The Role of Input Frequency on the Acquisition of English Adjectival Suffixes by L1 Thai Learners

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บทบาทของความถี่ข้อมูลต่อการรับหน่วยคำเติมท้ายคุณศัพท์ในภาษาอังกฤษของผู้เรียนชาวไทย

นายชลิต เจียรเกียรติ

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สารนิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรมหาบัณฑิต
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งานวิจัยนี้ศึกษาการรับหน่วยคำเติมท้ายคุณศัพท์ในภาษาอังกฤษโดยผู้เรียนที่มีภาษาไทยเป็นภาษาแม่เพื่อทดสอบว่าความถี่ข้อมูลซึ่งปรากฏในคลังข้อมูลการใช้ภาษาอังกฤษ (Almulla, 2015; Biber, 1993) มีอิทธิพลต่อการรับรู้หน่วยคำเติมท้ายคุณศัพท์ในภาษาอังกฤษหรือไม่ ภายใต้กรอบแนวคิดความถี่ข้อมูล (input frequency) (J. Bybee, 2010; J. L. Bybee & Beckner, 2010; Croft & Cruse, 2004) ผู้วิจัยตั้งสมมติฐานว่าความถี่รูปศัพท์หรือความถี่ของหน่วยคำเติมท้าย (type frequency) และความถี่รูปคำหรือความถี่ของคำ (token frequency) ส่งผลต่อการรับรู้หน่วยคำเติมท้ายนี้ นักศึกษาระดับปริญญาตรีที่มีภาษาไทยเป็นภาษาแม่และมีสมิทธิภาพทางภาษาอังกฤษระดับกลางจำนวน 30 คนทำแบบทดสอบตัดสินความถูกต้องทางไวยากรณ์ซึ่งรวบรวมข้อมูลความถี่รูปศัพท์และความถี่รูปคำจากคลังข้อมูล MorphoQuantics ผลการวิจัยพบว่าความถี่ข้อมูลทั้งความถี่รูปศัพท์และความถี่รูปคำส่งผลต่อการรับรู้หน่วยคำเติมท้ายคุณศัพท์ในภาษาอังกฤษ อย่างไรก็ตามความถี่รูปคำมีบทบาทในการรับหน่วยคำเติมท้ายนี้มากกว่าอย่างมีนัยสำคัญ ทั้งนี้เป็นไปได้ว่าผู้เรียนที่มีภาษาไทยเป็นภาษาแม่ได้พบเห็นคำคุณศัพท์ที่ประกอบด้วยหน่วยคำเติมบ่อยกว่าหน่วยคำเติมท้ายคุณศัพท์นั้นๆ ผลการวิจัยนี้ชี้ว่าผู้เรียนเหล่านี้มีแนวโน้มที่จะรับและเข้าถึงคำคุณศัพท์ในภาษาอังกฤษเป็นหน่วยคำเดียวแทนที่จะแยกคำคุณศัพท์ออกเป็นหน่วยคำแปลง (J. L. Bybee & Beckner, 2010)

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Chalit Chiarakiat : The Role of Input Frequency on the Acquisition of English Adjectival Suffixes by L1 Thai Learners. Advisor: Assoc. Prof. NATTAMA PONGPAIROJ, Ph.D.

This study examined the acquisition of English adjectival suffixes by L1 Thai learners to test whether input frequency, which refers to frequency of occurrences in corpora of English usage (Almulla, 2015; Biber, 1993), influenced the perception of the targeted English adjectival suffixes. Based on the input frequency framework (J. Bybee, 2010; J. L. Bybee & Beckner, 2010; Croft & Cruse, 2004), it was hypothesized that type frequency (suffix frequency) as well as token frequency (word frequency) would have a positive effect on the perception. A Grammaticality Judgement Test which incorporated type and token frequency counts from the MorphoQuantics corpus was administered to 30 intermediate L1 Thai undergraduate students. The results showed that input frequency, both type and token frequency, had an effect on the perception of English adjectival suffixes. Token frequency, however, seemed to play a more significant role in the acquisition possibly because L1 Thai learners were more exposed to the affixed adjectives than to the adjectival suffixes themselves. The results indicated that the learners were likely to acquire and access English adjectives as single units rather than parsing them into derivational morphemes (J. L. Bybee & Beckner, 2010).

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The Role of Input Frequency on the Acquisition of English Adjectival Suffixes by L1 Thai Learners

1. Introduction

English parts of speech, especially content words such as nouns, verbs, adjectives and adverbs, seem to be one area of errors made by second language (L2) learners, whether in production or perception. The wrong use of English parts of speech by L2 learners is well-documented (Alotaibi & Alotaibi, 2017; Friedline, 2011; Jiang, 2000). For example, adjectives are one problematic part of speech discovered in several studies (Hemchua & Schmitt, 2006; Pongpairoj, 2002; Sayer & Abdulsalam, 2018).

Among fields of second language acquisition (SLA) studies lies the acquisition of English morphology. Morphological knowledge is critical for L2 English learners because it helps enlarge their lexical storage. The more morphological awareness learners have, the greater growth in their vocabulary repertoire (Anglin, Miller, & Wakefield, 1993). However, L2 learners of English tend to have "very special problems acquiring morphology" (Friedline, 2011), which could affect their stages of L2 lexical development (Jiang, 2000). While a number of SLA studies have been focused on many different morphological features, little attention has been paid to the study on the acquisition of L2 English derivational morphology, specifically adjectival suffixes (Hemchua & Schmitt, 2006; Sayer & Abdulsalam, 2018).

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Morphemes are the smallest meaningful units in a language. English is an inflectional language where morphemes can be categorized as inflectional (grammatical) and derivational (semantic) (Fromkin, Rodman, & Hyams, 2018) (See 7.4 for details on inflectional and derivational morphemes). A number of variabilities found in many L2 learners' production and perception concerned morphological errors. Specifically, English suffixes, especially with derivational suffixes, could sometimes confuse L2 learners due to the fact that words with different parts of speech share the same or similar meanings. For example, an L2 learner of English may mistake a noun for an adjective in a sentence like 'The world is *globalization'. Instead of attaching the adjectival suffix '-ed' to the verbal root globalize to derive globalized, an error emerges when the nominal suffix '-ation' is added to the root, resulting in the incorrect word class. When focusing on errors from misusing English suffixes, adjectival suffixes tend to be one area where many L2 learners of English seem to struggle frequently.

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Input frequency or frequency of occurrences provides evidence about cognitive representation of linguistic features (J. L. Bybee & Beckner, 2010). The more repetitive certain features occur, the more frequent those features are naturally represented. Input frequency can be divided into token frequency, the number of times a word or phrase occur in natural running texts, and type frequency, the number of different items that can be used in a particular pattern (2010, p. 839). There have been a few studies investigating the influence of input frequency on the

acquisition of derivational morphology, e.g. L1 acquisition of derivational morphology in Finnish vocabulary by L1 Finnish learners (Bertram, Laine, & Virkkala, 2000), and L2 acquisition of English derivational suffixes among L1 Kurdish learners (Sayer & Abdulsalam, 2018). In the Thai context, to the best of my knowledge, there has been only one study examining the effect of input frequency on SLA. However, the study explored the acquisition of English infinitive and gerund complements by L1 Thai learners (Keawchaum & Pongpairoj, 2017). Therefore, this study bridged the gap by investigating the influence of input frequency on the acquisition of English adjectival suffixes by L1 Thai learners.

This study concentrated on the input frequency effect on the acquisition of English adjectival suffixes by L1 Thai learners. The focus was mainly on the learners' perception because none of the previous studies had explored L2 learners' perception. The study aimed to (1) investigate the role of input frequency on the acquisition of English adjectival suffixes by L1 Thai learners; (2) classify English adjectival suffixes according to their input frequency in order to display the target suffixes with distinct type frequency (suffix frequency) and token frequency (word frequency); and (3) find out whether token frequency or type frequency would affect the perception of English adjectival suffixes more.

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2. Research Questions

2.1 Does input frequency have a positive effect on the acquisition of English adjectival suffixes by L1 Thai learners?

2.2 Does type frequency or token frequency affect the perception of the targeted English adjectival suffixes more?

3. Hypothesis

The hypothesis of the study is as follows:

Input frequency, both token and type frequency, would have a positive effect on the perception of English adjectival suffixes by L1 Thai learners.

4. Significance of the Study

The study is significant as it contributed to SLA by investigating the influence of input frequency on the acquisition of L2 English adjectival suffixes by L1 Thai learners and examining whether type or token frequency would affect the acquisition more.

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5. Scope of the Study

The study concentrated on the effect of type and token frequency on the acquisition of English adjectival suffixes by L1 Thai learners. The focus was mainly on the learners' perception because none of the previous studies had explored L2

learners' perception. The task used was therefore Grammaticality Judgement Task (GJT). The participants of the study were 30 first-year undergraduate students at Chulalongkorn University whose English proficiency was in the intermediate level.

6. Definitions of Terms

Input frequency refers to the frequency of occurrences of certain linguistic features in running texts (N. Ellis & Collins, 2009). In this study, input frequency can be divided into type and token frequency, both of which were the 2 variables of the study.

Type frequency is the number of different items that can be used in a particular pattern (J. L. Bybee & Beckner, 2010). As of this study, type frequency refers to the frequency counts of the 8 target English adjectival suffixes.

Token frequency counts the number of times a word or phrase occur in natural running texts (J. L. Bybee & Beckner, 2010). In the study, token frequency refers to the frequency counts of the 16 target affixed adjectives which were derived from the 8 target suffixes.

