Systematicity of L2 Interlanguage of Stress Assignment in English Compound Nouns and Phrasal Verbs by L1 Thai Learners

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Abstract

This study aimed to investigate the production of stress in English compound nouns and phrasal verbs by L1 Thai learners. Based on the Interlanguage Hypothesis (Corder, 1982; Selinker, 1972), it was hypothesized that (1) there is a positive relationship between English proficiency levels and accuracy in stress assignment in compound nouns and phrasal verbs; and (2) L1 Thai learners' systematicity of L2 English stress placement is influenced by L1 transfer. The participants were 60 first-year undergraduates who were equally divided into two groups, namely intermediate and advanced groups, based on their English proficiency levels. All the participants were required to read sentences containing three different types of compound nouns in the first task and read sentences containing compound nouns and their corresponding phrasal verbs in the second task. Their readings were analyzed using an independent-

samples t-test and ANOVA. Although the advanced learners outperformed their intermediate counterparts in assigning stress in both tasks, the statistical results indicated a correlation between English proficiency levels and accuracy in stress placement only in compound nouns, but not in phrasal verbs. It was assumed that such systematicity found in the learners' IL resulted from the interlanguage factor of language transfer.

Introduction

In modern-day English instruction, which prioritizes developing communicative competence of learners through interactions with peers and instructors, the integration of pronunciation instruction has become crucial for improving learners' ability to communicate effectively (Wang, 2020). Pronunciation teaching and learning generally covers two aspects of pronunciation: segmental features (individual sounds) and suprasegmental features (elements that go beyond one sound segment) (see Wang, 2020).

Stress is one of the prosodic features that can greatly affect the speaker's overall intelligibility (Fraser, 2001). According to Brinton (2000), stress plays a role in distinguishing different parts of speech (e.g. súspect *n.* vs. suspéct *v.*) and distinguishing words from phrases (a gréenhouse vs. a green hóuse), highlighting contrastive elements (I said it was ón the table, not únder it.), and drawing attention to new information among old information (My car is réd – dárk red.).

Despite its significant role in helping listeners process and decode messages, stressing the correct syllables in each word is a challenge for many non-native speakers. This is because English has borrowed many words from other languages, making the stress system of modern English rather complex and not always predictable (Brinton, 2000; Roach, 2000). Predicting where stress should fall in a word is not so simple and straightforward that many scholars have even suggested it is probably best "to treat stress placement as a property of the individual word, to be learned when the word itself is learned" (Roach, 2000, p. 97).

Several previous studies have found that acquiring English stress patterns is fundamentally difficult for L2 learners, especially those whose L1 has different prosodic features and stress principles from English, such

as Indonesian (Arienintya, 2017; Karjo, 2016), Vietnamese (Tuan, 2018), Chinese (Liu, 2017), and Polish (Porzuczek & Rojczyk, 2017) learners. In the Thai context, errors concerning English stress placement were also found among Thai learners in production of loanwords (Isarankura, 2018), medical terms (Watanapokakul, 2009), and words with different suffixes and compounds (Jaiprasong & Pongpairoj, 2020). Other variables affecting acquisition of word stress, such as gender, length of language learning, and proficiency, have also been explored. Khamkhien (2010) found that female students significantly outperformed male students in a stress identification task, but whether duration of language learning impacted stress performance could not be concluded. Moreover, a possible correlation between English proficiency levels and accuracy in stress placement was found in Jaiprasong & Pongpairoj (2020), in which the advanced learners outperformed the intermediate learners in most aspects of the tasks. Another factor that possibly affects stress placement accuracy is the nature of a task. It was revealed in Isarankura (2018) and Jaiprasong & Pongpairoj (2020) that learners were more likely to stress the correct syllable of target words when they were shown in isolation than when they were put in sentences.

To the best of our knowledge, there has never been any study on L1 Thai learners' acquisition of English stress patterns with the focus on different types of compound nouns and phrasal verbs. This study therefore aimed to fill in the gap. The hypotheses of the current study were as follows:

1. L1 Thai advanced learners can pronounce English compound nouns and phrasal verbs with higher accuracy in terms of stress assignment than L1 Thai intermediate learners.
2. Based on the Interlanguage Hypothesis, L1 Thai learners' systematicity of L2 English stress placement is influenced by language transfer.

<div align="center">Literature Review</div>

Interlanguage Hypothesis

The term "Interlanguage" (IL) was first introduced by Selinker (1972) as a separate linguistic system or "mental grammar" which evolves while the learner is in the process of acquiring the second

language (L2). This system is based on an output of the L2 learner when s/he tries to communicate in the target language, and these utterances usually differ from what native speakers would produce to express the same meaning. Selinker claims that IL contains features between the L2 learner's native language and target language, but not identical to either of them.

IL is considered to be systematic, as the learner's language is controlled by some set of rules at every stage of development. However, this linguistic system is also dynamic and variable at the same time as these rules can change over time after the learner goes through a developmental stage.

Selinker (1972) suggests five psycholinguistic processes which are part of latent psychological structure including language transfer, transfer of training, strategies of L2 learning, strategies of L2 communication, and overgeneralization of L2 rules.

