Processing of English Passive Construction in L1 Thai Learners

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งานวิจัยชิ้นนี้มีจุดประสงค์ที่จะศึกษากระบวนการทำความเข้าใจหน่วยสร้างกรรมวาจกภาษาอังกฤษในผู้เรียนชาวไทย โดยมุ่งเน้นที่ตัวบ่งชี้กรรมวาจก *ถูก* ในภาษาไทยซึ่งมักพบในบริบทที่มีความหมายนัยทางร้าย (Po-ngam, 2008; Prasithrathsint, 2010) ซึ่งเป็นลักษณะต้นแบบของกรรมวาจก *ถูก* และยังสามารถพบได้ในบริบทที่มีความหมายเป็นกลาง (Prasithrathsint, 2001, 2006) และกรรมวาจก *be* ซึ่งสามารถพบได้ในทุกความหมาย งานวิจัยนี้แบ่งกริยาภาษาอังกฤษออกเป็น 3 ประเภท โดยใช้เกณฑ์การมีความหมายนัยร้ายและความเป็นธรรมชาติในประโยคกรรมวาจก *ถูก* ในภาษาไทย ได้แก่ กริยาประเภทที่ 1 (มีความหมายนัยทางร้ายและเป็นธรรมชาติในกรรมวาจก *ถูก* ในภาษาไทย เช่น *destroy*) กริยาประเภทที่ 2 (ไม่มีความหมายนัยร้ายและเป็นธรรมชาติในกรรมวาจก *ถูก* ในภาษาไทย เช่น *buy*) และ กริยาประเภทที่ 3 (ไม่เป็นธรรมชาติในกรรมวาจก *ถูก* ในภาษาไทย เช่น *heal*)

ในการทดลองที่ 1 ผู้วิจัยใช้แบบสอบถามการตัดสินความยอมรับได้ของประโยคภาษาอังกฤษ ซึ่งวัดการทำความเข้าใจประโยคของผู้เรียนหลังจากอ่านประโยคเสร็จ ผู้เข้าร่วมการทดลองได้แก่ผู้เรียนชาวไทยระดับกลางและระดับสูง กลุ่มละ 20 คน การวิเคราะห์ความแปรปรวนแบบสองทางชี้ว่าความสามารถทางภาษาอังกฤษส่งผลต่อการยอมรับประโยค และผู้เรียนชาวไทยยอมรับประโยคที่มีกริยาประเภทที่ 1 มากกว่าประโยคที่มีกริยาประเภทที่ 2 และประเภทที่ 3 อย่างมีนัยสำคัญ นอกจากนี้ประโยคที่มีกริยาประเภทที่ 2 มีแนวโน้มที่จะเป็นที่ยอมรับมากกว่าประโยคที่มีกริยาประเภทที่ 3 อาจกล่าวได้ว่าการถ่ายโอนเชิงบวกจากภาษาที่ 1 ช่วยให้ผู้เรียนชาวไทยยอมรับประโยคที่มีกริยาประเภทที่ 1 ได้มากกว่ากริยาอีกสองประเภท

ในการทดลองที่ 2 ผู้วิจัยใช้การทดลองการอ่านแบบกำหนดเวลาด้วยตนเอง ซึ่งใช้วัดการทำความเข้าใจประโยคของผู้เรียนในระหว่างการอ่าน ผู้เข้าร่วมการทดลองได้แก่ผู้เรียนชาวไทยที่มีความสามารถทางภาษาอังกฤษระดับกลาง 20 คน และระดับสูง 20 คน การวิเคราะห์ความแปรปรวนแบบสองทางพบว่าความสามารถทางภาษาอังกฤษมีแนวโน้มที่จะส่งผลต่อการยอมรับประโยคทดสอบ และผู้เรียนชาวไทยอ่านประโยคที่มีกริยาประเภทที่ 1 ได้เร็วกว่าประโยคที่มีกริยาประเภทที่ 2 และผู้เรียนมีแนวโน้มที่จะอ่านประโยคที่มีกริยาประเภทที่ 3 ได้เร็วกว่าประโยคที่มีกริยาประเภทที่ 2 เนื่องจากกริยาประเภทที่ 1 มีความเป็นธรรมชาติสูงที่สุดจึงเกิดการถ่ายโอนเชิงบวกซึ่งช่วยให้ผู้เรียนอ่านประโยคได้ไว ต่างจากกริยาประเภทที่ 2 ซึ่งไม่ใช่ความหมายต้นแบบ และผู้เรียนอ่านประโยคที่มีกริยาประเภทที่ 3 ได้เร็วเนื่องจากประโยคประเภทนี้ต่างจากรูปประโยคในภาษาแม่อย่างสิ้นเชิง

งานวิจัยชิ้นนี้พบว่าผู้เรียนชาวไทยทำความเข้าใจประโยคกรรมวาจกภาษาอังกฤษที่มีกริยาประเภทที่ 1 ได้ดีในทั้งสองการทดลอง อาจะสรุปได้ว่าการมีความหมายนัยทางร้ายมีบทบาทสำคัญในกระบวนการทำความเข้าใจกรรมวาจกภาษาอังกฤษของผู้เรียน นอกจากนี้การทดลองทั้งสองยังพบว่าอิทธิพลข้ามภาษาที่เกิดจากประเภทของกริยาเห็นได้ชัดเจนในกลุ่มผู้เรียนที่มีความสามารถทางภาษาอังกฤษสูงมากกว่าผู้เรียนที่มีความสามารถต่ำ อาจเป็นไปได้ว่าผู้เรียนกลุ่มสูงมีความตระหนักรู้ถึงความแตกต่างของกรรมวาจกในภาษาไทยและภาษาอังกฤษมากกว่า อย่างไรก็ดีผลการวิจัยที่พบในสองการทดลองมีความแตกต่างกันอยู่บ้าง ความแตกต่างดังกล่าวอาจเกิดจากอิทธิพลของรูปแบบการทดลอง เนื่องจากการทดลองทั้งสองแบบใช้ศึกษากระบวนการทำความเข้าใจที่ต่างกัน

สาขาวิชา ภาษาศาสตร์ ลายมือชื่อนิสิต .....

ปีการศึกษา 2563 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

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Vatcharit Chantajinda : Processing of English Passive Construction in L1 Thai Learners. Advisor: Asst. Prof. THEERAPORN RATITAMKUL, Ph.D.

The objective of this research study is to examine Thai learners' comprehension of English passive sentences focusing on Thai *thùuk*-passives, which are usually found in adversative contexts (Po-ngam, 2008; Prasithrathsint, 2010) which are prototypical in *thùuk*-passives and can also be used in neutral contexts (Prasithrathsint, 2001, 2006), and on *be*-passives in English, which can be found in all contexts. This work classified English verbs into three types using adversity and naturalness in Thai *thùuk*-passives, namely Verb Type 1 (adversative and natural in Thai *thùuk*-passives, e.g., *destroy*), Verb Type 2 (non-adversative and natural in Thai *thùuk*-passives, e.g., *buy*), and Verb Type 3 (unnatural in Thai *thùuk*-passives, e.g., *heal*).

In EXPERIMENT 1, an acceptability judgment task (AJT) was employed to measure Thai learners' comprehension of English passives after they finished reading each sentence. Twenty intermediate and twenty advanced learners participated in this experiment. A two-way ANOVA revealed that proficiency levels affected Thai learners' acceptability of and they judged sentences with Verb Type 1 significantly more acceptable that those with Verb Type 2 and those with Verb Type 3. Moreover, sentences with Verb Type 2 were likely to be more acceptable than those with Verb Type 3. Positive transfer from L1 possibly helped Thai students accept Verb Type 1 more than the other two verb types.

In EXPERIMENT 2, a self-paced reading task (SPRT) was used to examine learners' online comprehension of English passives. Twenty intermediate and twenty advanced learners participated in this experiment. A two-way ANOVA indicated that proficiency levels likely affected their reading times and they read sentences with Verb Type 1 faster than those with Verb Type 2. They, additionally, tended to read sentences with Verb Type 3 faster than those with Verb Type 2. Since Verb Type 1 is the most natural verb type in Thai *thùuk*-passives, positive transfer can be at work when learners read English passives, unlike Verb Type 2 which is non-prototypical. Additionally, they processed Verb Type 3 relatively fast since the sentences were atypical in L1.

In summary, Thai learners performed well when the stimuli sentences comprised Verb Type 1 in the two experiments. Adversity, moreover, played a crucial role in learners' comprehension of English passives. In addition, language transfer was discovered to be more obvious in the advanced learners. This is possibly due to the fact that they were highly aware of dissimilarities between L1 and L2 passives. The patterns found in the two tasks focusing on different comprehension processes differed to some extent possibly due to task effects.

Field of Study:	Linguistics	Student's Signature .....
Academic Year:	2020	Advisor's Signature .....