English adjectival suffixes are derivational morphemes that are bound to the end of other verbs, nouns, and adjectives in order to derive new adjectives (Pongpairoj, 2011). As of this study, 8 English adjectival suffixes were selected and divided into 2 groups: 4 adjectival suffixes with high type frequency and the other 4 suffixes with low type frequency.

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7. Literature Review

This section reviews 7.1 related theory, 7.2 the use of corpus data as representative of language use, 7.3 previous studies in language acquisition of English derivational suffixes, and 7.4 adjectival suffixes.

7.1 Related Theory

Given that the present paper intended to investigate the role of frequency on SLA of English adjectival suffixes by L1 Thai learners, this section reviews the related theory which is prone to account for the relationship between the frequency levels of English adjectival suffixes and the participants' perception of such suffixes — i.e. input frequency.

Generative linguists have been holding longstanding view that language competence is innate by the help of Universal Grammar (UG) (Chomsky, 2006, p. 112). On the other hand, the usage-based theory postulates that linguistic knowledge is more likely to stem from language use and linguistic experience instead (J. Bybee, 2010; J. L. Bybee & Beckner, 2010; Croft & Cruse, 2004). Usage-based models of language acquisition highlights the significance of input and, as the name implies, the role of usage in language processing (N. Ellis & Collins, 2009). That is to say, human beings' linguistic knowledge is implicitly founded on language input, rather than innate language faculty.

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According to the usage-based theory, the frequency of input is of central importance in every subfield of language processing as well as language acquisition. N. C. Ellis (2002) illustrated this as follows:

> Input frequency affects the processing of phonology and phonotactics, reading, spelling, lexis, morphosyntax, formulaic language, language comprehension, grammaticality, sentence production, and syntax.
>
> (N. Ellis & Collins, 2009, p. 330)

Input frequency emphasizes the role of input in language learning rather than innate abilities. To put it simply, the more frequent a particular linguistic form or pattern occurs, the faster and easier a language learner may process and hopefully acquire it. Moreover, frequency effects require language learners to possess certain patterns of occurrences in their cognitive system (2009, p. 330). Namely, once repetition helps strengthen certain linguistic forms, frequency of such input is automatically represented in cognition (J. L. Bybee & Beckner, 2010, p. 839).

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As a determiner of linguistic representation in mind, input frequency can be classified into 2 distinct sorts of frequency: 7.1.1 token frequency and 7.1.2 type frequency (J. L. Bybee & Beckner, 2010; Croft & Cruse, 2004; N. Ellis & Collins, 2009).

7.1.1 Token Frequency

Token frequency refers to how often a particular form — including words like 'have' and phrases like 'I don't think' — emerges in the input or the running texts (J. Bybee & Thompson, 1997; J. L. Bybee & Beckner, 2010; N. Ellis & Collins, 2009). To put differently, token frequency is the frequency of words or phrases in language use. Croft and Cruse (2004) noted that "[a] high token frequency for a word corresponds to a high number of specific usage events with that word" (p. 309). In other words, if a particular word is frequently used or accessed, it will surely have a high token frequency and will, therefore, be activated for future use more easily. This is due to the fact that the representation of the form in a speaker's cognition is entrenched, strengthened, every time that particular word is used (Croft & Cruse, 2004). For example, 'lie' and 'prevaricate' share the same semantic relation meaning "to deliberately tell someone something that is not true"; however, the former has higher token frequency and the latter lower token frequency due to a higher number of specific usage events with the word 'lie' (p. 309). In this study, token frequency refers to word frequency of affixed adjectives.

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7.1.2 Type Frequency

Type frequency, on the other hand, counts the number of "distinct lexical items" which can be employed in "a given slot in a construction" (J. Bybee & Thompson, 1997; J. L. Bybee & Beckner, 2010; N. Ellis & Collins, 2009). For instance,

the considerable *number* of 'adjectives' that can co-occur with the given nominal suffix '-ness' may be considered type frequency. J. L. Bybee and Hopper (2001) provided an example of English part tense suffix '-ed', which has a very high type frequency since this regular past tense suffix is productive and applies to thousands of verbs, whereas the irregular past form — such as 'swim/swam' and 'ring/rang' — has much lower type frequency (p. 365). This signifies that one function of high type frequency is its productivity, the ability to apply the construction to a number of lexical items. J. L. Bybee and Beckner (2010) offered an account for this, saying that "[a] higher type frequency also gives a construction a stronger representation, making it more available or accessible for novel uses" (p. 842).

When constructions or patterns occur very frequently, they strengthen the representation of the patterns in a speaker's mind, which would familiarize the speaker with such constructions. As a result, the speaker tends to be more sensitive to these constructions and thus acquire them more naturally than those with lower type frequency.

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7.2 The Use of Corpus Data as Representative of Language Use

As mentioned in 7.1, under input frequency, language acquisition is likely to be based on language use and frequency of occurrences rather than innate abilities. This language use is reflected in corpora, a collection of actual language data (Almulla, 2015; Biber, 1993). In other words, corpus data can be regarded as a

representative of language use, and also yield the frequency information which is the evidence for the input frequency framework. Furthermore, frequency counts in a corpus are supposed to be "a very good indicator of linguistic representation entrenchment" of how frequent the words are used in running texts (Mukherjee, 2006). Gahl, Jurafsky, and Roland (2004) pointed out the reliability of using corpus data as representative of language use, adding that the larger the corpus is, the more frequency counts, and the better it represents language as used in real life. Accordingly, a larger corpus tends to occasion a comparatively reliable representation of actual language use due to frequency information.

For these reasons, the researcher decided to employ the frequency counts of English adjectival suffixes from the *MorphoQuantics* corpus (http://morphoquantics.co.uk). The frequency counts adopted in this study came from just one corpus (the MorphoQuantics corpus) which, to the best of my knowledge, was the only corpus that provided type and token frequency counts of word-initial and word-final affixes in Spoken English from British National Corpus (BNC) at the time. MorphoQuantics.co.uk is the website for quantitative analysis of derivational morphemes extracted from the spoken element of the BNC, which was developed by Laws and Ryder (2014). The MorphoQuantics corpus is an online searchable dataset, which contains frequency data of 835 English derivational morphemes that "have not been recorded elsewhere, either for written or for spoken English" (2014, p. 12). The website, released in November 2014, is comprised

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of a comprehensive set of 554 word-initial and 281 word-final morphemes in English, from a corpus size of 1,008,280 tokens. The morphemes are provided with their meanings, etymology, as well as token and types frequency. Furthermore, it is suggested that the frequency provided is suitable for controlling stimulus material for use in empirical studies. There was one study (Sayer & Abdulsalam, 2018) which employed the English derivational suffix dataset in the MorphoQuantics corpus (See 7.3.2). For these reasons, this present study intended to utilize the frequency counts of English adjectival suffixes in this corpus as the representative of how people actually use these suffixes in real life.

7.3 Previous Studies in Language Acquisition of Derivational Morphology

This study was primarily concerned with frequency effect on the acquisition of English adjectival suffixes by L1 Thai learners. This section, accordingly, reviews previous studies regarding the acquisition of derivational morphology by 7.3.1 L1 speakers, 7.3.2 L2 learners from various L1 backgrounds, and 7.3.3 L1 Thai learners.

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7.3.1 Language Acquisition of Derivational Morphology by L1 Speakers

Tyler and Nagy (1989) investigated the acquisition of English derivational morphology among L1 English fourth-, sixth- and eighth-graders in order to assess different aspects of their knowledge on derivational suffixes. They also proposed the

3 aspects of the knowledge of derivational morphology: (1) *relational knowledge* which is the ability to relate semantic meaning of words (e.g. ‘celebratory' is related to ‘celebrate’); (2) *syntactic knowledge* which is the ability to identify word class according to derivational suffixes (e.g. ‘X-ic’ is an adjective); and (3) *distributional knowledge*, which is the knowledge of constraints of what bases and what suffixes can occur together (e.g. ‘-ive’ works in ‘persuade/persuasive', but not in ‘resident/*residentive’, and the adjective-forming suffix of continent is ‘-al/continental', not -‘ial/*continential’). The participants were 100 American students divided into 3 groups, namely 40 fourth-graders, 30 sixth-graders and 30 eighth-graders. Three experiments were conducted with the subjects to test relational, syntactic and distributional knowledge, respectively. The findings indicated that children developed relational knowledge before the fourth grade, syntactic information of the suffixes around the eighth grade, and distributional properties gradually from the sixth grade onwards. Finally, Tyler and Nagy (1989) also suggested some implications for SLA, pointing out that L2 learners may encounter difficulties with derivational morphology due to various factors: limitations of reading, vocabulary and test-taking skills, as well as the lack of derivational knowledge.

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Bertram et al. (2000) examined the role of derivational morphology in Finnish vocabulary acquisition by native elementary school children. They adopted frequency counts of morphologically complex words from Schreuder and Baayen (1995)’s corpus data so as to investigate the frequency effects on vocabulary

acquisition. The participants were 64 elementary schoolers, whose first language is Finnish. The subjects participated in 2 experiments to assess the relationship between the target suffix frequency and the students' levels of comprehension and production. The results reinforced the role of frequency in language acquisition, adding evidence to the input frequency concept. The participants seemed to perform better with high-frequency suffixes and their monomorphemic words. Yet, derived words with low-productive suffixes yielded poorest performance. The researchers then concluded that the frequency had a significant effect on the students' perception of the derived words, but not on production.