The first process is *language transfer,* which occurs when fossilizable items, rules, and subsystems in IL performance are the result of the learner's native language. In other words, the learner transfers some of the L1 rules or features to L2, such as the frequent use of the rising tone at the end of English wh-questions by L1 Vietnamese learners (Nguyễn & Đào, 2018) and the tendency for L1 Thai learners to drop some sounds in English final consonant clusters since such clusters do not exist in Thai (e.g. pronouncing "milk" as "mill") (see Sahatsathatsana, 2017). Second, *transfer of training* refers to the learner's application of L2 rules learned from training procedures, such as from textbooks or by teachers. Third, *strategies of L2 learning* means various strategies that the learner applies to the learning material in order to acquire L2. Fourth, *strategies of L2 communication* are strategies used by the learner to communicate with native speakers, such as focusing on communication rather than accuracy. The last process is *overgeneralization of L2 rules*, which occurs when the learner applies rules in inapplicable contexts, such as employing regular verb forms with irregular verbs, e.g. *runned, *writed, and *phoenomenons.

According to Selinker (1972), these five processes are not only central to the second language learning but also force fossilizable material upon the surface of the utterance. The term "fossilization" refers to the approximative rules that cannot be eliminated and become part of the stable interlanguage. This means that the learner's ability to learn L2 may cease to develop before s/he can reach the norm of L2.

Moreover, these rules tend to remain as potential performance and are more likely to re-emerge even though they seem to have been eradicated.

Based on Second Language Acquisition (SLA), IL has been claimed to be the first attempt to understand L2 learners' language system. IL focuses on the source of a learner's linguistic system, in the development and fossilization of learner rules, and in the influence of instruction on each developmental stage, rather than paying attention solely to whether or not learners are making errors (Selinker, 1972; Corder, 1982)

The L2 learner's language is considered to be a kind of unique language which has its own systematic rules. Data on IL can be obtained by elicitation of learner's judgements of grammaticality and/or observation of learners' communicative performance.

Finally, if the general principles of development of IL are found, these may help teacher to understand language learning process of the learner and can applied to find more effective ways of L2 teaching.

Stress

Definition of Stress

Stress, which is a suprasegmental feature, refers to emphasis or prominence given to a certain syllable in a word (lexical stress), or a certain word in a phrase or sentence (phrasal or sentence stress). Sound characteristics that make a syllable perceived as stressed usually include loudness, pitch, and vowel length (Roach, 2000).

The Stress System of English

In English, stressed syllables are usually described as those that are longer, louder, and higher in pitch with full articulation of vowel sounds, while unstressed syllables are said less distinctly with lower pitch and often with reduced vowels (Hall & Hastings, 2017; Roach, 2000). There are three degrees of stress in English: primary, secondary, and weak. For example, the word *ìntrodúce* is primarily stressed on the third syllable and secondarily stressed on the first syllable, while the second syllable of the word receives weak stress and its vowel is reduced to /ə/.

English is categorized as a free-stress language, which means the position of stress varies from word to word (Isarankura, 2016). However, rules concerning word stress could be formulated based on word classes. For instance, the majority of two-syllable nouns and adjectives have the primary stress on the first syllable (e.g. bóttle and cómmon), while the majority of disyllabic verbs have the primary stress on the second syllable (e.g. confíne and annóunce) (Yavaş, 2020). For many disyllabic nouns and verbs that are the same in the written form, the nouns are stressed on the first syllable, whereas the verbs on the second (e.g. pérmit *n.* vs. permít *v.*) (Yavaş, 2020). Reflexive pronouns are stressed on the final syllable (e.g. mysélf and themsélves) (Celce-Murcia et al., 2016). Word stress can also be determined by suffixes added to words (Celce-Murcia et al., 2016; Yavaş, 2020). Words with *stress-neutral suffixes* are stressed on the original syllable (e.g. cáre<u>ful</u>, pérmanent<u>ly</u>, néighbor<u>hood</u>, decísive<u>ness</u>, and advéntur<u>er</u>). Words with *stress-demanding suffixes* have the primary stress on the syllable containing those suffixes (e.g. enginéer, interview<u>ée</u>, Japan<u>ése</u>, and pictur<u>ésque</u>). Words with *stress-changing suffixes* are stressed on the syllable before the suffixes (e.g. symból<u>ic</u>, grammát<u>ical</u>, idént<u>ity</u>, geóg<u>raphy</u>, and biól<u>ogy</u>).

Stress of compound nouns and phrasal verbs will be discussed in English compounds section.

The Stress System of Thai

Stressed syllables in Thai share similar characteristics with English counterparts. That is, they are perceived as louder and said with longer vowels than unstressed syllables (Isarankura, 2016). Unlike English, Thai is considered a fixed-stress language, in which the last syllable of polysyllabic words usually receives the strongest stress (Luksaneeyanawin, 1983; Peyasantiwong, 1986). Secondary and tertiary stresses are also fixed on certain syllables, but they could be optional in natural speech (Isarankura, 2016)

English Compounds

A compound is a word formed by combining two or more units, each of which can stand alone as a word (Aarts et al., 2014). Compounds include compound nouns, compound adjectives, and compound verbs. Compound nouns and phrasal verbs, which are part of compound verbs

(see Aarts et al., 2014; McArthur et al., 2018), were the focus of this study.

English Compound Nouns

A compound noun is a noun made up of two or more words. Compound nouns can be formed by combining two nouns (e.g. wéekend), an adjective and a noun (e.g. déadline), a verb and a noun (e.g. bréakfast), a particle and a noun (e.g. áftersun), or they can be nouns derived from a phrasal verb (e.g. knóckout) (Collins, 2021). Compound nouns may be written as one word (e.g. bóyfriend), separate words (e.g. póst office), or with a hyphen (e.g. chéck-in).