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Chapter 1
Introduction

This chapter presents the introductory contexts of this study by first mentioning the background, objectives, and hypotheses of the study. Also, the significance demonstrates how this study is expected to contribute to novel discoveries. This study's scope is finally introduced at the end of the chapter.

1.1 BACKGROUND

Several studies on second language acquisition (SLA) have investigated L1 Thai learners of English and their interlanguage by studying different linguistic structures, which SLA scholars in Thailand believe can pose difficulties for L1 Thai learners of English, through various methods. To put it differently, linguistic units, which contrast in Thai and English, have been a major focus as they are likely to trigger negative transfer.

SLA researchers have continuously examined L2 English passives in learners with different language backgrounds with various focal points and data elicitation methods, such as Chinese learners (K. Wang, 2009; Y. Wang, 2009; Wang & Pongpairoj, 2021), Korean learners (Kim & Kim, 2013; Kim & McDonough, 2008), Saudi learners (Alotaibi, 2019), Igbo learners (Amadi, 2018), Arabic learners (Lghzeel & Raha, 2020), and Hungarian learners (Tankó, 2010). For Thai learners, Contrastive Analysis (CA), Error Analysis (EA), and Interlanguage (IL) paradigms have been used to explain their difficulties, errors, and production in a large number of SLA studies. Additionally, these studies mostly employed written and acceptability/grammaticality judgment tasks (AJTs/GJTs) which can reflect learners'

production and comprehension, respectively. As mentioned above that learners' language can be investigated in many linguistic levels, syntactic structures are of great interest to Thai scholars including the English passive construction. Simargool (2008) and Somphong (2013), for instance, explored the English passive construction and L1 Thai learners' pseudo-IL[1], and EA, respectively. Avoidance in SLA research in Thai learners has also been investigated, e.g., avoidance in the English passives by Chotiros and Pongpairoj (2012).

The English passive construction is of great interest for a large number of scholars and is considered problematic for many learners from different L1 backgrounds because of its complexity compared to its counterpart—the active construction. It is not surprising that the construction in question can cause difficulties in L2 learners of English since English passive sentences require additional markings, which are an auxiliary and the process of changing verbs into past participial forms. For Thai learners, difficulties in acquiring the English passive construction may take place due to the fact that the passive constructions in Thai and English differ.

(1) Thai

เขาถูก/โดนเพื่อนสนิทหักหลัง

kʰăw thùuk/doon pʰûːan.sa.nít hàk.lăŋ

S/he PASS close friend betray

'S/he was betrayed by his/her close friend.'

[1] IL pseudo-passives are ungrammatical sentences with passive meaning and the patient/theme argument as the sentential subject while their verbal forms are active and transitive, e.g., *the picture was painting* (Simargool, 2008).

(2) English

S/he got/was betrayed by his/her close friend

Even though both Thai and English are considered languages with periphrastic passive constructions[2], Thai and English passives, which can be observed in (1) and (2), respectively, differ in terms of the syntactic schema of the passive construction, verb forms, and contexts in which the passive construction can occur. It is observed that Thai passive construction is employed with different passive markers in particular restricted contexts due to its prototypical adversity while English passive construction, specifically with *be*, can be used in all contexts. As most research studies on Thai learners and the English passive construction utilized written tasks, there is a lack of experiments on second language (L2) processing, both off-line and on-line techniques. That is to say, psycholinguistic methods are not prevalent among SLA studies in Thailand, not only for the passive construction but also other types of syntactic structures.

The study of Kim and Kim (2013) investigated verbs in English passive construction. These verbs can be categorized into two groups according to their translation into Korean: Type 1 verbs, which are possible to be used in Korean passive sentences, and Type 2 verbs, which do not usually appear in Korean passive construction. This study was conducted using a self-paced reading task measuring reaction time in reading and answering comprehension questions. Reaction time in

[2] Passives are syntactically divided into two types: strict morphological/synthetic passives and periphrastic/analytical passives (Keenan & Dryer, 2007; Siewierska, 2005). The former type refers to languages that mark passive sentences by affixation (e.g., Tagalog), vowel change (e.g., Arabic), or other morphological processes (e.g., reduplication in Hanis Coos). The latter passive type includes languages that use an auxiliary and a morphological form of the lexical verb such as the passive participial form to mark passive sentences (e.g., Persian and Tzeltal).

reading English passive sentences formed with Type 1 verbs and with Type 2 verbs was measured and compared across levels of English proficiency. It can be concluded that low-proficiency learners were influenced by Type 2 verbs which are not normally found in Korean passive construction as the results showed that they spent more time reading and answering questions with Type 2 verbs compared to high-proficiency learners.

Even though Thai is claimed to have three passive markers including *thùuk*, *doon*, and *dâjráp*, this study focuses on the *thùuk* passive marker which is primarily used in adversative and also in neutral contexts (Prasithrathsint, 2001). That is, similar to Korean, *thùuk*-passives do not occur in all contexts as English passives do. Since it is the most general and prevalent passive marker in lights of usage compared to the other markers (Pothipath, 2018; Prasithrathsint, 2001, 2010), the Thai *thùuk*-passive construction and English passive construction are hence the main focus of this work. Verbs that are used in this study are categorized into three types by employing two criteria: naturalness of verbs in Thai *thùuk*-passives and adversity. Verb Type 1 includes verbs that can occur in Thai *thùuk*-passives naturally and have adversative meanings (e.g., *punish*, *attack*, *reject* in English which can be translated into Thai as *ลงโทษ* loŋ.tʰôːt, *โจมตี* tɕoːm.tiː, *ปฏิเสธ* pà.tìʔ.sèːt , respectively). Verb Type 2 covers those that can be used naturally with Thai *thùuk*-passives and have non-adversative meanings (e.g., *ask*, *release*, *design* which can be translated into Thai as *ถาม* tʰăːm, *ปล่อย* plɔ̀ːj, *ออกแบบ* ʔɔ̀ːk.bɛ̀ːp, respectively). Verb Type 3 consists of verbs that are unnatural with Thai *thùuk*-passives regardless of their meaning (e.g., *celebrate*,

admire, *improve* which can be translated into Thai as *(เฉลิม)ฉลอง* (tɕʰà.lɤ̌ːm) tɕʰà.lɔ̌ːŋ, *ชื่นชม* tɕʰûːn.tɕʰom, *ปรับปรุง* pràp.pruŋ, respectively). Note that verbs in Verb Type 3 are mostly non-adversative. The sentences (3) - (5) are examples of the three verb types passivized in Thai and English.

(3) Verb Type 1 (adversative verbs which can naturally be passivized with Thai *thùuk*-passives)

a. เด็กผู้ชายถูกผีสิงที่สุสาน

dèk.pʰûː.tɕʰaːj	thùuk	pʰîː	sǐŋ	tʰîː	sùʔ.sǎːn
boy	PASS	a ghost	possess	at	graveyard

‘A boy was possessed by a ghost at a graveyard’.

b. A boy was possessed by a ghost at a graveyard.

(4) Verb Type 2 (non-adversative verbs which can naturally occur in Thai *thùuk*-passives)

a. รถจักรยานถูกคุณน้าซ่อมที่โรงรถ

rót.tɕàka.jaːn	thùuk	kʰun.náː	sɔ̂ːm	tʰîː	roːŋ.rót
bicycle	PASS	uncle/aunt	fix	at	garage

‘The bicycle was fixed by our uncle/aunt in the garage.’

b. The bicycle was fixed by our uncle/aunt in the garage.

(5) Verb Type 3 (verbs which are unnatural when passivized in Thai *thùuk*-passives)

a. การศึกษาถูกภาคเอกชนส่งเสริมทางด้านการเงิน

kaːn.sɯ̀k.sǎː	thùuk	pʰâːk.ʔèːk.kàː.tɕʰon.	sòŋ.sɤ̌ːm	tʰaːŋ.dâːn.kaːn.ŋɤːn
Education	PASS	private sector	promote	financially

'Education was promoted by the private sectors financially.'

b. Education was promoted by private sectors financially.

The present study attempts to fill the gap by employing a psycholinguistic method through a self-paced reading task to explore L2 on-line processing and an acceptability judgment task to investigate L2 off-line processing of the English passive by L1 Thai learners. It is expected that the experiments in this study will not only shed light on the learners' linguistic knowledge about the construction in question but also contribute to the field of applied psycholinguistics and SLA in Thailand.

1.2 OBJECTIVES

This study aims to investigate L2 syntactic processing of the English passive construction in L1 Thai learners in order to examine the extent to which different types of verbs and language proficiency affect L1 Thai learners of English in judging and reading the construction in question. Since two groups of learners with different levels of English proficiency, intermediate and advanced learners, are the participants of this study, it is a cross-sectional study which can shed light on developmental

stages of Thai learners' interlanguage (IL) and the mechanism of IL processing as well.

1.3 RESEARCH QUESTIONS AND HYPOTHESES

The research questions of this study are

1. How do different types of verbs, which are categorized by their naturalness in the Thai *thùuk*-passive construction and adversity, influence acceptability judgment of English passive by L1 Thai learners with different proficiency levels of English?

