in need of improvement. The levels of English proficiency of the L1 Thai learners could lead to different scores (higher or lower) among them in terms of English word stress perception and production. Interlanguage, interlingual factors and intralingual factors, are possibly the major influencing aspects on the L1 Thai learners' incorrect perception and production of English word stress. Insufficient exposure to English environments and insufficient content of English pronunciation provided in English textbooks used to teach in Thai classrooms were assumed to affect the L1 Thai learners' learning of English word stress placement. Last, different types of tasks could affect the L1 Thai learners' competency to perceive and produce English word stress correctly.

The findings could be interpreted that there are two types of incorrect English word stress patterns found from this study. To start with, the stress was misperceived or mispronounced to be on the last syllable of the English word and this incorrect pattern could be seen among the L1 Thai beginners rather than the L1 Thai intermediate learners. In addition, the stress was misperceived or mispronounced to be on another syllable which is not on the correct syllable or the last syllable which was found more among the L1 Thai intermediate learners than the L1 Thai beginners.

5.2 SLA implications

The findings of this study contributed to some SLA implications in terms of error analysis (interlingual errors and intralingual errors), interlanguage focusing on language transfer, transfer of training and overgeneralization and other affecting factors in L2 perception and production of English word stress by L1 Thai learners, i.e. different levels of English proficiency of the L1 Thai learners, lower exposure to English, memorization of English word stress and task effects.

To begin with, both groups of the L1 Thai learners seemed to be in a developing stage trying to accomplish L2 English word stress but the L1 Thai beginners tended to be dependent more upon L1 Thai stress assignment rules, assigning stress onto the last syllable of a word. As error analysis was employed to investigate sources of linguistic errors, it could be seen that L1 Thai learners' incorrect English word stress perception and production were caused by two major factors: interlingual and intralingual factors. As far as interlingual factors are concerned, the differences between the Thai word stress assignment and English word stress assignment are totally different. The stress is mostly assigned on the right-handed position on Thai words while there are various possible positions for the stress to be assigned on an English syllable. So, the L1 Thai learners' different stress assignment system could lead to incorrect English word stress assignment. This case could be observed mostly by the L1 Thai beginners as they might assume that the stress in English was possibly on the last syllable of the word as that on Thai words. Concerning intralingual factors, errors are observed when learners misuse target language rules and the learners' false application of certain target language rules. A clear example drawn from this study could be that, the L1 Thai intermediate learners incorrectly applied stress onto left-handed positions because they might assume that the stress can fall on various positions of an English word and it is left-handed. Therefore, it could be concluded that the intralingual errors seemed to be observed more among the L1 Thai learners with higher English proficiency than the L1 Thai learners with lower English proficiency who tended to commit more interlingual errors in assigning stress for both perception and production. The results were consistent with Archibald (1997)'s notion that intermediate learners seemed to make

more developmental errors than beginners who tend to transfer their L1 rules to their L2.

Secondly, interlanguage including language transfer, transfer of training and overgeneralization was considered one of the most important factors that had impacts on the L1 Thai learners' English word stress perception and production. To begin with, language transfer could be observed in both perception and production of English word stress by the L1 Thai learners. Positive transfer from Thai to English could help facilitate some of the English compound verbs in terms of word stress perception and production as it could be found from the perception and the production tasks in that some of the L1 Thai learners could accurately perceive and produce English word stress on the particle of the compound verbs. Negative transfer could be seen in the L1 Thai learners' English word stress of the English words with suffixes affecting stress shift, neutral suffixes and compound nouns. Some of the L1 Thai learners made errors in perceiving English word stress of the English words with suffixes affecting stress shift, neutral suffixes and English compound nouns by giving stress on the last syllables of some of the focused words while there were more L1 Thai learners making errors in English word stress production of the English words in these three word categories with suffixes affecting stress shift, neutral suffixes and compound nouns by giving stress on the last syllables. Moreover, transfer of training was considered an influencing factor. As English pronunciation, especially English word stress perception and production, was less focused in Thai education compared to reading skills, writing skills vocabulary and grammar, the L1 Thai learners might have less chance in practicing English pronunciation regarding English word stress. Less input of English word stress practice might lead the L1 Thai learners to unsatisfactory English word stress perception and production. Overgeneralization might also be another important interlanguage factor which could be observed when the L1 Thai learners in this study attempted to create new English word stress rules. Overgeneralization could be found in different ways in both groups of the learners. The L1 Thai beginners tended to incorrectly assign stress on the last syllables of the English words while the L1 Thai intermediate learners seemed to incorrectly assign stress on the left-handed positions.