7.3.2 Language Acquisition of Derivational Morphology by L2 Learners from Different L1 Backgrounds

Jiang (2000) attempted to outline a framework for SLA of vocabulary in instructional setting, which is composed of 3 stages for L2 lexical development. First, the *formal stage* is when only orthographic and phonological knowledge of L2 vocabulary is stored. Second, the *lemma mediation stage* is when L2 syntactic knowledge is added into L2 lexicon but with L1 syntactic-semantic representation. Lastly, the *L2 integration stage* is when all 3 components of Tyler and Nagy (1989)'s morphological knowledge — relational, syntactic and distributional knowledge — are fully developed and composed in L2 lexical entry. However, Jiang predicted that L2

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learners may fossilize at the second stage, i.e. the lemma mediation stage, before reaching native-like competency in terms of L2 lexical development.

Friedline (2011) investigated SLA of English derivational morphology. There were 3 parts in this research: (1) measuring L2 learners' English derivational knowledge, (2) investigating the effects of input and output instruction on acquisition, and (3) examining the learners' attitudes, actions and motivations toward learning derivational morphology. However, only the first 2 studies are reviewed here since the main interest of this present paper is on the L2 acquisition of English adjectival suffixes by L1 Thai learners, not their attitudes toward the learning these suffixes. In Study 1, the researcher used measures of derivational knowledge developed from Tyler and Nagy (1989)'s L1 research to test how well and different L1 English speakers (N=23) and L2 English learners (N=58) can acquire English derivational morphemes. The findings showed that L2 learners performed poorer regarding the knowledge of derivational morphology, compared to L1 learners, irrespective of L1 background or L2 proficiency (2011, p. iv). As for Study 2, Friedline (2011) employed the results from Study 1 and investigated the effects of input-processing (strategies and mechanisms which promote form-meaning connections during comprehension) and pushed-output instruction (where students are asked to reconstruct the original text using notes taken while reading) on improving perception and production of L2 derivational morphology. The results demonstrated that input frequency led to better immediate and long-term learning than pushed-output conditions. In sum,

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both Study 1 and Study 2 suggested that frequency of derivational morphology had a positive effect on the acquisition by L2 English learners.

Alotaibi and Alotaibi (2017) assessed the acquisition of English derivational suffixes by L1 Kuwaiti learners. Tyler and Nagy (1989)'s framework of neutral and non-neutral derivatives were adopted, stating that 'neutral suffixes' — e.g. '-ness', '-er', '-ize' and '-ment' — are usually added to free morpheme and do not cause changes of stress or vowel quality in the word to which they are added. For example, the neutral suffix '-ness' does not change phonological quality to the stem 'good' when affixed into 'goodness'. On the contrary, 'non-neutral suffixes', which are added to bound morpheme, tend to cause the changes. The participants were 90 Kuwaiti EFL learners and tested on the awareness of the correct use of English derivational suffixes. A multiple-choice test was administered to measure the learners' perception, whereas a cloze test was adopted to test their production. The findings exhibited that the participants performed better on the comprehension part than the production part, and levels of proficiency did affect SLA. Moreover, the subjects tended to make higher errors with non-neutral derivational suffixes than their neutral counterparts.

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As aforementioned in 7.2, Sayer and Abdulsalam (2018) decided to utilize the frequency data appeared on the MorphoQuantics corpus (Laws & Ryder, 2014) as the representative of language use in their research on L1 Kurdish undergraduate students, aiming to examine the students' performance on the comprehension and

production of English derivational suffixes. The participants were tested on 12 English derivational suffixes. These 12 suffixes were chosen and divided into 3 groups based on their type frequency data in the corpus. For example, the first 4 suffixes had *high* type frequency — i.e. '-ly' adverbial (111,045), '-ion' (52,016), '-ty' (38,421) and '-al' adjectival (37,583). The next 4 suffixes had medium type frequency — i.e. '-ous' (8,116), '-or' (7,837), '-ic' (7,500) and '-al' nominal (7,384). The last 4 suffixes had low type frequency — i.e. '-ways' (35), '-ie' diminutive (18), '-ette' diminutive (14) and '-let' diminutive (10). These suffixes were selected as stimuli in a multiple-choice test and a fill-in-the-blank test in order to elicit comprehension and production skills, respectively. The results of the study indicated that there was a significant relationship between the participants' proficiency level and the perception and production of English derivational suffixes. Additionally, the findings revealed that the frequency of English derivational suffixes affected only the perception of such suffixes. No relationship was found between the frequency of English suffixes and the participants' production of these suffixes. This result was in line with Bertram et al. (2000)'s claim that frequency had a significant effect on the comprehension of derived words. Finally, the researchers pointed out that L1 Kurdish learners' performance in the perception test was much better than the production test.

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7.3.3 Language Acquisition of Derivational Morphology by L1 Thai Learners

Pongpairoj (2002) investigated syntactic, morphological and word usage errors in written English by L1 Thai undergraduates in order to indicate error frequency and causes of the errors. Contrastive analysis and error analysis, along with interlingual interference, were utilized to account for various errors found in paragraph writing of 100 first-year Arts students at Chulalongkorn University. The findings revealed that errors in writing came from word usage, morphological errors, and syntactic errors. With regard to morphological errors, 18.02 % of suffix errors were those of derivational suffixes. One cause of errors in derivational suffixes stemmed from the misuse of suffixes by attaching wrong morphemes to a part of speech, e.g. 'Making omelet is very *easily.' and 'My home is my *happily place.' One cause of the errors occurred as the consequence of interlanguage interference. That is, English is an inflected language whereas Thai is not, and therefore "English morphemes do not have corresponding constructions in Thai" (2002, p. 83).

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Hemchua and Schmitt (2006) examined L1 Thai third-year university students' lexical errors in their English composition, adopting error taxonomy framework, which divides written errors into 2 types: formal errors (morphological and word formation errors) and semantic errors (semantic relation, collocation and stylistic errors). The results demonstrated that 'near synonyms', 'preposition partners' and suffixes were the top 3 sources of lexical errors, respectively. The causes of errors were claimed to stem from "L2 intrinsic difficulty" rather than L1 transfer. One source of errors in L1

Thai learners' writing errors originated from the misuse of English suffixes, where the participants struggled with using accurate derivational morphemes corresponding to their parts of speech, accounting for around 80 % of the suffix errors — e.g. "It is said that today our world is *globalization (globalized)" (2006, p. 19). In other words, these Thai learners with intermediate English proficiency seemed to have low syntactic knowledge concerning derivational suffixes — i.e. nouns, verbs, adjectives and adverbs — confused with using the accurate word class or derivative forms. Hemchua and Schmitt (2006)'s research, therefore, identified problematic aspects of acquiring L2 English derivational suffixes, which is worth investigating how well L1 Thai learners can perceive different type of the suffixes, particularly adjectival suffixes.

From reviewing the literature, the researcher found that several studies regarding the acquisition of derivational morphology have been conducted. Specifically, scholars have conducted research on L1 acquisition of derivational morphemes, namely English derivatives (Tyler & Nagy, 1989) and Finnish derivatives (Bertram et al., 2000). Additionally, many researchers have investigated the acquisition of L2 English derivational morphemes by learners of different L1 backgrounds, e.g. EFL learners in the US (Friedline, 2011), Kuwaiti learners (Alotaibi & Alotaibi, 2017), Kurdish learners (Sayer & Abdulsalam, 2018), and Thai learners (Hemchua & Schmitt, 2006; Pongpairoj, 2002). However, to the best of the researcher's knowledge, there has never been any research examining SLA of English

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adjective-forming suffixes under the influence of input frequency account, particularly in the context of L1 Thai learners. Therefore, this present study bridged a gap in the research works related to the acquisition of English derivational suffixes by investigating the role of input frequency on the acquisition of L2 English adjectival suffixes by L1 Thai learners.

7.4 Adjectival Suffixes

Morphology is the study of words' internal structure and their underlying formation rules (Fromkin et al., 2018, p. 37). The smallest unit of meaning in a language is called "morpheme", which can be categorized into 2 major types: free and bound morphemes. Free morphemes refer to the those that can stand alone as meaningful units in a language, such as 'man', 'desire', 'beautiful' and 'boy', whereas bound morphemes can never stand by themselves, but rather are parts of words, e.g. 'un-', 'pre-', '-al' and '-less' (2018, p. 39). The latter are sometimes called "affixes". Affixes, or bound morpheme, are classified into 2 types: inflectional and derivational morphemes. The former hold grammatical functions and do not change the grammatical category of the root nor add lexical meaning when attached to words. Some examples of inflectional morphemes are '-s' third-person singular present as in 'she waits at home' and '-ed' past tense as in 'she waited at home' (2018, p. 47). Derivational morphemes, conversely, carry lexical functions and may or may not change the grammatical category of the words. They can be further

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categorized into prefixes and suffixes. When derivational morphemes precede other morphemes, they are referred to as prefixes, e.g. ‘un-’ as in ‘undo’ and ‘con-’ as in ‘convert’. On the contrary, if they follow other morphemes, those derivational morphemes are called suffixes, e.g. ‘-less’ as in ‘heartless’ and ‘-al’ as in ‘relational’.

Derivational morphemes that follow other morphemes may or may not change the grammatical class of the roots, which may be called *class-changing* and *class-maintaining* derivational suffixes, respectively (Pongpairoj, 2011, p. 58). For instance, when the class-changing suffix ‘-ish’ is attached to the base ‘boy’ which is a noun, the derived word ‘boyish’ becomes an adjective. However, the same suffix ‘-ish’ can be considered a class-maintaining suffix as in small (adj) + ‘-ish’ = ‘smallish’ (adj) (2011, p. 77). The process of suffixation, with the class-changing suffixes in particular, are composed of four types: nominal/noun-forming suffixes, verbal/verb-forming suffixes, adjectival/adjective-forming suffixes, and adverbial/adverb-forming suffixes.