2. How do different types of verbs, which are categorized by their naturalness in the Thai *thùuk*-passive construction and adversity, influence processing of English passive by L1Thai learners with different proficiency levels of English?

It is hypothesized that

1. In the acceptability judgment task, high-proficiency learners are not affected by the verb types categorized by naturalness of verbs in the Thai *thùuk*-passive construction and adversity. The low-proficiency learners, however, are affected by the verb types.

2. In the self-paced reading task, high-proficiency learners' reading performance is not affected by the verb types categorized by naturalness of verbs in the Thai *thùuk*-passive construction and adversity. Low-proficiency learners' reading performance, however, is affected by the verb types.

1.4 SIGNIFICANCE

It is highly expected that the present study can contribute to psycholinguistic and second language processing studies in L1 Thai learners of English since in Thailand second language acquisition studies applying psycholinguistic research techniques are still lacking. Results can, furthermore, shed light on English language pedagogy for L1 Thai learners. In other words, English language teachers can apply this study's contribution to help improve their teaching materials and/or methods for L1 Thai learners.

1.5 SCOPE

The English passive construction consists of two main types: long passives and short passives. The former refer to passive sentences whose agentive NPs are not omitted and appear as a part of the *by*-phrase while the latter refer to those that do not contain their agentive phrases. Only long passive sentences in English are included here on the assumption that *by-phrase* will help indicate that the test items are in their passive forms with the agent placed after *by* so as to facilitate learners with lower proficiency who might not be as familiar with the English passive construction without the agent as those with higher English proficiency.[3] Furthermore, even though some English grammar textbooks for Thai high school students mentioned several cases where the agentive phrase is not needed, a great number of examples included *by-phrase*. Kamying (2009) and Chenpanas (2012) retained *by-phrase* in all cases

[3] As most English grammar books and test preparation manuals for high school students in Thailand include the passive construction, it is assumed that Thai students irrespective of proficiency levels were taught the construction.

when he described the structural rules of transforming actives into passives in different tenses and aspects. *Get*-passives are also not included in the present study as it is claimed to be rarer than *be*-passives (Johnson and Oksefjell, 1996 as cited in Wanner, 2009). Many researchers added that the use of *get*-passive is also more limited compared to *be*-passives (Wanner, 2009). Even though Miller (2008) argued that it outnumbers *be*-passives in spoken English, it is assumed that Thai students are familiar with *be*-passives and long passives due to input from formal instruction.

This study, additionally, only focuses on the *thùuk*-passive marker since it is claimed to be a general passive marker in Thai. It can be used in both adversative and non-adversative contexts, and spoken and written language (Pothipath, 2018; Prasithrathsint, 2001, 2010) while the other markers, namely *doon* and *dâjráp*, are limited to adversative and beneficial contexts, respectively.

Chapter 2
Literature Review

Presented in this chapter are fundamental concepts related to the present study. The literature review includes the roles of L1, passive constructions in Thai and English, and second language processing.

2.1 THE ROLES OF THE FIRST LANGUAGE (L1)

It has been widely acknowledged that, in second language acquisition (SLA) studies, the roles of the first language (L1) are of great importance and have long been investigated by applied linguists. Besides the roles of L1, other terms such as *language transfer* and *cross-linguistic influence* are also employed to refer to the same idea. Language transfer is generally divided into two types which are positive transfer and negative transfer. Positive transfer refers to transfer that facilitates second language (L2) learners in acquiring a target language (TL) due to similarities of L1 and L2. On the other hand, negative transfer, also known as *interference*, is defined as transfer that leads to difficulties in L2A[4] because of discrepancies between L1 and L2 (Benati & Angelovska, 2016; Ellis, 2008, 2015; Gass, Behney & Plonsky, 2020; Lightbown & Spada, 2013; Ortega, 2009; Saville-Troike & Barto, 2016).

In the three main hypotheses on learner's language, i.e., Contrastive Analysis (CA) introduced by Lado in 1957, Error Analysis (EA) led by Corder in 1967, and Interlanguage (IE) coined by Selinker in 1972, language transfer has also played a

[4] The researcher follows Ellis (2015) in distinguishing SLA and L2A. Even though both terms stand for second language acquisition, the former is used for a discipline studying how humans acquire additional languages whilst the latter describes a process of acquiring additional languages.

crucial role and normally been mentioned as an important factor in the process of acquiring an L2 even though its importance differs depending on each hypothesis.

Contrastive studies claim that language transfer is the most prominent factor supporting or inhibiting L2A. The hypothesis specifically focuses on how L2 learners encounter difficulties when learning or acquiring an additional language and errors they produce. In other words, the *Contrastive Analysis Hypothesis* (CAH) considers interference as the main source of failure in L2A, and the best way to prevent such difficulties in learning an L2 is to compare and contrast the native language (NL) and target language (TL). CAH's main objectives are therefore for language pedagogy. However, the contrastive approach later became less popular as it cannot account for learners' errors that were not predicted before as they were not seen as difficulties in learning TL.

This gave rise to error analysts with their approach called *Error Analysis* (EA) whose focus is on analyzing L2 learners' errors, after its name. Error analysts divided the source of errors into two types comprising interlingual errors and intralingual errors. The former type deals with errors occurring due to the differences between L1 and L2. The gist of interlingual errors was adapted from CAH: L1 interference is a factor causing difficulties in learning an additional language. On the other hand, the latter type—intralingual errors—is used to describe errors from other causes which interference cannot account for, e.g., the complexity of the L2 system, learning strategies, and internal processes such as overgeneralization. Corder (1981 as cited in Humphries & Phoocharoensil, 2012) points out the importance of errors in learner's language as evidence from the process of acquiring an additional language. Error

analysts, however, overemphasized errors from data obtained from L2 learners and these data alone are inadequate for error analysts when avoidance hinders the errors.

The term *interlanguage* (IL) coined by Larry Selinker in 1972 shifted the focus of the study of learners' language from analyzing and emphasizing errors produced by L2 learners to developmental processes of learners' language. IL is defined as a separate linguistic system that L2 learners create and this system consists of linguistic characteristics of both their prior language(s) and TL. Even though the term was first used by Selinker, the notion of a linguistic system developed by L2 learners had been studied and termed *transitional competence* and *idiosyncratic dialect* by Corder (1981 as cited in Humphries & Phoocharoensil, 2012). IL does not only pay attention to errors produced by language learners but it explores learners' language and its developmental stages. One of the most essential concepts in IL studies is *fossilization* which is the process taking place when a particular structure at any linguistic level stops developing. Fossilization can be, for some researchers, clarified by neurolinguistic explanations (i.e., the plasticity of the brain) and the process is thus inevitable. Some, on the contrary, claim that fossilization is avoidable and biological restraints are partially responsible for the process. To put it differently, other factors such as sociolinguistic factors should be taken into account (Tarone, 2006). Importantly, language transfer has not been neglected throughout IL works as an important factor affecting such stages. Learners develop their ILs towards L2 as a goal. The more they develop their ILs, the closer they become more native-like. Different particular structures of a learner can also appear in different stages of IL.

It can be concluded from all three major theoretical perspectives on SLA—from CAH, EA, and IL—that *cross-linguistic influence* or *language transfer* from the

prior language(s) has been playing a central role as an influential factor. It is thus inevitable to deny the importance of L1 in the process of acquiring L2 whether they are similar or different.

2.2 PASSIVES

The two sentences in each of the following pairs demonstrate the so-called *voice system* or *grammatical voice*. This notion refers to constructions with distinctive adjustments of participants (semantic roles) and grammatical relations (Payne, 2011). Different grammatical voice categories—active and passive—depict different foci of the sentences. (6a) and (7a) demonstrate active sentences in English and Thai while (6b) and (7b) are considered passive sentences in the two languages.

(6) English

a. The cat chased the mouse. active

b. The mouse was chased by the cat. passive

(7) Thai

a. แมวไล่จับหนู active

mɛ:w lâj.tɕàp nŭ:

Cat chase mouse

‘The cat chases/d the mouse.’

b. หนูถูกแมวไล่จับ passive

nŭː thùuk mɛːw lâj.tɕàp

Mouse PASS cat chase

‘The mouse is/was chased by the cat.’

The sentences in each pair of the two languages present the same event of action or proposition (Aarts, 2011) but have different foci. That is, they are analogous in meaning with slight differences. The actives pay attention to the agent of a sentence while the passives concentrate on the acted-upon argument of the sentence. The passives are marked with special additional features, i.e., *be* in English and *ถูก* (***thùuk***) in Thai. Unlike Thai which is an isolating language, English, additionally, requires past participial forms of verbs which are *chased* (chase + -d). Core arguments in the two voice categories are, consequently, arranged differently so as to present different foci of an utterance.