Compound nouns are usually heavily stressed on the first element, but some do not follow this common stress pattern (e.g. apple píe, paper pláte, washing-úp) (see Collins et al., 2019). This common stress pattern of compound nouns is used to distinguish compound nouns from noun phrases (Celce-Murcia et al., 2016). For instance, 'the Whíte House' (= home of the US President) and 'a bláckbird' (= a type of bird) are compound nouns with the primary stress on the first element of each, while 'the white hóuse' and 'a black bírd' are noun phrases with the primary stress on the second element.

English Phrasal Verbs

A phrasal verb is a multi-word verb consisting of a lexical verb and at least one particle, which are combined to form a single unit (Aarts et al., 2014). According to DeCapua (2017), phrasal verbs can be classified into three groups:

(1) intransitive and separable (e.g. The plane *took off* in the morning.)
(2) transitive and inseparable (e.g. Tom *takes after* his grandpa.)
(3) transitive and separable (e.g. I forgot to *turn* the assignment *in*.)

Unlike compound nouns, stress usually falls on the second element, or the particle, of a phrasal verb (e.g. break dówn, carry óut). Therefore, in the case of phrasal verbs that have a corresponding

compound noun, stress would help express the intended meaning (e.g. break dówn *v.* vs. bréakdown *n.).*

Previous Studies on the Acquisition of English Stress Patterns

In this section, previous studies on the acquisition of English stress patterns in both non-Thai and Thai contexts are discussed.

Karjo (2016) explored the incorrect placement of lexical stress in Indonesian learners of English. In this study, thirty undergraduate students were asked to complete an intermediate repetition task – listening to 80 English words selected from Coxhead's Academic Word List and repeating them after each of them had been aurally presented. It was found that although the participants were provided with input before saying each word, they still could not correctly assign lexical stress. Five possible factors contributing to errors in stress placement were vowel height influence, mispronunciation of vowel, vowel length influence, misidentification of syllable structure, and orthographic influence.

Liu (2017) explored English stress placement based on negative transfer. In this study, seventy college students with L1 Chinese and L2 English read a story of around 600 words out loud, and ten participants with the most errors were later asked to give an interview. The results indicated that disyllabic English words were the most challenging for the Chinese learners to correctly assign stress, followed by tri-syllabic words. The researcher suggested three factors which could account for such errors, which were the learner's lack of knowledge concerning English syllabic structure, incorrect lengthening of vowel sounds in unstressed syllables, and unawareness of exceptions to certain stress rules. The researcher concluded by suggesting that teachers should emphasize the importance of English pronunciation in language classes.

Porzuczek & Rojczyk (2017) investigated the relations between production accuracy and metalinguistic knowledge concerning English word stress of Polish learners of English. The participants were divided into two groups: low proficiency learners with no phonetic training and high proficiency students who had completed phonetic training. Two tasks were employed: an oral production task, in which the participants read words aloud naturally, and an identification task, where they identified the syllable of each word that receives stress. In both tasks, the

high-proficiency group outperformed the other, leading to the conclusion that proficiency and phonetic training had great effects on both performance and competence of Polish learners. The researchers also indicated that having been exposed to spoken English as output could be another reason for the high proficiency group's superior performance in both conscious and subconscious aspects of English word stress acquisition.

Tuan (2018) examined Vietnamese elementary learners' recognition and production of English word stress. The learners' stress recognition and production of English lexical stress were measured through two different tasks of word stress assignment (a written test and an oral-reading test), and then an interview was conducted. The results of the written test showed that the L1 Vietnamese learners could successfully identify lexical stress, while those from the production task were not satisfactory, which could be due to L1 negative transfer as their L1 is a tonal language and their L2 is a stress-timed language. The learners' inconsistent performance could be explained by the fact that, in the reading task, the learners could not automatically activate their mental representations of lexical stress patterns, while such representations were accessible in the untimed written task. A correlation between the participants' production and the perception of lexical stress patterns was also observed.

Apart from studies on the acquisition of English word stress by L2 learners from different L1 backgrounds, those by L1 Thai learners were also explored.

Watanapokakul (2009) examined stress production and identification in English polysyllabic medical terms by first-year medical students and investigated their opinions on word stress in the medical profession. The instruments were a list of polysyllabic medical terms randomly chosen from a coursebook to test the participants' stress production and identification, and a four-point Likert scale questionnaire. The results showed that the learners had difficulties correctly pronouncing words with many syllables and that there was a correlation between the learners' competence and performance concerning lexical stress. Admitting their insufficient knowledge about lexical stress, most participants acknowledged the importance of word stress, which could affect communication in their profession.

Khamkhien (2010) studied Thai learners' pronunciation competence with regard to word stress and investigated whether

gender, faculty, and years of studying English had an effect on such competence. Ninety undergraduate students from three different science-related faculties were asked to complete a background questionnaire and a stress identification task, which consisted of 40 words selected from textbooks. The results showed that their performance was unsatisfactory considering that these words should be familiar to them. Statistical analysis revealed that gender was a significant predictor of Thai learners' performance in the stress identification task, in which female students outperformed male counterparts, but faculty of study and duration of studying English were not.

Isarankura (2018) investigated how L1 Thai learners pronounced and marked English stress in English loanwords. The participants were third-year English major students of two different English proficiency levels. Three tasks were employed: reading 30 target loanwords in sentences, reading the same words in isolation, and marking the primary stress of each target word. The results suggested transfer of L1 on L2 pronunciation, particularly in disyllabic loanwords, in which the learners tended to say the last syllable with full vowel length, causing the native speaker rater to perceive that syllable as being stressed. It was concluded that L1 transfer from the Thai phonological system impacted highly on less formal speech styles, i.e., in the reading-in-sentences task, possibly due to the fact that the participants did not pay attention to English stress rules in sentences and that they were familiar with Thai pronunciation of those frequently used loanwords.