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Since the researcher intended to investigate the acquisition of L2 English adjectival suffixes by L1 Thai learners, this section reviews 7.4.1 adjectival suffixes in English and attempts to answer 7.4.2 whether there are adjectives in Thai.

7.4.1 Adjectival Suffixes in English

In English, adjectival suffixes are adjective-forming suffixes, or sometimes called ‘adjectivilizers’ (Hamawand, 2011). These derivational morphemes are bound

to the end of free morphemes, resulting in derived adjectives. English derived adjectives can be formed by attaching the suffixes to 7.4.1.1 verbs, 7.4.1.2 nouns, and 7.4.1.3 adjectives (Pongpairoj, 2011, p. 74).

7.4.1.1 Adjectival Suffixes Attached to Verbs

Suffixes attached to verbs to form adjectives in English include '-ive', '-ory', '-able', '-ible', '-ent', '-ant', and '-some' (Hamawand, 2011; Pongpairoj, 2011). Some examples are listed as shown in:

(1) -ive: reactive, comprehensive, responsive, speculative

(2) -ory: celebratory, congratulatory, explanatory, exclamatory

(3) -able: washable, avoidable, recognizable, perishable

(4) -ible: reversible, responsible, discernible, forcible

(5) -ent: dependent, different, repellent, solvent

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7.4.1.2 Adjectival Suffixes Attached to Nouns

To form English adjectives, nouns can precede several suffixes, namely '-al', '-ial', '-ic', '-ical', '-ary', '-ful', '-less', '-ish', '-ous', '-y', '-ly', '-some', '-ate', '-en', '-ar', '-ward' and '-esque' (Hamawand, 2011; Pongpairoj, 2011). Some examples are listed as shown in:

(6) -al: medicinal, coastal, cynical, continental

(7) -ic: allergic, atomic, algebraic, Arabic

(8) -ical: symmetrical, economical, classical, historical

(9) -ary: dietary, supplementary, legendary, disciplinary

(10) -ful: delightful, remorseful, insightful, meaningful

(11) -ish: stylish, hellish, bookish, Swedish

(12) -ous: perilous, envious, courteous, virtuous

(13) -y: peppery, salty, greedy, thorny

7.4.1.3 Adjectival Suffixes Attached to Adjectives

English adjectives can be combined with another adjectival suffix, namely '-ish' and '-y', to derive novel adjectives (Hamawand, 2011; Pongpairoj, 2011). Some examples are listed as shown in:

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(14) -ish: biggish, youngish, warmish, smallish

(15) -y: greeny, yellowy

7.4.2 Are There Adjectival Suffixes in Thai?

Unlike English, which is an inflected language using inflectional and derivational morphemes to convey grammatical and semantic features, Thai is an uninflected one, and thus seems to have no constructions which correspond with

those of English morphemes (Pongpairoj, 2002, p. 83). In addition, word classes in Thai are not easily categorized and identified because Thai is “an isolating language where morphological marking is totally absent” (Prasithrathsint, 2000, p. 251). One problematic class is adjectives.

Dixon (2010) claimed that, while every language has the major word classes noun and verb, not all languages possess adjectives. Some adjective-absent languages express adjectival notions through nouns, and others through verbs (2010, p. 3). Schachter and Shopen (1985) divided these languages into 2 groups: ‘adjectival-noun languages’, where adjectival concepts are exhibited through nouns, and ‘adjectival-verb languages’, in which adjectival meanings are expressed through verbs. In other words, the so-called adjectives in these adjective-deficient languages tend to appear in the places of either nouns or verbs in the syntactic structures. Syntactically, adjectives and verbs in most Southeast Asian languages seem to fall into the same category, where words considered adjectives in English (e.g. ‘big’, ‘ill’, ‘beautiful’, ‘clean’, ‘tired’ and ‘old’) behave like verbs (Prasithrathsint, 2000, p. 253). Thai is one of these languages. Prasithrathsint (2000) pointed out that Thai does not have a distinct category of adjectives and the so-called adjectives in Thai are actually verbs since they act as verbs in 4 aspects: (1) occurrence in predicative position, (2) negation, (3) imperative, and (4) co-occurrence with words signifying aspect. Prasithrathsint (2000) provided some examples exhibiting the word /dii/ ‘good’ which behaves as verbs in the four aforementioned aspects as follows:

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Occurrence in predicative position:

(16) khǎw ***dii***

(s)he *good*

'(S)he is good.'

Negation:

(17) khǎw mây ***dii***

(s)he not *good*

'(S)he is not good.'

Imperative:

(18) coŋ ***dii*** talɔɔt-pay

IMP *good* forever

'Be good forever.'

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Co-occurrence with words signifying aspect:

(19) khǎw sǎnyaa wâa tɔɔ-pay-nii khǎw cà ***dii***

(s)he promise that from.now.on (s)he will *good*

'(S)he promises that from now on (s)he will be good.'

(Prasithrathsint, 2000, pp. 261, 262, 263)

On the contrary, some researchers argued that Thai does have adjectives as a distinct word class (Noss, 1964; Sookgasem, 1996). They adopted the semantic criterion in classifying words as adjectives in Thai, demonstrating that adjectives are referred to as words which describe the *quality* of something (Prasithrathsint, 2000, p. 256). One definition of adjectives in Thai was “a syntactic category, the members of which describe permanent states of or tell something about their subjects. They describe persons, things, situations, etc.” (Sookgasem, 1996, p. 579).

Sookgasem (1996) divided adjectives in Thai into 2 types: ‘attributive’ and ‘predicative’ as shown in (29) and (30), respectively:

(20) (chân chɔɔp) khon ***dii***

l like person *good*

'(I like) good people.'

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(21) khǎw ***dii***

(s)he *good*

'(S)he is good.'

(Prasithrathsint, 2000, p. 254)

However, Prasithrathsint (2000) criticized Sookgasem (1996)'s claim, arguing that defining adjectives by the semantic criterion alone is not appropriate. This is further exemplified by a number of words which were considered adjectives by Sookgasem (1996) but nouns by others — e.g. /adìit/ 'past', /pàtcuban/ 'present', /ciin/ Chinese and /faràŋ/ western (Prasithrathsint, 2000, p. 257). Evidence which confirms that these words are nouns, not adjectives, is in that they can follow prepositions, forming a prepositional phrase as shown in:

(22) nay ***adìit***

in *past*

'in the past'

(Prasithrathsint, 2000, p. 257)

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To summarize so far, there are 2 notions of classifying so-called adjectives in Thai. One is that these words are actually viewed as verbs when considering their syntactic distribution and co-occurrences, and thus there seem to be no adjectives in Thai owing to its status as a non-inflectional language. The other view takes semantic properties into consideration, pointing out that these so-called adjectives describe quality of other nouns, and therefore they are claimed as nouns. In sum, although classification of adjectives as a distinct part of speech is still controversial in Thai,

Thai does not have adjectival suffixes the same way English does (Prasithrathsint, 2000).

8. Methodology

This section describes 8.1 research objectives, 8.2 population and sample, 8.3 research instrument, 8.4 data collection, and 8.5 data analysis of the study.

8.1 Research Objectives

The study aimed to (1) investigate the role of input frequency on the acquisition of English adjectival suffixes by L1 Thai learners; (2) classify English adjectival suffixes according to their input frequency in order to display the target suffixes with distinct token frequency (word frequency) and type frequency (suffix frequency); and (3) find out whether token frequency or type frequency would affect the perception of English adjectival suffixes more.

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8.2 Population and Sample

The subjects in this study were 30 first-year undergraduate L1 Thai students at Chulalongkorn University. The sample of the study was selected by purposive sampling. The participants in this study are chosen based on their CU-TEP scores. CU-TEP, Chulalongkorn University Test of English Proficiency, was developed to assess students' ability to use English for academic purposes (Prapphal, 2003). In addition,

all first-year Thai undergraduates at Chulalongkorn University are required to take the CU-TEP. For this study, in order to achieve homogeneity of the population, the researcher selected participants whose English proficiency was in the intermediate level with the CU-TEP score 35 — 69, which were mapped to the level B1 on CEFR (Wudthayagorn, 2018). This proficiency group was intentionally selected because L2 learners at intermediate level have been exposed to most of the basic grammar and vocabulary, yet have not mastered all the rules and structure of the language (Iheanacho Jr, 1997). For these reasons, these particular subjects could probably best represent the acquirers of the L2 English adjectival suffixes in the present study. Besides, all of the participants were informed that their personal information and test results would be kept confidential and used for the research purpose only.

8.3 Research Instruments

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This section presents 8.3.1 data elicitation task, 8.3.2 adjectival suffix selection process for task production, 8.3.3 expert's validation (Item-Objective Congruence), and 8.3.4 pilot study.

8.3.1 Data Elicitation Task

This part explains details of the task used for eliciting data from the participants, i.e. Grammaticality Judgement Task (GJT).

The GJT was selected to measure the participants' perception of the L2 features under the investigation, which were the English adjectival suffixes with high and low type frequency, as well as token frequency of the derived words. The participants were required to read each sentence carefully and identify the underlined part of each sentence in all of the test items in GJT. If it is correct in terms of form, the participants were asked to put a tick mark (✓) in the parentheses. Contrarily, if it is not correct, the participants were asked to put a cross mark (✗) in the parentheses and to correct the underlined part in the space provided as in the examples above. The total number of the test items was 40, consisting of 16 target test items and 24 distractors (see Appendix A). The 16 target test items were divided into 4 conditions as shown in Table 1.