Timyam (2014) explains that changes in grammatical voice from *active* to *passive* or vice versa demonstrate a reorganization of relations between semantic roles and grammatical relations (Table 1). Figure 1 also shows the similar idea of such rearrangement.

Semantic roles	Grammatical relations	
	Active	**Passive**
Agent	Subject	Oblique
Theme/patient	Object	Subject

Table 1: The relations between semantic roles and grammatical relations in actives and passives (adapted from Timyam (2014)

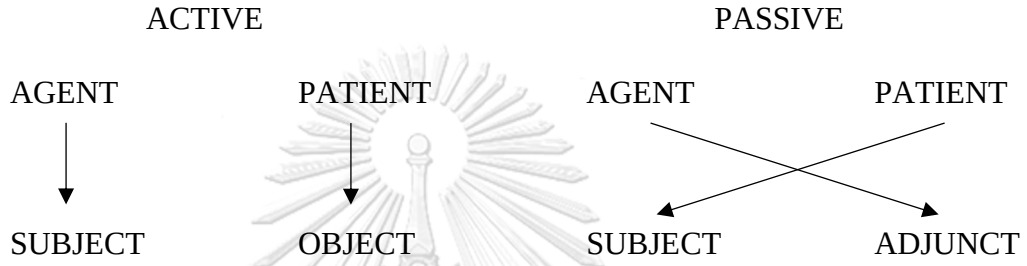

Figure 1: The rearrangement of semantic roles and grammatical relations in active and passive clauses (adapted from Zúñiga and Kittilä (2019))

Studies on the passive construction in first language acquisition (FLA) show that the acquisition of passives in L1 English children develops around the age of five (Borer & Wexler, 1987 as cited in Clark, 2009; Owens, 2016). However, several claims are made that, across languages, children can acquire the passive construction earlier than the age of five, especially in non-Indo-European languages, e.g., Inuktitut, Zulu and, Quiche Mayan (Owens, 2016). Yet, it is cross-linguistically clear that the active voice, as a less complex, more fundamental structure, is acquired before its passive counterpart in FLA. This highlights how the passive construction is onerous to be acquired in L1 acquisition and this idea can be applied to L2 acquisition as well.

2.2.1 Typology of passives

Linguists have considered the *passive voice* or *passive construction* a marked construction compared with the *active voice* which is unanimously deemed unmarked because not all languages have the passive construction, according to linguistic typology. Sieweirska (2005) found that the majority of languages in the world do not have the passive construction. Accordingly, there are two types of languages based on the existence of the passive construction: one that has the construction and the other that does not.

There are several typological characteristics of the passive construction that are shared cross-linguistically. Pothipath (2018) explained that the two important typological features of the passive construction are that 1) the subject of a sentence has to be affected by the action and 2) there has to be a passive marker. Siewierska (1984) listed three typological characteristics of passive and later added two more features (Siewierska, 2005). Mentioned below are these characteristics.

(a) The so-called passive construction needs to contrast with the counterpart construction which is active.

(b) The subject of the active construction receives an oblique case in the passive and can be omitted.

(c) The subject of the passive construction corresponds to its counterpart construction’s direct object.

(d) Compared to the active construction, the use of the passive counterpart is more restricted.

(e) The verb is morphologically marked.

According to Palmer (1994), the passive construction is mainly defined as a result of the process of promoting an object (theme/patient), demoting a subject (agent) of an active sentence, and marking the passive verb. This construction shifts the focus from its active counterpart. For Palmer, passive sentences are derived from their active counterparts via transformational, formal rules. The process of changing actives to passives is known as *passivization*. From the functionalist perspective, some might describe passive sentences as those whose active counterparts' agents undergo de-topicalization and the patients become topicalized (Givón, 2006).

Payne (2006, 2011) described the passive construction from the perspective of linguistic typology. He explained that the passive voice differs from the active counterpart for its alignment of grammatical relation and semantic relation in the sentence. In passive sentences, the patient argument functions as the subject while the agent argument receives an oblique case and can be omitted as an adjunct. Passive clauses with agent omission are called *agentless passives* (Dixon, & Aikhenvald, 2000). Apart from the notion of voice, Payne (2006) also used the concept of *valence* or *valency*[5], including both semantic and syntactic valence. From this view, the passive construction is regarded as a *valence-decreasing construction*. To simplify, grammatical slots for verb arguments decreases when a sentence is under passivization. To illustrate, *hit* in an active sentence requires two core arguments, but

[5] The concept of valency or valence is borrowed from chemistry to describe the number of participants of an event. It can be divided into two types: semantic valence and syntactic valence. The former refers to the number of participants that a verb requires in the world scene or event while the latter refers to the number of core arguments in syntactic structures (Payne, 2006, 2011). For example, the word "eat" requires two semantic arguments including a thing that got eaten and one that ate. This can also be called event structure or semantic argument structure of "eat" (Hilpert, 2019). However, the verb can be used with either one or two core arguments. That is, "eat" always contains two semantic arguments but it can have either only one syntactic argument or two core arguments. To illustrate, we can say *he already ate* and *he already ate that fish*. The former has one core argument which is the eater and the direct object is omitted because it is not important or known. The latter, on the other hand, contains both the eater and a thing that was eaten.

when the sentence is passivized, *hit* takes only one core argument. So, the main verbs of the passive construction become intransitive by changing from transitive verbs in their active counterparts as a result of the valence-decreasing process (Dixon, R., & Aikhenvald, A., 2000; Payne, 2006, 2011; Prasithrathsint, 2003, 2010). From this, transitive active clauses[6] have two main core arguments which are A (most agent-like argument/transitive subject) and O (less agent-like argument/transitive object) while their derived intransitive passive clauses consist of one core argument, S (single argument/intransitive subject), which is correspondent to O in their active counterparts. A is then changed from a main core argument in active clauses into a periphery argument of passive clauses. Zúñiga and Kittilä (2019) gave a description of prototypical passive sentences which also accord with typologists and valency's view. That is, prototypically, compared to actives, passives have fewer syntactic argument(s). Passive clauses, moreover, differ from their active counterparts in terms of the rearrangement of grammatical relations. Lastly, passive clauses are marked in their predicate.

In a nutshell, typologically, passives contrast with actives in several aspects: the arrangement of semantic roles and grammatical relations, the number of core arguments (syntactic valency), sentential focus, morphological marking. Passivized sentences' subject is the patient/theme resulting non-canonical mapping of semantic roles and grammatical relations compared to their active counterparts. Their verb form becomes more intransitive because of the syntactic valence-decreasing process. This

[6] According to Dryer (2007), verbs are subcategorized into two types: intransitives and transitives. Verbs that take only one argument are called intransitives while those with two or more than two arguments are transitives. Transitive clauses are said to contain objects. If a clause has two objects and one subject (three core arguments), it is called a ditransitive clause. Carnie (2011) summarized that intransitives, transitives, and ditransitives refer to verbs with one, two, and three core arguments, respectively.

is related to the fact that the agent which is a core noun argument in actives is demoted to a non-core argument in passives. In addition, actives and passives present different focal information. The latter topicalize the patient/theme and detopicalize the agent. That is, the rearrangement of sentential arguments provides a different perspective of the same proposition of an utterance depending on which information is given emphasis. Lastly, passives are more morphologically marked compared to actives. Examples of active ((8a)-(10a)) and passive ((8b)-(10b)) sentences in languages other than English and Thai are given below.

(8) Kiribatese

a. E_i kamate-a_j te $naeta_j$ te moa_i

it kill-it the snake the chicken

'The chicken killed the snake.'

b. E_i kamate-aki te $naeta_j$ (iroun te moa_i)

it kill-PASS the snake (by the chicken)

'The snake was killed (by the chicken).'

(Keenan & Dryer, 2007)

(9) Sre

a. Cal paʔ mpon
wind open door
'The wind opened the door.'

b. Mpon gə-paʔ mə cal
door PASS-opem by wind
'The door was opened by the door.'

(Manley, 1972 as cited in Keenan & Dryer, 2007)

(10) Malay

a. Salji tebal me-liputi kemuncak gunung fuji
snow thick ACT-cover summit mount Fuji
'Thick snow covers the summit of Mount Fuji.'

b. Kemuncak gunung fuji di-liputi salji tebal
summit mount Fuji PASS-cover snow thick
'The summit of Mount Fuji is covered by thick snow.'

(Prasithrathsint, 2004)

2.2.2 Passives in Thai

Following all requirements of the aforementioned typological characteristics, Thai has been claimed to have the passive construction (Prasithrathsint, 2006; Thepkanjana, 2016). Prasithrathsint (2001, 2004) found that the adversative meaning of the passive construction is common among Southeast Asian languages (and East Asian languages) as an areal feature. That is, Thai and other languages in South East

Asia and East Asia, e.g., Vietnamese, Khmer, and Japanese, have adversative passive constructions. Supporting the claim, Suphon (1998) added that Thai passives are said to carry unfavorable meaning.