Pakjamsai & Pongpairoj (2018) conducted a study to compare the effectiveness of explicit and implicit instruction of L2 English word stress among L1 Thai learners. The participants were equally divided into two groups. After the pre-test, in which the learners recorded their pronunciation and marked the stress of target words, one group was provided with rules of English word stress, while the other was given lists of words together with a recording of an English native speaker which they listened to and repeated. Finally, both groups completed the post-test. The score comparison between the two groups indicated explicit instruction led to higher rates of immediate improvement of word stress production and identification.

Jaiprasong & Pongpairoj (2020) investigated L1 Thai learners' English word stress production in words with different suffixes and compounds. Twenty undergraduate students – 10 intermediate learners and 10 advanced learners participated in two tasks: reading words in

isolation and reading words in sentences. The results revealed overall higher stress accuracy in the first task than the second, and superior performance of the advanced group in most types of words in both tasks. Several stress assignment errors made by the participants were attributed to the differences between the stress patterns of English and Thai. As there was inadequate pronunciation content in English textbooks used in Thailand, the researchers suggested teachers include the similarities and differences between the stress patterns of the two languages in their lessons for higher accuracy in word stress production.

It is worth noting that previous research on the acquisition of English stress patterns tended to focus on stress in words containing different numbers of syllables. To the best of our knowledge, there have been no studies conducted to systematically investigate L1 Thai learners' stress assignment focusing on different types of English compound nouns and phrasal verbs that have a corresponding compound noun. This study was thus conducted to fill in this gap.

Methodology

Participants

The participants in this study were 60 L1 Thai first-year students from nine different faculties at Chulalongkorn University (CU), Bangkok, Thailand, namely Allied Health Sciences, Architecture, Arts, Economics, Education, Engineering, Pharmaceutical Sciences, Political Science, and Science. The participants were equally divided into two English proficiency groups, namely intermediate and advanced, based on their CU-TEP[1], TOEFL, and IELTS scores as shown in Table 1[2]. It should be noted that Common European Framework of Reference for Languages (CEFR) was used to determine the ranges of the three English test scores of intermediate learners (B1) and advanced learners (C1).

Table 1

Ranges of English Test Scores for Each Proficiency Group

Tests	Intermediate group	Advanced group
CU-TEP	35-69	99-120
TOEFL (iBT)	42-71	95-113
IELTS	4.0-5.0	7.0-8.0

Research Instruments

Two research instruments were employed to measure stress production accuracy of the participants. The first task aimed to measure pronunciation accuracy of different kinds of compound nouns based on how they were formed, while the second task focused on the pronunciation of compound nouns and their corresponding phrasal verbs. In both tasks, the participants were asked to read sentences which contained target disyllabic compound nouns and phrasal verbs aloud. Each sentence was 10-14 words in length and one target compound noun or one target phrasal verb was placed at the end of the sentence. The sentences were designed in a way that compound nouns were uniformly singular and phrasal verbs were not inflected with any suffixes. Also, to reduce chances of the participants knowing what they were being tested on, sentences with target compound nouns and phrasal verbs were randomly mixed with sentences of similar length and difficulty serving as distractors.

The first task, or the compound noun task, consisted of 30 sentences with 12 test sentences, each of which featured a compound noun (four compound nouns derived from N + N, such as '*textbook*'; four derived from ADJ + N, such as '*software*'; and four derived from V + Par, such as '*backup*'[3]), and eighteen distractors. All target compound nouns were primarily stressed on the first syllable. Three examples of task items are shown below:

(1)   a. He painted his room black without asking for permission from the landlord.
       b. Considering the work progress, I am not certain that we will meet the deadline.
       c. Sam claimed that he hadn't received prior notice of the layoff.

The target words of 1a, 1b, and 1c were 'landlord' (N-N), 'deadline' (ADJ-N), and 'layoff' (V-Par), respectively. The first element of each word, i.e. 'land', 'dead', and 'lay', was primarily stressed.

Table 2

List of Target Compound Nouns in Task 1

N - N	ADJ - N	V - Par
landlord	deadline	layoff
nightmare	background	workout
textbook	sidewalk	backup
warehouse	software	breakthrough

The second task, or the compound noun - phrasal verb task, consisted of 20 sentences with eight test sentences, each of which featured either a compound noun or its corresponding phrasal verb (e.g. '*workout*' and '*work out*'), and 12 distractors. All target compound nouns were stressed on the first syllable, while all target phrasal verbs were primarily stressed on the second syllable. Two examples of task items are shown below:

(2)   a. Several companies refused to hire Mark because he was a university dropout.
        b. Suffering from severe depression, she thought it was best to drop out.

In 2a, the target word was the compound noun 'dropout' with the primary stress on 'drop', while in 2b, the target word was the phrasal verb 'drop out' with the primary stress on 'out'.