Thirdly, there were other affecting factors related to L1 Thai learners' English word stress perception and production. To start with, different levels of English proficiency possibly caused differences in English word stress perception and production. The L1 Thai intermediate learners seemed to apply English word stress on various syllables of the English words while the L1 Thai beginners made errors by assigning English word stress on the last syllable of a word. Furthermore, lower exposure to English word stress perception and production was seen as another vital aspect. Inadequate opportunities for English word stress practice and lower exposure to some English word categories such as compound verbs could bring about incorrect English word stress perception and production of the L1 Thai learners (Aungcharoen, 2006). Besides, memorization could be used to explain the L1 Thai learners' inconsistent results in English word stress perception and production. Some of the English words in some word groups were correctly perceived and produced by the L1 Thai learners while other words in the same word groups were incorrectly perceived and produced by them. This might be because the L1 Thai learners memorize English word stress of particular words, not particular patterns. Lastly, different types of tasks could contribute to the L1 Thai learners' different English word stress perception and production. Since the L1 Thai learners needed more steps in completing the English word stress production task than the perception task, their English word stress production scores were lower than those of their perception.

Last, but not least, the L1 Thai learners' English word stress perception of both L1 Thai beginners and L1 Thai intermediate learners did not always directly make their English word stress production of the same word category in the same direction for both L1 Thai beginners and L1 Thai intermediate learners. Some of the L1 Thai learners' English word stress perception and production was in contrast. Moreover, it could be seen that the L1 Thai learners were able to better identify the location of stress after immediately listening to a recording compared to when the L1 Thai learners immediately pronounced English word stress. This could be summarized in that the L1 Thai learners' performance and the competence of English word stress are different. The way the L1 Thai learners produced English word stress could not be directly reflected by their underlying competence from their perception.

5.3 Pedagogical implications

The followings are pedagogical implications obtained from this study.

Firstly, more of the English word stress rules as part of suprasegmental features should be taught to L1 Thai learners of English as basic skills when they learn about English speaking. As one of the main achievements of learning a language is to be able to communicate with others, knowing how to pronounce each word with correct stress assignment could lead L1 Thai learners to have more awareness of the roles of English word stress in the perception and the production. It could affect the communicators' comprehensibility and intelligibility while communicating in English with each other. Moreover, more materials and classroom activities with regard to English word stress drills and practices should be given to L1 Thai learners of English since they start learning English. The younger the L1 Thai learners start to learn about different rules of English word stress assignment in English, the better they will acquire English word stress rules for their everyday life conversation. Arvaniti (2012) claimed that providing learners with proper learning and teaching with regard to multiple dimensions focusing on particular linguistic elements could help the learners to acquire a language more effectively.

Secondly, with regard to the English proficiency level of the participants, the selected participants for this study were L1 Thai beginners and L1 Thai intermediate learners. Their learning strategies for acquiring a language could possibly be different. This occurrence commonly exists in every classroom. So, it would be beneficial for every teacher to observe how L1 Thai learners with different English proficiency levels learn English word stress rules so that teachers could be students' facilitators who can provide the L1 Thai learners with proper teaching materials and methods for learners with different English proficiency levels.

Thirdly, it is recommended for English teachers in Thailand to be aware of factors affecting incorrect English word stress perception and production, which would be beneficial for learners of English when they study English pronunciation. According to Saville-Troike (2006), employing interlanguage and error analysis in the classroom could beneficially help teachers to understand learners' possible strength and weakness of a particular learner and know how to select proper learning contexts and teaching procedure to suit learners' learning

Lastly, during pronunciation practice sessions, L1 Thai learners of English should be provided with various types of tasks for English word stress perception and production practices such as reading and perceiving English words with particular stress patterns in isolation, in sentences, in paragraphs, and in longer texts. This could raise the learners' awareness to have better understanding and comprehensibility in receiving and pronouncing English word stress in different types of tasks.

5.4 Limitations and recommendations

Based on the conduct of this research, the followings are limitations along with recommendations for future research studies.

To begin with, further studies should focus on other categories of English words in terms of perception and production of English word stress such as English words with other types of suffixes e.g., suffix '-ee' (stress is put on the last syllable) as seen in 'trainee', compound nouns deriving from adjective+noun e.g. 'monthly tickets' and compound verbs deriving from an auxiliary + a verb e.g. 'is washing'. This should also be conducted with L1 Thai learners to see more of the problems that affect their English word stress perception and production.