There are three main passive markers in Thai, which are *thùuk*, *doon*, and *dâjráp*. The first two markers literally mean *to touch something* while the last one's literal meaning is *to receive*. These markers developed from lexical verbs and eventually became the passive markers in Thai under the process of grammaticalization (Pothipath, 2018), but they have also retained their original function.

Each marker is used in different contexts depending on meanings. *Thùuk* and *doon* are claimed to be used in unfavorable contexts while *dâjráp* occurs in favorable contexts. Compared with *thùuk* and *doon*, *dâjráp* is the least frequent passive marker in Thai (Prasithrathsint, 2010). As mentioned above, Thai passive constructions, especially with *thùuk* and *doon*, are adversative in nature. However, Prasithrathsint (1985, 1988, 2001, 2006, 2010), and Iwasaki and Ingkaphirom (2009) suggested that the marker *thùuk* has now been neutralized. That is, *thùuk* now can be used in neutral contexts with high productivity. A series of Prasithrathsint's works (1985, 1988, 1999) on the change of Thai passive constructions explained that the neutralization of Thai passives is due to the modernization or Westernization of the Thai society. In other words, the marker *thùuk* has been neutralized because of the language contact with English. In addition to the neutralization of *thùuk*, the influence of English during the modernization in the Bangkok period also resulted in an increase in the use of the passive constructions in Thai (Prasithrathsint, 1985, 1988, 1999). According to Prasithrathsint (2001), the marker *thùuk* is now regarded as a general Thai passive

marker and *doon* has become a "truly adversative passive" marker in Thai. In spite of the fact that *thùuk* and *doon* can be used interchangeably in adversative contexts and share the same syntactic schema, the latter cannot be used in non-adversative sentences (Prasithrathsint, 2001). It can be attested that the adversative passive construction, which is an areal feature shared cross-linguistically in Southeast Asian languages, is still extant in Thai. One marker, *thùuk*, underwent neutralization and its function has extended while the other, *doon*, is now functioning as a full adversative marker. Despite the neutralization of *thùuk*, Po-ngam (2008) studied Thai passive construction found in newspapers during 1946 to 2005 and found that *thùuk* was the most frequent one among the three passive markers and it is still used mostly in negative contexts. Nevertheless, according to Prasithrathsint (2006), *thùuk* is neither adversative nor non-adversative. It is now a structural marker for grammatical purposes of marking the sentences passive only as she also found *thùuk* used with favorable verbs (Prasithrathsint, 2001). However, *thùuk* is still prevalent to convey adverse events according to Po-ngam's data (2008). Another difference between the two markers is that *thùuk* is more formal (and occurs frequently in written language) than *doon* which is found colloquially (Potipath, 2019; Supanee, 2012a).

From a previous study by Tonglaw (1952 as cited in Lekawatana, 1979), the change of Thai actives into the passives consists of two processes. The first process is to move the object in an active sentence into the subject position. The second process then deals with placing the subject in the active sentence between the auxiliary or the passive marker in Thai, *thùuk*, and the finite verb, and this NP is considered part of the predicate (Tonglaw, 1952 as cited in Lekawatana, 1979). Sudmuk (2003) specified that it is noteworthy that NP_1 which is the former subject has to be in the same

position in both active and passive constructions. In other words, it always precedes the main verb of the sentence. One active and two passive sentences with *thùuk* and *doon* below exemplify the two processes.

(11) เพื่อนใส่ร้ายเขา

pʰûːan	sàj.ráːj	kʰăw
Friend	slander	him.

‘His friend slandered him.’

(12) เขาถูกเพื่อนใส่ร้าย

kʰăw	thùuk	pʰûːan	sàj.ráːj
S/he	PASS	friend	slander

‘S/he was slandered by his friend.’

(13) เขาโดนเพื่อนใส่ร้าย

kʰăw	doon	pʰûːan	sàj.ráːj
S/he	PASS	friend	slander

‘S/he was slandered by his friend.’

From the examples above, (11) shows an active sentence in Thai which follows the pattern of SVO. The sentences (12) and (13) demonstrate passive sentences in Thai with two passive markers, which are *thùuk*, and *doon*, respectively.

As shown in (12) and (13), Thai passive sentences with the two markers—*thùuk* and *doon*—can be used grammatically and acceptably in adversative contexts. In this case, they are used with ใส่ร้าย *sàjrá:j* ‘to slander’.

The structure of Thai actives is generally NP_1 + VP + NP_2 or SVO while the default pattern of Thai passive sentences is structured as NP_2 + a passive marker (*thùuk* or *doon*) + (NP_1) + V. In the passive sentences, NP_2 is the object of the active counterpart and holds the semantic role of patient or theme while NP_1 is the subject of the active counterpart and acts as the agent. The sentences (12) – (13) above illustrate this syntactic pattern which is compatible with *thùuk* and *doon* only. According to Timyam (2015), the marker *dâjráp* cannot be applied to this syntactic pattern. As a result, unlike the other two markers, it can be noted that if we use the marker *dâjráp* with the same structure and verb as (12) and (13), an unacceptable passive sentence takes place since it cannot be contextualized with adversative verbs and the marker does not allow this syntactic schema. *Dâjráp* will be discussed separately.

Thai passives can also be formed as NP_2 + a passive marker (*thùuk* or *doon*) + VP (+ *dooj* + NP_1). *Dooj* is a preposition and, in this case, introduces the agent or NP_1. Functioning as the PP with the non-core agentive argument in the passive sentence, *dooj-phrase* can be optionally omitted. This schema is believed to be an influence from the passives with *by-phrase* in English caused by language contact as the two languages share high, striking similarities in this pattern (Timyam, 2015). Prasithrathsint (2006) added that the neutralized *thùuk* with the agentive phrases is usually found in this pattern, with *dooj-phrase*, rather than the previous one. She also

found that commonly Thai passive sentences with *thùuk* are either agentless or have the agentive phrases with *dooj*.

For *dâjráp*, it is syntactically different from *thùuk* and *doon*. The co-occurrence of *dâjráp* and *dooj-phrase* is not well documented in the literature. However, *dâjráp* and *càak-phrase* can co-occur (Timyam, 2015). *Càak*, meaning 'from', is used to precede NP_1. That is, similar to *dooj-phrase* and *by-phrase* in English, *càak-phrase* is also deemed an agentive prepositional phrase. *Dâjráp* can also be formed with nominalized clauses with two Thai nominalizers, *kaan* and *kwam* (Iwasaki & Ingkaphirom, 2009; Prasithrathsint, 1988; Tejarajanya, 2015). Unlike *thùuk* and *doon*, the use of *dâjráp* is highly restricted. According to Prasithrathsint (2010), it is commonly used in favorable contexts and this marker occurs with some verbs only, e.g., มอบหมาย mɔ̂ːp mǎːj 'to assign', เลือก lɯ̂ːak 'to choose/elect', แต่งตั้ง tɛ̀ŋ tâŋ 'to appoint', แจ้ง tɕêːŋ 'to inform', เชิญ tɕʰɤːn 'to invite' and คัดเลือก kʰát lɯ̂ːak 'to select/choose.' Sentences (14) and (15) display the use of *dâjráp*-passives without and with the agent, respectively.

(14) เขาได้รับเชิญไปเปิดพิธีในงาน

kʰăw	dâj.ráp	tɕʰɤːn	paj	pɤ̀ːt	pʰíʔ.tʰiː	naj	ŋaːn
He	PASS	invite	go	open	ceremony	in	work

'He has been invited to go to open the ceremony.'

(Iwasaki & Ingkaphirom, 2005)

(15) เขาได้รับเชิญจากรัฐบาลเป็นประธานในการแข่งขัน

kʰăw dâj.ráp tɕʰɤ:n tɕà:k rát.tʰàʔ.ba:n pen pràʔ.tʰa:n naj ka:n.kʰɛ̀ŋ.kʰăn

He PASS invite from government be president in competition

‘He has been invited by the government to be the president of the competition’.

(Timyam, 2015)

To sum up, there are two main forms of the passive construction for *thùuk* and *doon*: one is the default pattern and the other is the foreign pattern which can be used commonly as well. In both patterns, NP_1 can be omitted. However, the data of present-day Thai analyzed by Prasithrathsint (2006) showed that more than 90 percent of full passive sentences are formed with *dooj-phrase*. In other words, the first pattern placing a passive marker right between the two NPs is now less prevalent. Unlike the other two markers, *dâjráp* does not share the same syntactic patterns and only has one structural schema. However, the agentive phrase in *dâjráp*-passives can also be omitted. The marker, moreover, does not allow the agent to be placed next to itself. If the agent is retained, *càak-phrase* needs to be added to introduce the agent which follows the VP or nominalized clause. Note that verbs that co-occur with this marker are highly restricted in meaning. VP here refers to verbs that Prasithrathsint (2010) listed and are mentioned in this chapter earlier. Below are the syntactic structures of Thai passives of each marker.