Table 3

List of Target Compound Nouns and their Corresponding Phrasal Verbs in Task 2

Compound nouns	Corresponding phrasal verbs
dropout	drop out
breakup	break up
comeback	come back
cleanup	clean up

The compound nouns and phrasal verbs used in this research were selected according to two criteria: appropriate level of difficulty and

high frequency. They were taken from NIETS[4]'s vocabulary list compiled from commercial English textbook series, all of which were approved by Thai Ministry of Education to be used in schools. Then the words on the list were checked for frequency in The Corpus of Contemporary American English (COCA) and ranked from highest frequency to lowest frequency. Only compound nouns and phrasal verbs with high frequency were included in the tasks. However, since there were not adequate compound noun-phrasal verb pairs in the list for Task 2, the researchers needed to add two compound nouns and one phrasal verb, i.e. "cleanup", "dropout", and "break up", respectively, so that there would be enough task items (see Appendices B and C for task sheets).

Both tasks were verified for their content validity using the Index-Objective Congruence (IOC), developed by Rovinelli and Hambleton (1977), to determine whether they can adequately measure the knowledge as indicated in the objectives of the tasks, i.e. stress assignment in compound nouns and phrasal verbs. Three experts[5] were recruited to evaluate each task item, giving the scores ranging from 1 to -1. The descriptions of the scores are as follows:

(3)   1 point: The task item was judged as congruent with the task objectives.

0 point: The task item could not be judged as either congruent or incongruent with the task objectives.

-1 point: The task item was judged as incongruent with the task objectives.

For each item, the scores from the three experts were added up and divided by the number of experts, as shown in the formula below.

(4) $IOC = \dfrac{\sum R}{n}$

$\sum R$ = the sum of the experts' scores
n = the number of experts

Each task item had to score higher than 0.5 in order to be deemed as an appropriate and valid task item. All the items administered to the subjects passed the IOC, with both the first task and the second task scoring 1, and both tasks were employed in a pilot study before the main study was carried out[6].

Procedure

Due to the COVID-19 situation, the administration of both tasks and data collection were done online. The researchers arranged to meet with small groups of participants (not more than four participants per session) via Zoom Cloud Meeting to administer the tasks in the second semester of the 2020 academic year. The participants would be sent a file containing sentences for Task 1, in which they were to record themselves reading all the sentences and submit the recording to the researchers within ten minutes so that they would read all the items spontaneously. Then the process would be repeated for Task 2, except that the participants would be given eight minutes as there are fewer sentences in this task. It should be noted that the participants were instructed to apply short pauses between sentences in both tasks so that sentence boundaries would be made clearer.

All the recordings from both tasks were then checked for stress assignment of target compound nouns and phrasal verbs by the three experts. Four rating codes, as shown below, were used to rate the pronunciation of each target word. The experts could also add additional comments (if any) next to the scores they gave.

(5)

Codes	Descriptions
1	The word was correctly stressed.
0	The word was not correctly stressed.
W	The word was mispronounced in a way that would greatly affect intelligibility.
S	The target word/the sentence containing the target word wasn't read or recorded.

The data collected were then analyzed using an independent-samples t-test and ANOVA to determine the (non-) significance of stress placement accuracy in compound nouns and phrasal verbs between the two participant groups. To ensure that data collected would truly represent the participants' stress production performance, only the pronunciations of participants who received all numeric scores – i.e. 1 (correct) or 0 (incorrect) – in each word set would be used for data analysis.

Results and Discussion

In this section, the results of the study will be primarily discussed in accordance with each task.

The Compound Noun Task

In the compound noun task, the proportions of scores and percentages showed that, for the advanced group, the correct stress production rates in the three compound noun types were quite high, i.e. 89.18% for ADJ-N compound nouns, 81.03% for N-N compound nouns, and 77.88% for V-Par compound nouns. On the contrary, the appropriate stress production in the intermediate group were at low rates, i.e. 50% for ADJ-N compound nouns, 37.93% for N-N compound nouns, and 38.10% for V-Par compound nouns. The data are shown in Table 4 below:

Table 4

Comparison of Correct English Stress Placement in Each Compound Noun Type

Types of compound nouns	Advanced group (N = 30)			Intermediate group (N = 30)		
	Mean	Percentages	SD	Mean	Percentages	SD
ADJ-N	3.567	89.18%	0.626	2.000	50.00%	1.195
N-N	3.241	81.03%	0.912	1.517	37.93%	1.214
V-Par	3.115	77.88%	1.107	1.524	38.10%	1.209

An independent-samples t-test was conducted in R (R Core Team, 2020) to compare correct rates of English stress placement on words in each compound noun type between the two learner groups, as shown in Table 5 below:

Table 5

Comparison of Correct English Stress Placement in Each Compound Noun Type via T-test

Types of compound nouns	df	SE	Effect size (Cohen's *d*)	t
ADJ-N	41.97	0.250	1.650	6.275***
N-N	51.99	0.282	1.606	6.115***
V-Par	41.16	0.342	1.380	4.658***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Results from an independent-samples t-test showed that there were high significant differences in the correct scores of all the compound noun types between the advanced and the intermediate groups: for the ADJ-N compound nouns, the scores of the advanced group were M = 3.57, SD = 0.626, and those of the intermediate group were M = 2.00, SD = 1.195; t = 6.275, p < 0.001, d = 1.650. For the N-N compound nouns, the advanced group's scores were M = 3.24, SD = 0.912, and the intermediate group's scores were M = 1.16, SD = 1.214; t = 6.115, p < 0.001, d = 1.606. For the phrasal verbs, the former group's scores were M = 3.12, SD = 1.107, and those of the latter group were M = 1.52, SD = 1.209; t = 4.658, p < 0.001, d = 1.380. The data therefore showed marked differences in appropriate stress placement in all the three compound noun types between the two learner groups, as correct English stress placement was highly evidenced in the advanced group, but not in the intermediate group.