It could be observed that one of the selected English words was included in one sentence in the perception task and the production task in this study. However, it is recommended that future research studies should include focused words in longer speech such as short stories or tales. This means that a paragraph or a longer sentence should be created by including more than 1 focused word. The obtained data could be used to reflect the L1 Thai learners' perception and production of English word stress in a natural speech.

Subsequently, as it was observed from this study that the English word stress perception results were much better than those of the production, it is recommended for English teachers in Thailand to balance their English teaching about perception and production of English word stress. That means the English teachers in Thai educational institutes should pay more attention to providing L1 Thai learners with more drills and practices regarding listening to English word stress assignment and speaking or pronouncing English words with correct stress.

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จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY



APPENDICE

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

Name _____ SWU-SET Score _____
 Faculty _____

Perception Task

Marking English Word Stress in sentences

Directions: You will hear a recording of each sentence only ONCE. You have to choose the stressed syllable according to what you hear by writing an X onto the selected choice.

Items	Sentences
1	Wearing a t-shirt makes you look <u>youth / ful</u> . <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">1</div> <div style="border: 1px solid black; padding: 2px 10px;">2</div> </div>
2	I think he's not a good <u>me / cha / nic</u> . <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">1</div> <div style="border: 1px solid black; padding: 2px 10px;">2</div> <div style="border: 1px solid black; padding: 2px 10px;">3</div> </div>
3	John glanced at Sue <u>sharp / ly</u> . <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">1</div> <div style="border: 1px solid black; padding: 2px 10px;">2</div> </div>
4	Many employees are dissatisfied with a wage <u>re / duc / tion</u> . <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">1</div> <div style="border: 1px solid black; padding: 2px 10px;">2</div> <div style="border: 1px solid black; padding: 2px 10px;">3</div> </div>
5	Sam was shocked because the news he heard was <u>aw / ful</u> . <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">1</div> <div style="border: 1px solid black; padding: 2px 10px;">2</div> </div>
6	Your customers will trust you if you are honest and <u>truth / ful</u> . <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">1</div> <div style="border: 1px solid black; padding: 2px 10px;">2</div> </div>
7	My mother would like to eat something <u>or / ga / nic</u> . <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">1</div> <div style="border: 1px solid black; padding: 2px 10px;">2</div> <div style="border: 1px solid black; padding: 2px 10px;">3</div> </div>
8	I left my car keys in my <u>rain / coat</u> . <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">1</div> <div style="border: 1px solid black; padding: 2px 10px;">2</div> </div>

Items	Sentences
9	She looks at me <u>close / ly</u> . <div>1 2</div>
10	He put on his shoes before he <u>went / out</u> . <div>1 2</div>
11	You should be well-prepared for all upcoming <u>sit / u / a / tions</u> . <div>1 2 3 4</div>
12	After work, you should do other relaxing <u>ac / ti / vi / ties</u> . <div>1 2 3 4</div>
13	Finally, she didn't <u>show / up</u> . <div>1 2</div>
14	You can put that movie in the DVD <u>play / er</u> . <div>1 2</div>
15	People in the class said that Susan in the most <u>e / ner / ge / tic</u> . <div>1 2 3 4</div>
16	A fox was killed by an old <u>hun / ter</u> . <div>1 2</div>
17	For business persons, a telephone is one of the <u>ne / ces / si / ties</u> . <div>1 2 3 4</div>
18	He wrapped his arms around her <u>tight / ly</u> . <div>1 2</div>
19	Among thirteen competitors, Julie was the <u>win / ner</u> . <div>1 2</div>

Items	Sentences
20	Edd picked up his exam result and sighed <u>deep / ly.</u> <div>1 2</div>
21	I can't be more <u>spe / ci / fic.</u> <div>1 2 3</div>
22	We want justice in our <u>com / mu / ni / ty.</u> <div>1 2 3 4</div>
23	Mike got a lot of presents on his <u>birth / day.</u> <div>1 2</div>
24	When Jim and Jan come to Thailand, I will treat them <u>nice / ly.</u> <div>1 2</div>
25	Her actions show that she is <u>grate / ful.</u> <div>1 2</div>
26	In my school, there is only one athlete who does <u>gym / nas / tics.</u> <div>1 2 3</div>
27	That old washing machine always <u>breaks / down.</u> <div>1 2</div>
28	The Smiths got no choice for their next <u>des / ti / na / tion.</u> <div>1 2 3 4</div>
29	Bruno Mars is such a sweet <u>sing / er.</u> <div>1 2</div>
30	Many kids are waiting for a movie called "Thor" to <u>come / out.</u> <div>1 2</div>