Table 1: 4 Conditions in the Study

Input Frequency	**High Token Frequency**	**Low Token Frequency**
High Type Frequency	Condition 1 (HH)	Condition 2 (HL)
Low Type Frequency	Condition 3 (LH)	Condition 4 (LL)

Condition 1 (HH) was intended to examine whether **HIGH type and HIGH token frequency** had an effect on the acquisition of L2 English adjectival suffixes by

L1 Thai learners. Among the 4 items, 2 target test items were written grammatically, whereas another 2 target test items were written ungrammatically. In this task, the participants were asked to examine whether each target test item was grammatical or not as. Examples (23) and (24) represent the items containing the high type frequency suffix '-y' and '-al' which were affixed into adjectives with high token frequency — 'lucky' and 'environmental'.

(23) We've been pretty ***luckish** so far. ( ) _____

(24) One of the world's current **environmental** issues is global warming. ( ) _____

Condition 2 (HL) was intended to examine whether **HIGH type and LOW token frequency** had an effect on the acquisition of L2 English adjectival suffixes by L1 Thai learners. Among the 4 items, 2 target test items were written grammatically, whereas another 2 target test items were written ungrammatically. In this task, the participants were asked to examine whether each target test item was grammatical or not. Examples (25) and (26) represent the items containing the high type frequency suffixes '-y' and '-al' which were affixed into adjectives with low token frequency — 'dusty' and 'architectural'.

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(25) The books were **dusty** and unused. ( ) _____

(26) Wootton Bassett has retained much of its ***architecturous** heritage. ( ) _____

Condition 3 (LH) was intended to examine whether **LOW type and HIGH token frequency** had an effect on the acquisition of L2 English adjectival suffixes by L1 Thai learners. Among the 4 items, 2 target test items were written grammatically, whereas another 2 target test items were written ungrammatically. In this task, the participants were asked to examine whether each target test item was grammatical or not. Examples (27) and (28) represent the items containing the low type frequency suffixes '-ible' and '-ar' which were affixed into adjectives with high token frequency — 'responsible' and 'regular'.

(27) Romeo and Juliet's parents were ***responsory*** for their children's death.

( ) _____

(28) His blood pressure was taken at **regular** intervals. ( ) _____

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Condition 4 (LL) was intended to examine whether **LOW type and LOW token frequency** had an effect on the acquisition of L2 English adjectival suffixes by L1 Thai learners. Among the 4 items, 2 target test items were written grammatically, whereas another 2 target test items were written ungrammatically. In this task, the participants were asked to examine whether each target test item was grammatical or not. Examples (29) and (30) represent the items containing the low type frequency suffixes '-ible' and '-ar' which were affixed into adjectives with low token frequency — 'plausible' and 'circular'.

(29) Her story sounded **plausible**. ( ) _____

(30) He had round unblinking eyes and a perfectly ***circulary** head. ( ) _____

In terms of scoring, each item carries 1 point. The scores are given based on the criteria shown in the Table 2:

Table 2: Criteria for scoring in Grammaticality Judgement Test

Scoring	**Criteria**
1 point	a **correct** judgement on a correct item
1 point	a **correct** judgement on an incorrect item **with** an accurate correction
0 point	an *incorrect* judgement on a correct item
0 point	an *incorrect* judgement on an incorrect item
0 point	a **correct** judgement on an incorrect item **without** any correction or **with** an inaccurate correction

As Table 2 suggests, the participants would receive either 1 or 0 score for each target test item. The subjects would be scored 1 supposed that they provide a correct judgement on a grammatical item or a correct judgement on an

ungrammatical item with a grammatically accurate correction. Judging the grammatical and ungrammatical target test items correctly indicates that the participants had some knowledge of and were sensitive to the investigated linguistic features. Nonetheless, the participants would receive score 0 if they judged the target test items correctly, yet did not provide any correction or provided a grammatically inaccurate correction because this signifies that they do not truly comprehend the target linguistic features.

8.3.2 Selection Process for Adjectival Suffixes and Affixed Adjectives in the GJT

The adjectival suffixes, as well as their derived adjectives, were selected based on their type frequency and token frequency in a corpus, respectively. The researcher utilized the frequency counts of English adjectival suffixes from the British National Corpus (BNC) in order to select English adjectival suffixes according to their frequency counts. The frequency counts of these suffixes are from the MorphoQuantics corpus (http://morphoquantics.co.uk) — the website for quantitative analysis of derivational morphemes extracted from the spoken element of the BNC, which was developed by Laws and Ryder (2014). The website contains a comprehensive set of 554 word-initial and 281 word-final morphemes in English, from a corpus size of 1,008,280 tokens. The morphemes are specifically provided with type frequency and token frequency.

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Initially, in terms of the adjectival suffixes, 8 adjective-forming suffixes were chosen based on their occurrences, which depended on their high and low type frequency counts, in the MorphoQuantics corpus. Among all 37 adjectival suffixes (type frequency counts ranging from 1 to 660) in the corpus, the researcher decided to investigate only the suffixes which had type frequency counts from 33 onwards; anything less was excluded from the study. This is because the suffixes with extremely low type frequency (ranging from 1 to 16) might signify bias toward the results of the study. That is, the participants might not even know some of these suffixes — e.g. '-ine' (16), '-oid' (7) and '-o' (1) — and were more likely to perform poorly on the items containing these infrequent suffixes, which might somewhat represent a biased factor toward the expected results. Besides, suffixes which can derive one word that has more than one part of speech (e.g. '-ian' which derives 'Asian' or '-ist' which derives 'Buddhist' which are considered both adjective and noun) were not included in this study since such suffixes do not represent adjectival suffixes solely. Furthermore, adjective-forming suffixes which are free morphemes carrying their own semantic meanings (e.g. '-like' as in 'childlike' and '-free' as in 'smoke-free') were also excluded because they were not in the scope of this study, which focused mainly on the perception of the suffix form alone, not their semantic properties. Therefore, there were totally 8 adjectival suffixes selected according to their high and low type frequency from the corpus. All of the selected adjectival suffixes were illustrated in Table 3.

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Table 3: The list of adjectival suffixes used in the GJT

Adjectival Suffixes		Type Frequency Counts
High Type Frequency	-y	660
	-al	558
	-ic	409
	-able	304
Low Type Frequency	-ful	77
	-ate	58
	-ible	46
	-ar	42

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After excluding some suffixes that did not go in line with the study's objectives, the first 4 adjectival suffixes with highest type frequency (ranging from 304 to 660) and the last 4 adjectival suffixes with the lowest type frequency (ranging from 42 to 77) in the corpus were used in the GJT to elicit the participants' perception of such suffixes.

In terms of adjective selection for the GJT, two derived adjectives were selected for each adjectival suffix (See Table 4) based on token frequency in the

MorphoQuantics corpus. That is, one adjective should have high token frequency count, while the other should have low token frequency count. The reason behind this is to investigate whether the type frequency of the adjectival suffixes alone played a role in the perception of such suffixes by L1 Thai learners, or the perception was also affected by the token frequency of the affixed adjectives. Nevertheless, words which belong to more than one part of speech (e.g. 'public', which is considered adjective and noun, or 'separate', which is regarded as both adjective and verb) were excluded from the list because these words may manifest other word classes other than adjectives, which could affect the results. As a consequence, there were totally 16 adjectives selected according to their high and low token frequency from the corpus. All of the selected adjectives were illustrated in Table 4.

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Table 4: The list of adjectives used in the GJT

Adjectival Suffixes			Adjectives			
			HIGH Token Frequency	Counts	LOW Token Frequency	Counts
High Type Frequency	-y	(660)	lucky	589	dusty	12
	-al	(558)	environmental	500	architectural	15
	-ic	(409)	basic	523	forensic	12
	-able	(304)	reasonable	557	flammable	14
Low Type Frequency	-ful	(77)	helpful	343	wishful	14
	-ate	(58)	desperate	200	immaculate	18
	-ible	(46)	responsible	462	plausible	15
	-ar	(42)	regular	353	circular	10

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After excluding words that belong to more than one part of speech, 8 adjectives with high token frequency (ranging from 200 to 589) and 8 adjectives with low token frequency (ranging from 10 to 18) in the corpus were used for producing task to elicit the participants' perception of the selected adjectival suffixes. Initially, the researcher intended to choose adjectives with high token frequency counts ranging from around 300 to 500. However, there was one derived adjective —

‘desperate’ (200) — whose frequency counts are below 300. Concerning the word ‘desperate’ (200), there are in fact three adjectives with higher token frequency counts, namely ‘private’ (698), ‘appropriate’ (653) and ‘separate’ (439), yet they all can be identified as more than one part of speech, i.e. adjective/noun, adjective/verb, and adjective/verb, respectively. That is why ‘desperate’ which has lower frequency counts (200) seems to be more suitable for the context of this study. Finally, the final 16 derived adjectives were used to produce the target test items in the GJT.

8.3.3 Experts’ Validation: Index of Item-Objective Congruence

Prior to the administration of the test, the GJT was verified for their content validity using the Index of Item-Objective Congruence (IOC). Each test item was rated by three native speakers of English who are instructors who teach at the Faculty of Arts, Chulalongkorn University. The validation is based on the IOC, where score (+1) indicates that the expert is certain that the target test item is congruent with objectives, score (0) signifies that the expert is uncertain whether the target test item is congruent with objectives, and score (-1) shows that the expert is certain that the test item is NOT congruent with objectives. Each item had to score higher than 0.5 to be regarded as capable of measuring the objectives of the test. All of the items that appeared on the tests administered to the subjects passed the IOC, with the GJT

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scoring 0.958 on average. The IOC scores of individual items are provided in Appendix B.