According to the data presented in Tables 4 and 5, the advanced learner group outperformed the intermediate group in the stress production of compound nouns at a statistically significant rate (p < 0.001), suggesting a correlation between accuracy of stress placement and L2 English proficiency. Significantly higher accuracy of correct stress placement of the advanced learners could be explained by more exposure to spoken English, which shaped their English IL in terms of speech output, including stress placement, to be closer to the L2 norms. Moreover, with more L2 input, it was possible that the students with higher English proficiency were better at discerning the differences in loudness, pitches, and vowel length between stressed and unstressed syllables in words, which led to higher rates of correct stress production

(Jaiprasong & Pongpairoj, 2020). On the other hand, the intermediate learners, whose combined average correct percentage of stress assignment was lower than 50 percent, could be said to be in their transitional development in the acquisition of English stress patterns, and that it requires possibly more time and language input for their IL to reach the L2 norms. It should be noted that these findings are consistent with several previous studies that investigated the relationship between stress production and L2 English proficiency (e.g. Jaiprasong & Pongpairoj, 2020; Porzuczek & Rojczyk, 2017).

As the results showed that the L1 Thai advanced learners could pronounce English compound nouns with higher accuracy of stress assignment than the L1 Thai intermediate learners, Hypothesis 1, which states that L1 Thai advanced learners can pronounce English compound nouns and phrasal verbs with higher accuracy in terms of stress assignment than L1 Thai intermediate learners, was confirmed.

Appropriate English stress placement rates among the three compound noun types were compared in each learner group. Results were shown in Table 6 below:

Table 6

Comparison of Appropriate English Stress Placement Rates among the Three Types of Compound Nouns in Each Learner Group (ANOVA)

Participants	df	SE	Effect size (r^2)	F-statistics
Advanced group	2,82	0.893	0.037	1.941
Intermediate group	2,76	1.206	0.037	1.455

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

An analysis of variance (ANOVA) yielded no significant variation among the three compound noun types in both the advanced group ($F(2, 82) = 1.941$, $p > 0.05$, $r^2 = 0.037$) and the intermediate group ($F(2,76) = 1.455$, $p > 0.05$, $r^2 = 0.037$), suggesting that different compound noun types had no effect on (in)appropriateness of stress placement in both L1 Thai learner groups.

The evidence that L2 English stress placement rates among all three compound noun types by the advanced group were high at non-significant levels and those by the intermediate group were low at non-

significant levels indicated that the stress assignment (in)accuracy of each learner group was consistent across the three compound noun types. This suggests systematicity in L2 interlanguage of English stress in compound nouns by each learner group. Regardless of how compound nouns are formed, the IL of the advanced learners seemed to deviate less from the target norm than that of the intermediate learners. The performance consistency across the compound noun types investigated in this study could be attributed to the fact that the students with higher proficiency, due to having more exposure to L2 input, tended to be more aware that compound nouns are generally stressed on the first element, while those with lower proficiency were still in their transitional development of the acquisition of stress, according to the Interlanguage Hypothesis.

The Compound Noun – Phrasal Verb Task

In the compound noun – phrasal verb task, where compound nouns and phrasal verb counterparts were explored on L2 stress placement, the proportions of scores and percentages demonstrated the following. For compound nouns, the correct stress rate was much higher in the advanced group than in the intermediate group, i.e. 68.33% and 46.43%, respectively. However, the results for phrasal verbs were not in the same direction. That is, appropriate stress placement rates of the two groups, despite their different English proficiency levels, were at similar rates, i.e. 65.53% in the advanced group and 61.20% in the intermediate group. The data are shown in Table 7 below:

Table 7

Comparison of Correct English Stress Placement in Compound Nouns and their Corresponding Phrasal Verbs

Words	Advanced group (N = 30)			Intermediate group (N = 30)		
	Mean	Percentages	SD	Mean	Percentages	SD
Compound nouns	2.733	68.33%	1.413	1.857	46.43%	1.353
Phrasal verbs	2.621	65.53%	1.049	2.448	61.20%	1.152

An independent-samples t-test was conducted in R (R Core Team 2020) to compare appropriate English stress placement rates on each word type between the two L1 Thai groups, as demonstrated in Table 8:

Table 8

Comparison of Correct English Stress Placement in Compound Nouns and their Corresponding Phrasal Verbs via T-test

Words	df	SE	Effect size (Cohen's *d*)	t
Compound nouns	55.96	0.363	0.633	2.413*
Phrasal verbs	55.52	0.290	0.156	0.596

* p < 0.05, ** p < 0.01, *** p < 0.001

Results from the independent-samples t-test showed that correct stress on compound nouns in the advanced group (M = 2.733, SD = 1.413) and in the intermediate group (M = 1.857, SD = 1.353) was significant (df = 55.96, t = 2.413, p < 0.05). However, there was no significant difference in placing correct stress on their corresponding phrasal verbs between the two groups. (df = 55.52, t = 0.596, p > 0.05).

As the result from the compound noun − phrasal verb task demonstrated that the advanced Thai group outperformed the intermediate group in placing correct stress on compound nouns (68.33% and 46.43%, respectively), but not on their phrasal verb counterparts (65.53% and 61.20%, respectively), unlike in the first task, Hypothesis 1 was partially confirmed.