Thùuk

1. The default pattern: NP_2 + *thùuk* + (NP_1) + VP

2. The foreign pattern[7]: NP_2 + *thùuk* + VP + (*dooj* + NP_1)

Doon

1. The default pattern: NP_2 + *doon* + (NP_1) + V

2. The foreign pattern: NP_2 + *doon* + VP + (*dooj* + NP_1)

Dâyráp

The default pattern: NP_2 + *dâjráp* + VP/ Nominalized clause + (*càak* + NP_1)

Some linguists (Kullavanijava, 1974 as cited in Sudmuk, 2003; Singnoi, 1999; Sudmuk, 2003; Lee & Ackerman, 2017) claimed that there is another type of Thai passives which is *dooj*-passives. This structure is similar to NP_2 + passive marker (*thùuk, doon,* or *dâjráp*) + V + (*dooj* + NP_1), but it does not require a passive marker. The schema of *dooj*-passives is then NP_2 + V + *dooj* + NP_1. Different from the constructions with *thùuk* and *doon*, *dooj-phrase*, which is an agentive phrase, cannot be omitted. *Dooj*-passives also appear in neutral contexts only as in (16).

[7] The word 'foreign' here refers to the influence of English as it is believed that language contact between Thai and English might lead to the emergence of this syntactic pattern.

(16) เรื่องนั้นเขียนโดยนักเขียนมีชื่อ

rûːaŋ	nán	kʰĭːan	dooj	nák.kʰĭːan	miː	tɕʰûː
story	that	write	by	writer	have	fame

‘That story was written by a famous writer.’ (Sudmuk, 2003)

Similar to *dooj*-passives, there are other constructions in Thai which convey passive meaning but are unmarked. They are called with different names, i.e., verb passives or unmarked passive construction[8] (Prasithrathsint, 1985, 1988, 2001), patient-subject construction[9] (Thongtaeng, 2009), middle construction[10] (Inhongsa et al., 2016; Potipath, 2019), and passive-like construction[11] (Potipath, 2019). Despite their different names, these constructions generally allude to Thai sentences that have the non-agent subject and passive meaning without any passive marker. The sentence (17) is an example of the unmarked passive construction in Thai with factitive verbs while the sentence (18) exemplifies Thai middle construction.

[8] In Prasithrathsint’s works (1985; 1988; 2001), this construction is said to contain “a zero-derived intransitive verb”. That is, it looks like its transitive counterpart but functions as an intransitive verb without any passive marker. Verb passives’ subject is the patient. The unmarked passive construction usually appears with factitive verbs such as สร้าง sâːŋ ‘to build’, ตกแต่ง tòk tɛ̀ŋ ‘to decorate’, ทำ tʰam ‘to make/do’, and ปลูก plùːk ‘to plant’. However, present day data show that it is normal to passivize these verbs with the neutralized *thùuk* marker (Prasithrathsint, 2001) (see also Footnote 11). Iwasaki and Ingkaphirom (2005), however, grouped verb passives or the unmarked passive construction with *dooj*-passives.

[9] Patient-subject construction refers to a grammatical construction passive meaning that generally has an inanimate argument as the sentential subject which is not limited to the patient (it can be the goal, beneficiary, place, instrument, etc.), but lacks a passive marker (Thongtaeng, 2009).

[10] According to Inhongsa et al. (2016), Thai middle construction refers to sentences whose subject is the patient/theme without a passive marker and they require an adverb. This construction is used to depict a generic interpretation. Pothipath (2018) added that if a passive marker is added to middle sentences in Thai, they will become unacceptable.

[11] This term refers to the same concept as verb passives or the unmarked passive construction. However, the addition of a passive marker is possible. Comparing passive-like sentences with a passive marker with those without it, the latter are deemed smoother while the former show stronger emphasis on the acted-upon argument (Pothipath, 2018).

(17) อาหารแบบนี้ทำง่าย

ʔaː.hăːn	bɛ̀ːp	níː	tʰam	ŋâːj
Food	kind	this	make	easy

‘This kind of food is easy to prepare.’

(Prasithrathsint, 1985)

(18) บุหรี่นี้ขายดี

bù.rìː	níː	kʰăːj	diː
Cigarette	this	sell	good

‘This cigarette sells well.’

(Inhongsa et al., 2016)

2.2.3 Passives in English

The English passives also have characteristics that are shared with other languages. The passive construction in English can be used with two passive markers which are *be* and *get*. Sentences with *be* are considered basic passives while those with *get* are classified as non-basic passives. *Get*-passives are, furthermore, claimed to occur frequently in adverse contexts according to Downing’s (2015) and Chappell’s studies (1980 as cited in Prasithrathsint, 2010). Coto Villalibre (2015), however, argued that *get* can appear in both favorable and unfavorable contexts but it implies that some parts of responsibility for the action fall on the subject and is used to emphasize unexpectedness of events. Miller (2008) added that this type of passive is not acceptable when used with *accidentally* while it is acceptable with *deliberately*.

This clarified why *get* is used for unexpectedness. Payne (2006, 2011) also stated that, in *get*-passives, the patient-like argument has "some degree of control over the event" and can be used in imperative sentences in which *be*-passives cannot be found. *Get*-passives, furthermore, differ from *be*-passives in terms of the grammatical functions of *be* and *get*. Different from *be*, *get* is not considered an auxiliary verb as it requires *do insertion* to form questions and negations (Huddleston & Pullum, 2015; Parrott, 2000). Downing (2015) also stated that the two English passive markers appear in different registers. *Be* is normally used in formal contexts including written texts while *get* occurs more colloquially, usually in speech as it is claimed that the majority of passive clauses found in English spontaneous speech are *get*-passives (Miller, 2008). Below is the schema of the English passive construction.

(19) NP_2 + *be/get* + passive participle + (by + NP_1)

By-phrase, or the agentive phrase, in English passives is optional. Passive sentences that do not contain this adjunct are called *short passives* or *agentless passives* while those consisting of the agentive phrase are considered *long passives*. In spite of the fact that long passives are common in academic writing, the agentless ones are still more frequent in the same register (Miller, 2008).

Apart from *be* and *get* passives, English passives can also be categorized into other types. Puckica (2009), for example, grouped English passives into two types. The first category is called *standard* or *central* passives which are passives that are composed of passive participles. The central passives hence include *be* and *get* passives and passive participial phrases. The other type is defined as *marginal*

passives disputing the claim that English passives have to be composed of passive participle forms. In his work, he depicted two sentences from British National Corpus (BNC), which are shown in (20) and (21) below.

(20) Again, this is a serious defect and [it] needs checking by a structural engineer

(21) Those tenements shall be recoverable by the donor or his heirs.

(Puckica, 2009)

The two underlined words in gerundial and adjectival forms, respectively, are semantically similar to the standard passives, even though they are not syntactically passive, i.e., formed with passive participles.

It is additionally claimed that passive sentences in English are generally found in formal or academic texts (Parrott, 2000) and can also be used when speakers want to modify the agent with a chunk of words or a clause (e.g., an adjective clause) which is highly complex in structure (Downing, 2015)

2.2.4 Contrastive studies of Thai and English passives

In addition to the aforementioned typological characteristics by Siewierska (1984, 2005), both Thai and English passive constructions share one similarity. These two languages have periphrastic or analytical passives. To form a passive sentence in Thai and English, a passive marker in a periphrastic form is required (*thùuk*, *doon*, or *dâjráp* in Thai and *be* or *get* in English). However, in English, the main verb is obligatorily conjugated in its passive participial form, unlike Thai which does not have inflectional morphemes.

The differences between Thai and English passives are discussed in various aspects and analyzed in the field of EFL and ESL since this grammatical feature is commonly found in Thai students' writing (Somphong, 2013). As stated in the introduction, the passive construction itself is more complex than its unmarked counterpart—the active construction—and it can even cause more difficulties when the construction differs in L1 and L2.

Lekawatana (1979) argued that Thai students of English usually find *thùuk*- and *doon*-passive constructions of Thai similar to the English passives. Mallikamas (2013) compared and contrasted Thai and English passives (Table 2). Her work suggested that even though Thai and English share some syntactic similarities in the passive constructions, their word orders differ. In English passives, *by-phrase* can be added to introduce the agentive noun after the VP while in Thai the agentive noun can be either inserted between a passive marker and the main verb or preceded by *dûaj* ('with') or *dooj-phrase* following the VP. More importantly, this work also emphasized the preference for using *thùuk* and *doon* in adversative contexts only. As Mallikamas' work concentrates on English language teaching and translation, it can be inferred that, in the field of translation, some scholars still prefer not using *thùuk* in neutral contexts while Prasithrathsint (2001) found that the neutral *thùuk* is in use.