8.3.4 Pilot Study

The task GJT was pilot tested with one group of participants, consisting of 8 high-school students, whose CU-TEP scores were between 35 — 69, which were mapped to the B1 level on the CEFR. These pilot participants met the required qualification in terms of level of proficiency as mentioned in the part of population and sample (See 8.2). This pilot study was conducted at Find Me Tutoring School, Rayong, on September 7, 2019. The pilot study went well and there was no need for any adjustments to the task.

8.4 Data Collection

Regarding the main study, the data were collected in the first semester of the academic year 2019, during September 25 — October 15, 2019. The researcher decided to utilize the platform Google Form to collect the data because, after having tried to distribute the tests to some first-year undergraduate Arts students during English I class, the number of the tests returned was very low. This could be because the students did not feel the sense of anonymity and were not comfortable to disclose their CU-TEP scores. The GJT was then uploaded to Google Form instead, so that the participants might feel more confident completing the task anonymously. The recruitment of the participants was announced publicly on social media

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platforms, including Facebook, Instagram, Twitter, and LINE through undergraduate student connections at Chulalongkorn University. All of the participants had the required qualifications (See 8.2).

8.5 Data Analysis

Once the data were attained from the GJT, only the 16 target test items, which represent the linguistic features under investigation in this study, were scored by the researcher according to the Table 8.2. Post scoring process, the data were analyzed quantitatively with the descriptive statistics from Microsoft Excel. A two-way repeated measures ANOVA was also conducted to compare the 4 conditions (See 8.1) of the 2 variables, i.e. type and token frequency, where the scores were calculated by subjects and by items, as well as by the interaction between the two.

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9. Results

This part reports the results on the correct answers in the GJT (See 8.3.1). The results were presented in accordance with the research hypothesis. The hypothesis is that, based on input frequency concept, type frequency as well as token frequency would have a positive effect on the perception of L2 English adjectival suffixes by L1 Thai learners. Specifically, the participants would make more correct judgement on the suffixes with higher type and token frequency than those with lower frequency. To answer this hypothesis, the total scores, the percentages, the mean scores and

the standard deviations of the correct answers of the 4 conditions in the study (See Table 1) were compared. In addition, the data were calculated using two-way ANOVA with repeated measures to see if the differences between type and token frequency among the 4 conditions approached statistical significance.

Table 5: Results on the correct answers of the GJT obtained from the participants

GJT Scores					
Condition	Number of Participants	Total Scores	%	Mean	SD
Condition 1 (HH) HIGH type and HIGH token	30	106/120	88.33%	3.53	0.62
Condition 2 (HL) HIGH type and LOW token	30	57/120	47.50%	1.90	0.84
Condition 3 (LH) LOW type and HIGH token	30	85/120	70.83%	2.83	0.83
Condition 4 (LL) LOW type and LOW token	30	58/120	48.33%	1.93	0.58

Figure 1:Results on the correct answers of the GJT obtained from the participants

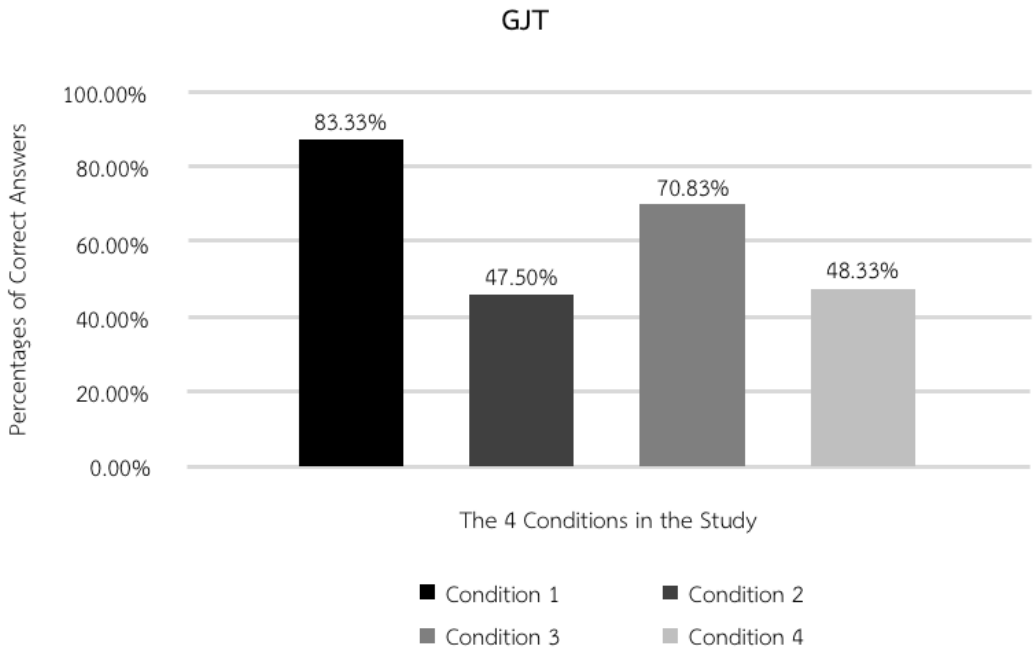

Table 5 and Figure 1 report the results on the correct answer of the GJT and the differences among the 4 conditions. The participants judged the items in Condition 1 (*M* = 3.53, *SD* = 0.62) the most correctly, followed by those in Condition 3 (*M* = 2.83, *SD* = 0.83), Condition 4 (*M* = 1.93, *SD* = 0.58), and Condition 2 (*M* = 1.90, *SD* = 0.84), respectively. In addition, two-way ANOVAs were conducted to find out whether the differences in score means between the 4 conditions were significant as shown in Table 6 and Table 7.

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Table 6: The results of a two-way ANOVA with repeated measures

Source	SS	df	MS	F	p
Subjects	23.7	29			
Within subjects					
A	3.3333	1	3.3333	10.0009	.003
B	48.1333	1	48.1333	82.7601	.0001
A x B	4.0333	1	4.0333	9.7753	.004

Table 7: The results of Turkey HSD post hoc tests

Mean	Condition	1	2	3	4
3.53	1				
1.90	2	*			
2.83	3	*	*		
1.93	4	*		*	

*p <.01

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The results of a two-way ANOVA (type frequency x token frequency) by subjects (See Table 6) revealed a significant main effect for type frequency ($F_{(1,29)}$ = 10.0009, p = .003), a significant main effect for token frequency ($F_{(1,29)}$ = 82.7601, p = <.001), and a significant interaction effect between type and token frequency ($F_{(1,29)}$ = 9.7753, p = .004). This shows that the differences by subjects between type and token frequency among the 4 conditions approached statistical significance. However, there was no other main effects. Furthermore, post-hoc tests (Tukey HSD) revealed that there were significant differences (p <.01) between Condition 1 and Condition 2, Condition 1 and Condition 3, Condition 1 and Condition 4, Condition 2 and Condition

3, and Condition 3 and Condition 4. Nevertheless, the difference between Condition 2 and Condition 4 was not significant (See Table 7).

10. Discussions

As stated in the hypothesis, input frequency was predicted to play a significant role in the learners' perception, and the results confirmed the prediction. The intermediate L1 Thai learners of English appeared to be sensitive to English adjectival suffixes based on their type and token frequency along the acquisition process. However, as mentioned in 7.4.2, since the Thai language is an isolating language and does not possess morphological marking (Prasithrathsint, 2000), English derivational suffixes could pose problems for L1 Thai learners.

The results of the quantitative analysis indicate that type and token frequency had an effect on the perception of L2 English adjectival suffixes by L1 Thai learners, as the participants made more correct judgement on the suffixes with higher type and token frequency than those with lower frequency. Nevertheless, token frequency seemed to have a more significant role in the perception. That is, as shown in Condition 1 (HH) and Condition 3 (LH), when token frequency was high, suffixes with high type frequency were judged more correctly than those with low type frequency. On the contrary, when token frequency was low, suffixes with either high or low type frequency counts did not seem to play a role in the perception as seen in Condition 2 (HL) and Condition 4 (LL) whose differences were not statistically

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significant. This implies that, though input frequency played an important role in the acquisition of English adjectival suffixes among L1 Thai learners, token frequency could affect L1 Thai learners better than type frequency. This could be partly due to more exposure to the affixed adjective forms than to the adjectival suffixes themselves.

That the participants performed better on the GJT when the target suffixes appeared in affixed adjectives with high token frequency signified that L1 Thai learners were likely to acquire those affixed adjectives as single units. J. L. Bybee and Beckner (2010) explained how words can be accessed either as a whole or as segmented morphemes coming together and stressed the role of token frequency, stating that the higher the token frequency of the sequence, the higher likelihood that it will be accessed, acquired and stored as whole (2010, p. 840). This is because high token frequency strengthens the underlying representation of their words, which makes them easier to access whole and lose their internal structure (J. L. Bybee, 1985). Additionally, type frequency of the adjectival suffixes had a less effect on the acquisition on the account that once words with derivational affixes become more frequent, their affixes start to become less apparent (1985). In other words, morphological complex words are more frequent than the affixes from which they were originally derived. As a result, L1 Thai learners appeared to be more sensitive to English adjectival suffixes according to their token frequency more than type frequency. Each suffix is acquired separately, so type frequency has to reach a

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certain degree in the input until the acquirers could detect the suffixes within affixed words (Jarmulowicz, 2002). With more exposure to various affixed forms of the suffixes, the representation of such suffixes will be reinforced, acquired and reapplied in novel use.

However, what is worth observing is that task effects might play a role in the results of the study. The task effects possibly concerned distinctly incorrect derivational suffixes in the task items and the learners' corrections with respect to their familiarity.