Items	Sentences
31	Our university has good fa / cil / i / ties. <div>1 2 3 4</div>
32	The government is concerned about the habitats of wild / life. <div>1 2</div>
33	I'm sure she will be surprised when she gets / up. <div>1 2</div>
34	You have a right to make your own de / cis / ion. <div>1 2 3</div>
35	When you go to the beach, put on sun / screen. <div>1 2</div>
36	It will be good if people support organ do / na / tion. <div>1 2 3</div>
37	The test results make Maria so doubt / ful. <div>1 2</div>
38	I want to see what is inside that dog / house. <div>1 2</div>
39	The accident had a high level of se / ver / i / ty. <div>1 2 3 4</div>
40	I would take you to anywhere you would like to go, if you were my lov / er. <div>1 2</div>

-----THANK YOU FOR YOUR COOPERATION-----

Production Task

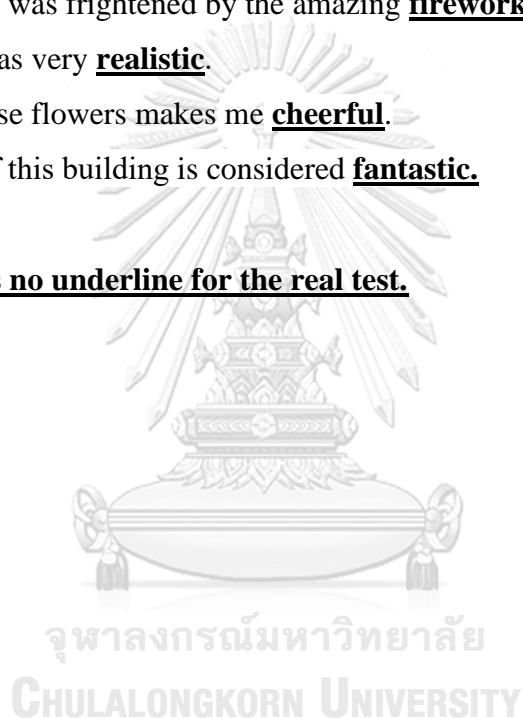
Task 1: Reading Words in Sentences

Directions: Read each sentence only once.

1. What makes you foresee an upcoming **calamity**?
2. He decided to start working as a teacher teaching **economics**.
3. The detective will reveal the truth today **surely**.
4. Travelling in the mountains alone makes me feel calm and **peaceful**.
5. Japanese people highly regard showing high respect as one of the best **characteristics**.
6. They both did very well by all **indications**.
7. When you take a placement test, you need to be **careful**.
8. Alexander is always excited to see foreign **teachers**.
9. Technology sometimes decreases people's working **ability**.
10. Today's meeting is about our company's **security**.
11. An effective engineer should be able to work well under difficult **conditions**.
12. Every job has its own important **responsibilities**.
13. Jim's parents are so sick that they need someone to **look after** them.
14. Dutch houses are always painted **brightly**.
15. What makes clean food valuable is the increase in **nutrition**.
16. I will ask the hotel about what time we can **move out**.
17. The only thing Sandy did on her vacation was staying in her **bedroom**.
18. This Korean series is **romantic**.
19. I would say that this project is **useful**.
20. She summarized her plan very **neatly**.
21. Though tomorrow is the examination day, Pam still has a lot to **focus on**.
22. She completed her work **quickly**.
23. You would listen to my problem intently if you were a good **leader**.
24. Greenhouse gases give bad effects on nature, such as soil **erosion**.
25. I want to see more **attractions**.
26. One of the most difficult jobs is to be a **housewife**.
27. My uncle is a kind **farmer**.
28. The vase accidentally **fell down**.

29. Sorry, I cannot see any **possibilities.**
30. Sandra just decided to by a new **bookcase.**
31. President John's speech is so **thoughtful.**
32. Here comes our **driver.**
33. Mr.Joe got a letter and read it **slowly.**
34. Many kids enjoyed watching **baseball.**
35. She has someone to **pick up.**
36. A baby's crying distracted the attention of the **readers.**
37. A little baboon was frightened by the amazing **fireworks.**
38. His painting was very **realistic.**
39. Looking at those flowers makes me **cheerful.**
40. Joe's design of this building is considered **fantastic.**

Remark: There is no underline for the real test.



VITA

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