In translation, Pinmanee (2015) suggested that translators should use *thùuk* and *doon* with adverse sentences and *dâjráp* with beneficial sentences. She also added that these markers should not be used interchangeably. *Thùuk* should not be used in favorable contexts and *dâjráp* should not appear in unfavorable sentences. For neutral

contexts, all three markers can be used (Pinmanee, 2012a, 2012b)[12]. Suphon (1998) stressed that when translating positive meanings, translators must use *dâjráp* instead of *thùuk*. Jitaree's explanation also accorded with the previous translation books which distinguish the differences between *thùuk* and *dâjráp*. If one uses *thùuk* in favorable or neutral sentences, these sentences will be deemed defective because of the foreign pattern (Jitaree, 2010). The preference for *thùuk* and *doon* as adversative passive markers is applied not only to English-Thai translation but also to other languages whose passive construction is akin to English passives such as Spanish. Like other translation books, Wisesmanee (2014) described that unfavorable passive sentence in Spanish, when translated into Thai passives, should be used with *thùuk* or *doon* and that students should use *dâjráp* with positive passive sentences. For neutral passive sentences, it is suggested that students employ the middle or patient-subject constructions. She, additionally, emphasized that students must pay close attention to each source sentence's meaning which could be negative, neutral, or positive. Wisesmanee concluded that *thùuk* should not be used in favorable and neutral contexts and *dâjráp* should not be employed in unfavorable contexts.

From the translation books reviewed above, even though Prasithrathsint (2001, 2006, 2010) found that *thùuk* has been neutralized and become both adversative and neutral passive markers, translation scholars seem to cling to the conventional function of *thùuk* as an adversative marker. Moreover, despite the neutralized *thùuk* passives' existence, Thai grammarians once did not accept this innovative usage and the fact that language changes (Prasithrathsint, 2001). Later, the neutralized form

[12] Pinmanee (2012a, 2012b) only gave examples of *thùuk* and *dâjráp* in neutral contexts. Consequently, the use of *doon* in such contexts has not been confirmed. This is in line with Prasithrathsint's findings (2001). From my point of view, the use of *doon* in non-adversative contexts should be further explored as there might be change in the *doon*-passive construction.

became more frequent. Thus, more Thai grammarians find it acceptable (Prasithrathsint, 2006). However, the preference for adversative readings is still prevailing in translation instructions. Since there are still conflicts over its usage, more research on *thùuk* is needed. One might need to compare the use of *thùuk* by analyzing texts from different genres, domains, and registers. The marker can possibly appear as a neutral passive marker in colloquial and spoken language. On the other hand, when it comes to formal and written language, it is likely that only its prototypical, adversative meaning is acceptable. This study is still based on what scholars mentioned in their works about the adversity of *thùuk* and on Po-ngam (2008) who discovered that even though there is a downward trend for adversative *thùuk*, it is still widely used more than the neutral and positive readings.

Thai passives	**English passives**
Nouns with thematic roles of patient or theme are positioned as the subject of the sentence.	Nouns with thematic roles of patient or theme are positioned as the subject of the sentence.
Dûay and *dooj* can be added.	*By* can be added.
Thùuk, *doon*, or *dâjráp* is added as a passive marker preceding the verb or the agentive noun.	*Be* or *get* is added as an auxiliary (a passive marker).
Verbs are not conjugated as Thai is not an inflectional language.	The main verb has to be in its past participial form.

Table 2: Similarities and differences between Thai and English passive constructions (adapted from Mallikamas, 2013)

2.2.5 Passive construction in SLA

A large number of SLA studies have been conducted to investigate the English passive construction in learners from different L1 backgrounds. This construction is of particular interest for its complexity compared to the active counterpart in terms of structure and non-canonical mapping of thematic roles. Wang (2010) reviewed several earlier pieces of research whose main focuses are on the passive, especially in Chinese and Japanese learners and found that most of the previous studies aimed at scrutinizing the overpassivization of unaccusative verbs in these learners and the negative transfer from their L1. Some concluded that the native language plays a crucial role in acquiring the English passive construction. Chinese, for example, is considered a topic-prominent language while English is a subject-prominent language (Wang, 2010). The differences between the two languages are then used to explain the variability of the English passive construction in L1 Chinese learners of English.

Examining Indonesian learners of English, Bochari et al. (2020) employed a questionnaire asking the learners to change active sentences into passive sentences. Analyzing the data from the Error Analysis (EA) viewpoint, they found that Indonesian learners did not understand the concept of subject and object leading to difficulties in forming passive sentences with correct word ordering. These learners did not insert some essential components of the passive construction such as the auxiliary *be* or did not change the main verb into its passive participial form. In some cases, it was found that the learners did not fully master tenses in English, which do not exist in their L1, Indonesian. That is, apart from changing active sentences into passives as the questionnaire asked them to do, these learners also changed tenses.

Lghzeel and Raha (2020) studied English passives in Arabic EFL learners using a grammar test. As passives in Arabic and English differ, it was expected that errors would take place. This study aimed to deeply investigate two types of errors, interlingual and intralingual errors, found in this structure. The grammar test used for data collection asked participants to complete a fill-in-the-blank exercise, to alternate active forms with their passive ones, and to complete a multiple-choice task. It was found that most of the participants cannot master English passive sentences and avoided this structure by replacing it with the active construction. For the error types, the majority of errors were interlingual. In sum, the participants' L1, Arabic, influenced how they used English passives.

In addition to those studies whose focus was on the writing tasks, K. Wang (2009) examined six learners whose L1 was Mandarin using an online production task. These learners participated in an experiment using the *FishFilm* cartoon animation. They were asked to describe what happened in 32 episodes each of which consisted of two fish. Half of them were patient-cuing and the sentence subjects should be patient-like. The contexts also forced the participants to form passive sentences in online speech production. It was found that early and late intermediate learners did not produce any English passive sentence while advanced learners, like a native control participant, passivized almost all of the target items. In sum, intermediate learners who tended to produce active sentences in patient-cuing items clung on to canonical mapping between semantic roles and grammatical functions (agent with subject and patient with object). So, when the patient arguments in the experimental contexts appeared in the subject position, these learners assigned the agent role to them as they assumed that the subject needed to be the agent of the

sentence. On the other hand, advanced learners mastered the non-canonical mapping of English passives.

A study by Wang and Pongpairoj (2021) investigated Chinese learners of English and their avoidance behavior found in the English passive construction. It was predicted that due to the differences between Chinese and English, participants would avoid using the passive construction. An indirect preference elicitation task (IPE) was used as the main research instrument asking participants to describe given pictures. Results showed that these learners produced passive sentences more than active sentences for the test items with statistical significance. This study thus supported the Factors of L2 Non-avoidance Hypothesis (FNAH) claiming that L1 and L2 differences do not always result in avoidance behavior. Furthermore, non-avoidance behavior in this study can be also due to task effects and learners were possibly familiar with the construction. Similar to the present study, the researchers examined whether adversity played a vital role as Chinese passives are used for adversative readings. Further analysis suggested that in adversative contexts Chinese learners produced passive sentences more significantly than active sentences. On the other hand, they avoided using passive sentences in non-adversative contexts. This implied that adversity in Chinese passives affected Chinese learners in the process of acquiring the English passive construction.

Most of the research studies on L1 Thai learners and the English passive construction, focused on errors from interference. From CA and EA studies, it was found that the passive construction is the second most found error in L1 speakers of Thai (only after S&V agreement) (Arunsamran, Authok & Poonpon, 2011 as cited in Somphong, 2013).

Simargool (2008) examined the interlanguage of Thai learners of English and the English passive construction via sentence production. Participants were asked to construct sentences from given subjects and verbs which are transitive, unergative, and unaccusative. The study demonstrated that high-proficiency students could produce more full/complete passive sentences than low-proficiency learners. Besides, Simargool also found other types of ungrammatical sentences, i.e., malformed passive sentences (incorrect participial morphemes or agreement), pseudo-passive sentences, and passivized unaccusative sentences. In conclusion, there was some evidence of negative transfer or interference from their native language in their English interlanguage. Two possible causes for malformed passive sentences were discussed. The first one is Thai phonology which does not allow consonant clusters in the final position. This phonological restriction can, as a consequence, affect Thai learners' interpretation of 'what's happened', which they misunderstood to be 'was happened.' The second cause is that these learners did not completely acquire passive morphology in English. The researcher also concluded that L1 transfer was held responsible for both malformed passive and pseudo-passive sentences while passivization rules were overgeneralized in the case of passivized unaccusative sentences.

Somphong (2013) studied, categorized, and analyzed errors in English passives produced by Thai learners. The research followed Simargool's work (2008) in the method used in data collection. Participants grouped into high- and low-proficiency learners had to write sentences from given words including transitive verbs and fillers which were unaccusative and unergative verbs. More than 50 percent of the results were well-formed passives while the rest varied. Somphong categorized

error types and found that the most common errors were associated with verb inflections or the conjugation. It can then be concluded that they were interlingual errors influenced by the native tongue as Thai is an isolating language in which verbs are not morphologically marked.