Firstly, for items with incorrect derivational suffixes, the learners might be able to easily detect that the derivational suffixes in the given words were distinctly incorrect. For example, there were 2 pairs whose results did not go in line with the assumption — the two suffixes with low type frequency, i.e. '-ate' and '-ible'. The suffix '-ate' was affixed into two adjectives: one with high token frequency 'desperate' (Condition 3) and the other with low token frequency 'immaculate' (Condition 4). However, from the GJT data, the correct judgement rate for 'desperate' was 46.66% while 'immaculate' was correctly judged at 70.00%. The same case applied to the suffix '-ible' which were affixed into 'responsible' (Condition 3 with high token frequency) and 'plausible' (Condition 4 with low token frequency) as well. The correct judgement rate for 'responsible' was 50.00% whereas 'plausible' was correctly judged at 93.33%. This could be because of task effect. Due to the nature of the GJT, which requires its test items to be mixed with both

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grammatical and ungrammatical items. The words ‘immaculate’ and ‘plausible’ were in grammatical forms in the GJT while ‘desperate’ and ‘responsible’ were in ungrammatical forms — ‘desperous’ and ‘responsory’ (See Appendix A). The grammatical forms might already sound right to the participants and were judged correctly accordingly, whereas the ungrammatical forms could be easily perceived as clearly wrong, but the participants could have difficulty providing accurate correction of the forms, thus could also be the source of the reverse in the frequency effect for these two suffixes — ‘-ate’ and ‘-ible’. Additionally, task effect seemed to be one determining factor in the participants’ correct and incorrect answers in the GJT. Test items whose affixed adjectives were already in grammatical forms tended to be judged more correctly, resulting in more correct answers and higher scores for such items (See Appendix C). Contrarily, test items with ungrammatical adjectival forms or nonce-words (e.g. ‘*architecturous’, ‘*desperous’, ‘*circulary’) were likely to receive lower scores partly because the participants could not provide accurate corrections for the correct judgement of the ungrammatical forms. This trend applied to test items in Condition 2 (HL), Condition 3 (LH), and Condition 4 (LL). Nevertheless, test items in Condition 1 (HH) did not seem to be affected by task effect, which could be owing to the fact that Condition 1 (HH) was the only group whose suffixes and their affixed adjectives yielded both high type and high token frequency. This further reinforces that input frequency seems to be relatively influential in the perception of L2 English adjectival suffixes by L1 Thai learners, which goes in line with Sayer and

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Abdulsalam (2018). The more frequent particular suffixes and adjectives occurred, the better perception of such linguistic features the participants showed.

Secondly, the other factor which led the participants to provide some errors in the corrections could be their more familiarity with some words than others. This could be seen through some test items in the GJT, i.e. 'environmental', '*architecturous', and '*circulary'. The item 'environmental' was in grammatical form in the task and most participants (80 %) judged the item correctly (See Appendix D). Nonetheless, 6 participants (20%) judged this correct item incorrectly and provided the same correction — 'environment'. Quite similarly, for the item '*architecturous', some participants (23.33%) made correct judgement in that it was in ungrammatical form, yet provided inaccurate correction, resorting to the nominal form 'architecture' instead of the required adjectival form 'architectural'. The reasons behind these two items where the learners provided incorrect derivational suffixes could be explained in that the participants were probably more exposed to and thus more familiar with the nominal forms of the words, i.e. 'environment' and 'architecture', than their adjectival counterparts. The same explanation also applies to the item '*circulary' which required the participants to provide the correct adjectival form, 'circular'. However, some participants resorted to the words 'circle' and 'circulated' instead. These suggest that familiarity with words seemed to affect the learners' perception of English word forms. When L2 learners were not certain with particular word forms, specifically adjectives in this case, they tended to rely on other forms in the same

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word family which were already strengthened in their lexicon. This again highlights the influence of token frequency on the learners' perception.

Previous studies investigating the influence of frequency of input on SLA of linguistic features (Bertram et al., 2000; Keawchaum & Pongpairoj, 2017; Sayer & Abdulsalam, 2018) revealed that frequency in general had a positive effect on the acquisition, particularly on L2 perception. However, this present study examined in details how input frequency, namely type frequency and token frequency, as relied on the frequency counts from the corpus data affect the L2 perception of English adjectival suffixes. By looking at the overall picture of the results from the 4 conditions in the study, it could be concluded that input frequency — token and type frequency, respectively — of English adjectival suffixes contributed to the perception of the learners. Accordingly, the hypothesis was confirmed.

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11. Conclusion

The current study aimed at examining the input frequency effects on the acquisition of English adjectival suffixes by L1 Thai learners, particularly the influence of token and type frequency on the perception of the suffixes. Based on input frequency, both token and type frequency had a positive effect on the perception of English adjectival suffixes by L1 Thai learners. To fulfill the study, all of the participants were required to complete the GJT whose test items employed the frequency counts from the MorphoQuantics corpus. The findings confirmed the

frequency effect, showing that input frequency had a positive effect on the acquisition; however, token frequency seemed to be more influential than type frequency. Thus, it could be assumed that L1 Thai learners were more exposed to token frequency of various affixed adjectival forms than to type frequency of the adjectival suffixes. It was claimed that, while token frequency seems to be directly perceived as the number of times particular words or phrases occur, L2 learners have to come across enough input before type frequency of certain linguistic features are entrenched in the learners' underlying representation.

The study yielded some pedagogical implications. As this study mainly provides the findings on the SLA of English adjectival suffixes, it may also allow English language teachers to design and develop teaching materials and methods for teaching English derivational suffixes in general. Perceptive and productive tasks incorporating the actual usage of English adjectival suffixes (as well as nominal, verbal and adverbial suffixes) should be designed and adopted in classroom with language learners. For example, perceptive exercises such as reading and listening to news, articles and passages, as well as visual-audio materials with English subtitles, which are full of the targeted linguistic features, should be provided in class regularly. Once the learners are familiarized with the features, production tasks such as writing assignments, group presentations and role plays which are designed to elicit the linguistic features at issue should later be adopted to the language class. According to input frequency, the more frequently and repeatedly certain linguistic

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features occur in the learners' input, the stronger the mental representations of those features could be developed.

There are also some limitations in the study and recommendations are made accordingly for future studies. Firstly, the instrument used in this study — GJT — was a controlled elicitation task for assessing the participants' perception, thus could perhaps lack the natural occurrences of the data. It is suggested that future research employ spontaneous tasks, and also present more fine-grained results to see other factors that could affect the acquisition. Another limitation was that the scope of this study is heavily on English adjectival suffixes. However, English adjectival suffixes may not be the only category where L1 Thai learners would have difficulty applying appropriate morphological marking. Other English derivational morphemes or even English morphology in general could also be one problematic issue for L1 Thai learners to acquire. Yet, with input frequency, the L2 learners may perceive and produce L2 English morphology somewhat easier. It is therefore recommended that future researchers include other types of derivational suffixes in English, i.e. nominal, verbal and adverbial suffixes, or even prefixes as well. Moreover, future researchers are encouraged to incorporate other databases for similar studies, or even conduct a corpus research collecting data about English derivational morphemes both from spoken and written English, specifically used by L1 Thai learners.

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APPENDICES

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APPENDIX A: Grammaticality Judgement Test

Name _____ ID _____ CU-TEP Score _____

Directions: Judge if the underlined word in each sentence is correct in terms of form. If it is correct, put a tick mark (✓) in the parentheses. If it is wrong, put a cross mark (✗) in the parentheses and rewrite the incorrect part in the space provided.

For example:

*The new secretary was **organized** and conscientious.* (✓) _____

*Each department is hierarchically **organization**.* (✗) *organized*

1. We've been pretty **luckish** so far. ( ) _____
2. The editors failed to **standardize** the spelling of geographic names. ( ) _____
3. The books were **dusty** and unused. ( ) _____
4. The medicine may cause **dryness** of the mouth. ( ) _____
5. The two approaches are **basicly** very similar. ( ) _____
6. One of the world's current **environmental** issues is global warming. ( ) _____
7. The cookies will **flatten** slightly while cooking. ( ) _____
8. Wootton Bassett has retained much of its **architecturous** heritage. ( ) _____
9. You need to complete at least one written **assignment** per semester. ( ) _____
10. They like to **conversate** on music and opera. ( ) _____
11. There was a **basical** fault in the design of the engine. ( ) _____
12. He would never do anything to **jeopardify** his career. ( ) _____
13. The **forensic** scientists will analyze the samples collected at the scene. ( ) _____
14. It is an offense to deliberately publish a serious **falseness**. ( ) _____
15. These were the first democratic elections after 36 years of **dictatorship**. ( ) _____
16. Any **reasonable** person would have done exactly as you did. ( ) _____
17. **Vandalation** used to be a rare occurrence here. ( ) _____
18. Be careful with hazardous commodities such as **flameful** materials. ( ) _____
19. The points you make are fine, but the whole essay lacks **coherence**. ( ) _____

20. You must **notify** us in writing if you wish to cancel your subscription. ( ) _____
21. The sudden loss of his money had made him **desperous**. ( ) _____
22. He thanked all those who had helped him on the road to **starness**. ( ) _____
23. Though old, the books were in **immaculate** condition. ( ) _____
24. In the distance, the sky was beginning to **brightify**. ( ) _____
25. She agreed without the slightest **hesitation**. ( ) _____
26. You may find it **helpful** to read this before making any decisions. ( ) _____
27. The water was rising **fastly**. ( ) _____
28. Without resources, the proposed measures were only **wishable** thinking. ( ) _____
29. This **revision** is much more readable. ( ) _____
30. Music is used to **glorificate** God. ( ) _____
31. Romeo and Juliet's parents were **responsory** for their children's death. ( ) _____
32. Deaths during **infantment** fell dramatically in the last century. ( ) _____
33. Her story sounded perfectly **plausible**. ( ) _____
34. 300 people were injured in the **explosal**. ( ) _____
35. Crosby loves his job so much, so he is fighting **hard** to keep it. ( ) _____
36. His blood pressure was taken at **regular** intervals. ( ) _____
37. The proposed plan will not **satisfy** everyone. ( ) _____
38. He had round unblinking eyes and a perfectly **circulary** head. ( ) _____
39. You're too young to **contemplate** retirement. ( ) _____
40. Fumes from cooking are enough to **activize** the alarm. ( ) _____

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Note: The sentences highlighted with the grey color are the target test items used to elicit data from the participants.