Emerging data worth exploring were that the accurate production rate of the phrasal verbs in the intermediate group appeared to be much higher than that of the compound noun counterparts. Interestingly, this higher rate led to the approximate accuracy rates on English phrasal verbs in the two Thai groups, despite their different English proficiency levels. Based on the Interlanguage Hypothesis (Selinker,1972; Corder, 1982), it is assumed that some factor came into play, giving rise to such L2 systematicity, which could be observed in not just the second task, but also the first one.

Considering factors in the Interlanguage Hypothesis, the factor of language transfer presumably caused the intermediate group to correctly produce the phrasal verbs at higher rates than their compound noun

counterparts in the second task. This is due to the fact that English phrasal verbs and Thai words in general have different stress patterns. In English phrasal verbs, the primary stress falls on the particle, which is the second as well as last element (see 2.3). In a similar vein, according to the Thai accentual system, stress in Thai is usually fixed on the last syllable (Luksaneeyanawin, 1983; Peyasantiwong, 1986) (see 2.2). The intermediate Thai learners possibly transferred this fixed stress pattern in Thai to English phrasal verbs, which happened to have the same stress placement, as well as to English compound nouns. Their accurate stress placement rate for the compound nouns, where the primary stress must be on the first word, was therefore at a much lower rate (46.43%) than that for phrasal verbs (61.20%).

Similarly, the factor of language transfer is also believed to have contributed to the results of the first task (the compound noun task). The overall much lower performance of the intermediate learners in the first task, in which their average percentages of ADJ-N, N-N, and V-Par compound nouns were 50%, 37.93%, and 38.10%, respectively, was most likely due to fact that these learners tended to inappropriately apply the stress pattern of their L1 (stressing the last syllable) in L2 compound nouns (stressing the first element).

Based on the findings in both tasks, Hypothesis 2 was confirmed as language transfer caused the systematicity in L1 Thai learners' IL concerning stress assignment in English compound nouns and phrasal verbs.

What is also worth observing from the finding in the second task is that the accurate rate in the V-Par compound nouns in the advanced group was much lower than that in the former task, 68.33% and 77.88%, respectively. It is assumed that this was due to task effects. The compound nouns and their corresponding phrasal verbs in this task were composed of exactly the same words (e.g. breakup - break up), possibly making it difficult and therefore confusing for the learners to make decisions of which component in each pair to put the primary stress on.

To summarize, the first hypothesis, which states that the higher English proficiency learners have, the higher accuracy concerning stress assignment they will demonstrate, was confirmed by the results of the compound noun task, but partially confirmed by the findings of the compound noun-phrasal verb task. The results of both tasks confirmed the second hypothesis, which states that L1 Thai learners' systematicity

of L2 English stress placement in compound nouns and phrasal verbs results from language transfer, based on the Interlanguage Hypothesis.

Conclusion

This study investigated the stress production in English compound nouns and phrasal verbs by L1 Thai learners. Despite the advanced learners' higher percentages in correct stress placement in both tasks, statistical results indicated a correlation between English proficiency levels and accuracy in stress placement in only compound nouns, but not phrasal verbs. Systematicity in the Thai learners' IL concerning stress placement in compound nouns and phrasal verbs was also observed, which was assumed to have been principally caused by L1 transfer.

The findings of the current study could lead to some implications in both linguistic and pedagogical aspects. With regard to linguistics implications, the study confirmed Interlanguage Hypothesis that there was observable systematicity of the Thai learners' acquisition of stress in compound nouns and phrasal verbs. Selinker's Interlanguage Hypothesis therefore proved to be a useful concept that could provide insight into the development of phonological output of L2 learners and lead to better understanding about factors of second language acquisition. Concerning pedagogical implications, explicit pronunciation instruction, as suggested in several studies (e.g. Karjo, 2016; Liu, 2017; Pakjamsai & Pongpairoj, 2018), is highly recommended to improve learners' stress production. Additionally, presentation of pronunciation content in the classroom needs to be carefully organized so that awareness of phonological differences between Thai and English and significance of correct stress placement in the target language can be successfully developed. To improve L2 learners' spoken input concerning stress in compound nouns and phrasal verbs, the common stress pattern of both compound types should be presented side-by-side, and such explicit instruction should be followed by stress perception and production practices.

There are some limitations of this study and recommendations for future research. First, this study examined only stress production in compound nouns and phrasal verbs. Future research should investigate whether a correlation between perception and production of English stress could be observed. Moreover, it would be interesting to carry out a similar study with focus on compound nouns and phrasal verbs with

more than two syllables. Additionally, whether accuracy of stress production is affected by positions of compounds in a sentence and surrounding words is worth investigating. Lastly, an interview should be conducted upon the completion of performance tasks to investigate whether classroom instruction and learners' strategies of producing English stress contribute to their IL systematicity.

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Endnotes

[1] CU-TEP is the acronym for Chulalongkorn University Test of English Proficiency and is run by the Chulalongkorn University Language Institute. CU-TEP scores are commonly required for admission to undergraduate and graduate programs in Thailand.

[2] Originally, only CU-TEP scores were used to recruit participants for this study. However, due to the COVID-19 situation, rounds of CU-TEP examination, which all first-year CU students are required to take, had been postponed, and we could not get enough students with CU-TEP scores to participate. To reach the target number of participants of 60, we found it necessary to add TOEFL and IELTS scores as alternative requirements in the recruitment. We used the comparison table of each exam score to CEFR levels indicated by CU Academic Testing Center (for CU-TEP), ETS (for TOEFL), and IELTS (for IELTS) (see Appendix A).