APPENDIX B: The Index of Item-Objective Congruence (IOC)

Description: The index of congruence is to validate the quality of this instrument. Please indicate your agreement according to the following scale by placing a tick mark (✓) in the box.

Scoring +1 = Certain that the test item is congruent with the objectives

Scoring 0 = Uncertain whether the test item is congruent with the objectives

Scoring -1 = Certain that the test item is NOT congruent with the objectives

No.	Questions	Expert's Opinions			IOC Results	Suggestions
		Expert 1	Expert 2	Expert 3		
	The participants are required to read each sentence and identify the underlined part of each sentence. If it is correct, put a tick mark (✓) in the parentheses. If it is wrong, put a cross mark (✗) in the parentheses and rewrite the incorrect part in the space provided (totally 16 test items excluding distractors).					
	Objectives 1. To classify types of adjectival suffixes according to their high and low type frequency; 2. To investigate whether there is a connection between the frequency of the adjectival suffixes and L2 learners' perception of such suffixes in their derived adjectives; 3. To examine whether token frequency of the adjectives themselves, aside from the type frequency of the adjectival suffixes, also affects the perception or not; and 4. To ensure the test items are grammatical and sound natural to native English experts.					

1	We've been pretty **luckish** so far.	+1	+1	+1	1	
2	One of the world's current **environmental** issues is global warming.	+1	+1	+1	1	
3	There was a **basical** fault in the design of the engine.	+1	+1	+1	1	
4	Any **reasonable** person would have done exactly as you did.	+1	+1	+1	1	
5	The books looked **dusty** and unused.	+1	0	+1	0.67	Use 'were' instead of 'looked'.
6	Wootton Bassett has retained much of its **architecturous** heritage.	+1	+1	+1	1	
7	The **forensic** scientists will analyze the samples collected at the scene.	+1	+1	+1	1	
8	Be careful with hazardous commodities such as **flameful** materials.	0	+1	+1	0.67	Use 'products' instead of 'commoditie-s'.
9	You may find it **helpful** to read this before making any decisions.	+1	+1	+1	1	
10	The sudden loss of his money had made him **desperous**.	+1	+1	+1	1	

11	Romeo and Juliet's parents were **responsory** for their children's death.	+1	+1	+1	1	
12	His blood pressure was taken at **regular** intervals.	+1	+1	+1	1	
13	Without resources, the proposed measures were only **wishable** thinking.	+1	+1	+1	1	
14	Though old, the books were in **immaculate** condition.	+1	+1	+1	1	
15	Her story sounded ferpectly **plausible**.	+1	+1	+1	1	Take out 'perfectly'.
16	He had round unblinking eyes and a perfectly **circulary** head.	+1	+1	+1	1	
	Average Result				0.958	

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APPENDIX C: Results of the Correct Answers in the GJT by Conditions

Test Items	Scores (out of 30)	Test Items	Scores (out of 30)
Condition 1 (HH)		**Condition 2 (HL)**	
*luckish	27	dusty	26
environmental	24	*architecturous	6
*basical	26	forensic	20
reasonable	29	*flameful	5
Condition 3 (LH)		**Condition 4 (LL)**	
helpful	27	*wishable	2
*desperous	14	immaculate	21
*responsory	15	plausible	28
regular	29	*circulary	7

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REFERENCES

Almulla, N. (2015). *The role of frequency in L2 structure accuracy: Acquiring the English infinitive-gerund construction by Arabic L1 speakers*: California State University, Long Beach.

Alotaibi, M. A., & Alotaibi, A. M. (2017). On the acquisition of derivational suffixes by Kuwaiti EFL learners. *European Scientific Journal, ESJ, 13*(17), 223-238.

Anglin, J. M., Miller, G. A., & Wakefield, P. C. (1993). Vocabulary development: A morphological analysis. *Monographs of the society for research in child development*, i-186.

Bertram, R., Laine, M., & Virkkala, M. M. (2000). The role of derivational morphology in vocabulary acquisition: Get by with a little help from my morpheme friends. *Scandinavian Journal of Psychology, 41*(4), 287-296.

Biber, D. (1993). Representativeness in corpus design. *Literary and linguistic computing, 8*(4), 243-257.

Bybee, J. (2010). *Language, usage and cognition*: Cambridge University Press.

Bybee, J., & Thompson, S. (1997). *Three frequency effects in syntax.* Paper presented at the Annual Meeting of the Berkeley Linguistics Society.

Bybee, J. L. (1985). *Morphology: A study of the relation between meaning and form* (Vol. 9): John Benjamins Publishing.

Bybee, J. L., & Beckner, C. (2010). Usage-based theory. In *The Oxford handbook of linguistic analysis*.

Bybee, J. L., & Hopper, P. J. (2001). *Frequency and the emergence of linguistic structure* (Vol. 45): John Benjamins Publishing.

Chomsky, N. (2006). *Language and mind*: Cambridge University Press.

Croft, W., & Cruse, D. A. (2004). *Cognitive linguistics*: Cambridge University Press.

Dixon, R. M. (2010). *Where have all the adjectives gone?: and other essays in semantics and syntax* (Vol. 107): Walter de Gruyter.

Ellis, N., & Collins, L. (2009). Input and second language acquisition: The roles of frequency, form, and function introduction to the special issue. *The Modern Language Journal, 93*(3), 329-335.

Ellis, N. C. (2002). Frequency effects in language processing: A review with implications for theories of implicit and explicit language acquisition. *Studies in second language acquisition, 24*(2), 143-188.

Friedline, B. E. (2011). *Challenges in the second language acquisition of derivational morphology: From theory to practice.* University of Pittsburgh,

Fromkin, V., Rodman, R., & Hyams, N. (2018). *An introduction to language*: Cengage Learning.

Gahl, S., Jurafsky, D., & Roland, D. (2004). Verb subcategorization frequencies: American English corpus data, methodological studies, and cross-corpus comparisons. *Behavior Research Methods, Instruments, & Computers, 36*(3), 432-443.

Hamawand, Z. (2011). *Morphology in English: Word formation in cognitive grammar*: Bloomsbury Publishing.

Hemchua, S., & Schmitt, N. (2006). An analysis of lexical errors in the English compositions of Thai learners.

Iheanacho Jr, C. C. (1997). *Effects of two multimedia computer-assisted language learning programs on vocabulary acquisition of intermediate level ESL students.* Virginia Tech,

Jarmulowicz, L. D. (2002). English derivational suffix frequency and children's stress judgments. *Brain and Language*, *81*(1-3), 192-204.

Jiang, N. (2000). Lexical representation and development in a second language. *Applied linguistics*, *21*(1), 47-77.

Keawchaum, R., & Pongpairoj, N. (2017). The Role of Frequency on the Acquisition of L2 English Infinitive and Gerund Complements by L1 Thai Learners. *PASAA: Journal of Language Teaching and Learning in Thailand*, *54*, 29-57.

Laws, J., & Ryder, C. (2014). Getting the measure of derivational morphology in adult speech a corpus analysis using MorphoQuantics. *Language Studies Working Papers*, *6*, 3-17.

Mukherjee, J. (2006). Corpus linguistics and language pedagogy: The state of the art–and beyond. *Corpus technology and language pedagogy: New resources, new tools, new methods*, 5-24.

Noss, R. B. (1964). *Thai reference grammar*: Foreign Service Institute, Department of State.

Pongpairoj, N. (2002). Thai university undergraduates' errors in English writing. *Language and Linguistics, 20*(2), 66-99.

Pongpairoj, N. (2011). ระบบหน่วยคำในภาษาอังกฤษ [English Morphology]. โครงการเผยแพร่ผลงานวิชาการ คณะอักษรศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย.

Prapphal, K. (2003). English proficiency of Thai learners and directions of English teaching and learning in Thailand. *Journal of Studies in the English Language, 1*.

Prasithrathsint, A. (2000). Adjectives as verbs in Thai. In: Walter de Gruyter, Berlin/New York.

Sayer, I. M., & Abdulsalam, S. (2018). The Acquisition of Derivational Suffixes by Students of English at the University of Human Development. *Journal of University of Human Development*, *4*(4), 55-60.

Schachter, P., & Shopen, T. (1985). Parts-of-speech systems. *Language typology and syntactic description, 1*, 3-61.

Schreuder, R., & Baayen, R. H. (1995). Modeling morphological processing. *Morphological aspects of language processing, 2*, 257-294.

Sookgasem, P. (1996). *The predicative-adjective construction in Thai.* Paper presented at the Pan-Asiatic linguistics: Proceedings of the fourth international symposium on languages and linguistics, Bangkok.

Tyler, A., & Nagy, W. (1989). The acquisition of English derivational morphology. *Journal of memory and language*, *28*(6), 649-667.

Wudthayagorn, J. (2018). Mapping the CU-TEP to the Common European Framework of Reference (CEFR). *LEARN Journal: Language Education and Acquisition Research Network, 11*(2), 163-180.

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