[3] N, V, ADJ, and Par stands for noun, verb, adjective, and particle, respectively.

[4] NIETS stands for The National Institute of Educational Testing Service.

[5] The experts were two native speakers of English and one Thai teacher who grew up in the US and has taught English pronunciation for 15 years. All of them are full-time lecturers at The Department of English, Faculty of Arts, Chulalongkorn University.

[6] The methodology was approved by the Office of the Research Ethics Review Committee for Research Involving Human Subjects: The Second Allied Academic Group in Social Sciences, Humanities and Fine and Applied Arts, Chulalongkorn University.

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Appendix A

Table A1

Comparison of CU-TEP, TOEFL, and IELTS scores to CEFR levels

CEFR levels	CU-TEP (Max 120 points)	TOEFL iBT (Max 120 points)	IELTS (Max 9)
C2	n/a	114-120	8.5-9.0
C1	99-120	95-113	7.0-8.0
B2	70-98	72-94	5.5-6.5
B1	35-69	42-71	4.0-5.0
A2	14-34	n/a	Below 4.0
A1	n/a	n/a	

The CU-TEP and CEFR comparison is proposed by Chulalongkorn University Academic Testing Center (CU-ATC). (Source: http://www.atc.chula.ac.th/pdf2017/Score_CEFR.pdf)

The TOEFL iBT and CEFR comparison is proposed by Education Testing Service (ETS). (Source: https://www.ets.org/toefl/score-users/scores-admissions/compare)

The IELTS and CEFR comparison is proposed by IELTS. (Source: https://www.ielts.org/-/media/pdfs/comparing-ielts-and-cefr.ashx)

Appendix B

Task 1 (30 items)*
Estimated time: 10 minutes
Instructions:
This task consists of 30 sentences. You are to record yourself reading all the sentences out loud. At the beginning of the recording, state your subject number and the task number. Please note that you are **NOT** allowed to use dictionaries or any resources.

> "Subject number ___" → "Task one"

1. Keep in mind that your New Year's resolutions must be realistic.
2. The seats reserved for the disabled were completely full.
3. Did all people in the village really believe that salesman?
4. I need a decent pair of sneakers for my daily **workout**.
5. The exhibition presents 100 breathtaking photos from around the world.
6. The spread of COVID-19 is every hotel owner's worst **nightmare**.
7. Considering the work progress, I am not certain that we will meet the **deadline**.
8. The brothers were worried that they would end up in jail.
9. In LA, police ticket thousands of pedestrians annually for jay-walking.
10. I have learned so much about Thai politics from this **textbook**.
11. Kevin was a nuisance in class, talking back, bothering the girls.
12. Women and children can be heard screaming in the **background**.
13. Time has run out, so we explained the process in the next lecture.
14. Mike was in danger of believing the propaganda spread by the government.
15. Greatly outnumbered by the gang, the police immediately requested **backup**.
16. Orders shipped via standard delivery typically arrive in 5 business days.
17. He painted his room black without asking for permission from the **landlord**.
18. Chocolate cake and coke for breakfast – are you kidding me?
19. The breakfast buffet is included in the price of the room.

20. The police are investigating the cause of the fire that destroyed the **warehouse**.
21. The company has done absolutely nothing to resolve the conflict.
22. Can a person stay healthy and physically fit just by walking?
23. Sam claimed that he hadn't received prior notice of the **layoff**.
24. Rather than waiting for the authorities to do something, we should act now.
25. The driver lost control of the vehicle and hit a vendor on the **sidewalk**.
26. My mother says I don't work hard enough, but I do work hard.
27. You have to close all applications before installing the **software**.
28. Developing a vaccine using new gene technology is an impressive medical **breakthrough**.
29. The company is working on ways of improving the lifespan of the battery.
30. Nothing irritates me more than parents who gloats about their children.

****** End of Task 1 *****

[*] In the original task sheet sent to the participants, the target compound nouns are not in bold type.

Appendix C

Task 2 (20 items)[*]
Estimated time: 8 minutes

Instructions:
This task consists of 20 sentences. You are to record yourself reading all the sentences out loud. At the beginning of the recording, state your subject number and the task number. Please note that you are NOT allowed to use dictionaries or any resources.

"Subject number ___" → "Task two"

1. Social distancing and lockdowns are believed to help flatten the curve.
2. Unable to stand the presence of each other, they agreed to **break up.**
3. How many times do I have to tell you to cut down on calorie?
4. Several companies refused to hire Mark because he was a university **dropout**.
5. Is it a crime to witness a robbery and say nothing?
6. I never thought that loose jeans would ever **come back**.
7. Getting kicked out of the team is Nick's biggest fear.
8. It's high time we gave our place a good **cleanup**.
9. Can you believe that another year has gone by so quickly?
10. I was a frequent customer of the bar during my college years.
11. Suffering from severe depression, she thought it was best to **drop out**.
12. It doesn't matter what you say as long as you love that girl.
13. I would like to take a crash course in letting go.
14. The band was popular a decade ago and is trying to stage a **comeback**.
15. Not paying the rent, the brothers were evicted from the apartment.
16. Here are recommended shows to binge-watch on Netflix this weekend.
17. It is reasonable to expect everyone at the party to help **clean up.**
18. Those businessmen need to think more about preserving the environment.

19. Going to couple counselling is one way to prevent a **breakup**.
20. Sports critics claim that many athletes are overpaid and overrated.

***** End of Task 2 *****

* In the original task sheet sent to the participants, the target compound nouns and their corresponding phrasal verbs are not in bold type.