Another study by Chantajinda (in press) also used the same method as in Simargool (2008) and Somphong (2013). This research study divided English verbs into two types: passivized verbs that are natural in Thai *thùuk*-passives regardless of their adversity, and passivized verbs that are unnatural in Thai *thùuk*-passives. Results from the writing task revealed that even though the former verb type was passivized more than the latter, their statistical difference was not significant. It was concluded that the verb types, which were categorized by naturalness in Thai *thùuk*-passives, might play a role. It is possible that Thai learners attempted to focus on forms, due to the nature of the elicitation task which mainly focused on the syntactic structure, even though these L2 syntactic forms might sound unnatural in their translated counterparts in Thai.

Timyam (2014) collected data from Thai learners through free writing tasks and analyzed how they used passive and existential constructions. For the passives in English, Timyam concluded that L1 Thai speakers tended to use present simple tense to indicate various time references. Since in their native language, verbs are not marked with any inflectional morphemes, they were likely to choose the simplest form which is present simple tense. Even if English passive sentences can be constructed with more than one marker, i.e., *be* or *get*, the learners mostly used *be* which is the most prevalent and basic pattern. Timyam also noticed that the majority of passives found in the data were *short* or *agentless* passives. It possibly implied that

these learners acquired the construction pragmatically. That is to say, they realized the shift of emphasis from agent to a theme or patient (O'Grady, 2001 as cited in Timyam, 2014). For the agentive phrases, the most frequent preposition found in this study was *by* for it is a basic and typical pattern in English passives. Although passives can also be used when speakers want to attach more information to the agent phrase which makes it longer and more complex, the participants did not add much information to the agentive phrases.

There is one study focusing on Thai learners' avoidance of the English passive construction by Chotiros and Pongpairoj (2012). The researcher hypothesized that, due to the differences between Thai and English passives, learners were likely to avoid using the construction. However, results indicated that the majority of the participants did not avoid the passive construction. This did not guarantee that learners can correctly produce the construction as some errors were also detected. The researchers explained that there are three factors accounting for the non-avoidance behavior including the high similarities of the construction in Thai and English, the increasing prevalence of Thai passives, and the participants' English proficiency.

Ursic and Zoghbor (2020) compared and contrasted Thai and English passives and provided suggestions for language practitioners although it is unclear how they obtained examples of ungrammatical passive sentences which they predicted that Thai learners might produce. First, as Thai has no inflections, it is believed that Thai learners might find the conjugation of *be* and passive participial forms difficult. The researchers listed three types of errors including 1) overpassivization of unaccusatives such as *occur* and *exist*, 2) use of *by-phrase* but lack of the passive conjugation due to the unmarked passive construction in Thai, and 3) lack of the passive auxiliary *be* in

adjectival passives. This study suggested that EFL teachers in Thailand make use of the similarities between Thai and English passives to facilitate Thai learners and that the differences between L1 and L2 be emphasized to prevent interference.

From the aforementioned studies, English passive sentences, thus, can be considered problematic among L1 Thai learners. Many possibilities are involved in explaining such difficulties such as morphosyntactic differences between Thai and English. Due to the fact that Thai lacks inflectional morphemes, the conjugation of an auxiliary and a past participial form, for instance, can be demanding for L1 Thai learners. It can also be concluded that most of the SLA studies on L1 Thai learners and English passive construction have focused on only writing tasks. It is hence worth exploring the construction in question with different experimental methods.

2.3 SECOND LANGUAGE PROCESSING

The study of language processing is one of the major fields in psycholinguistics examining how speakers process their native language and its mechanism by employing methods in experimental psychology (Segalowitz & Trofimovich, 2012). Not until recently, second language research has utilized psycholinguistic techniques to expand the scope of language processing and second language learning. According to Jiang (2018), psycholinguistic methods have been used to elicit data from L2 learners since the 1980s. Such methods can shed light on more insightful details about how L2 learners process and comprehend their target language(s). The application of psycholinguistic techniques to SLA research is widely known as the study of second language processing (SLP). SLP is different from SLA

as it does not only explain the acquisition of L2 but also describes L2 learners' processing and mental representation (Jiang, 2018). Accordingly, SLP seems broader than SLA and it is a combination between the two neighboring disciplines, i.e., psycholinguistics and SLA as shown in Figure 2.

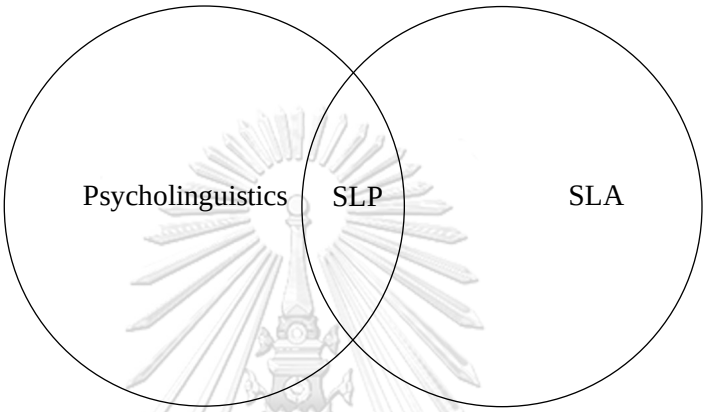

Figure 2: The combination of psycholinguistics and SLA which gives rise to SLP (Jiang, 2018)

VanPatten & Jegerski (2010) stated that both on-line and off-line methods can be used in L2 processing research. However, recently the on-line methods are now replacing the off-line measures such as judgment tasks as the former can reflect learners' real-time processing. Various methodologies are considered on-line measures such as self-paced reading/listening, eye-tracking, and Functional Magnetic Resonance Images (fMRIs) (Carreiras & Clifton, 2004 as cited in VanPatten & Jegerski, 2010).

Jiang (2018) also added that studies in L2 processing have mainly covered several linguistic levels from phonological, lexical, and syntactic aspects. Nonetheless, a large number of previous studies on L2 sentence processing have focused on wh-dependencies and ambiguous relative clauses (Clahsen & Felser, 2006;

Yuan, 2017). Yuan (2017) then accentuated that research on L2 syntactic processing still lacks a variety of syntactic structures. That is, structural varieties are worth exploring in the field of L2 processing. Furthermore, there exist various goals of SLP research. Some might be interested in exploring how L1 and L2 processing are different by comparing data from native and non-native speakers and others might examine how L1 influences L2 and vice versa in on-line processing.

SLP can further explain the process of acquiring an L2 by employing experimental methods and this field is now of great interest and growing. There are many arguments from various groups of researchers which are used to explain SLP and learners' language from different perspectives such as Shallow Structure Hypothesis (SSH) and Good Enough (GE) Representation. These two hypotheses concentrate on how L1 and L2 processing are similar or different from each other. However, as the present study does not examine this issue by comparing native speakers of English with English learners, more details concerning the hypotheses are not discussed. Apart from an increasing interest in similarities and differences between native and non-native processing, there are other strands which SLP scholars have actively studied such as L2 processing development, the involvement of explicit knowledge in L2 processing, and the innateness of language and L2 processing (Segalowitz & Trofimovich, 2012).

In Thailand, SLP is a novel interdisciplinary field that is highly worth exploring. There are few works examining Thai learners' online processing of English (e.g., English tense and aspect agreement in English native speakers, L1 Thai learners, and L1 Japanese learners by Snape et al. (2019), English subject and verb agreement in L1 Thai learners by Siriwittayakorn and Miyamoto (2019), English subject and

object relative clauses in Thai learners by Thanasuptawee and Singhapreecha (2019), and long distance number agreement in L1 Thai learners of English by Rattanasak et al. (2020)). Clearly, the study of SLP is highly lacking in Thailand and it is expected that this field will be further investigated in order to help understand L1 Thai learners more profoundly. The present study is the first research focusing on Thai learners' online (and offline) processing of English passive sentences.

Chapter 3
Experimental design

This chapter demonstrates how to prepare target items for the two main tasks, an acceptability judgment task (AJT) and a self-paced reading task (SPRT). The methodology, results, and discussion of the experiments will be found in Chapter 4 (for the AJT) and Chapter 5 (for the SPRT).

Since this research study aims to investigate the effects of different verb types on the processing of English passives, transitive verbs in English are categorized into three types. Type 1 verbs are those that are natural when their Thai equivalents appear in *thùuk*-passives and adversative. Type 2 verbs are natural when their Thai equivalents appear in *thùuk*-passives and non-adversative. And, Type 3 verbs are those that, when translated in Thai, sound unnatural in *thùuk*-passives. This categorization is based on Prasithrathsint's works (1985, 1988, 2001) claiming that *thùuk* is prototypically adversative and has later been neutralized. This prototypical characteristic and the neutralization resulted in the difference between Verb Type 1 and Verb Type 2. Verbs in Verb Type 3 are all non-adversative. In fact, whether they are adversative or not is not of concern here as they are deemed unnatural in Thai *thùuk*-passives. There is one distinction in terms of non-adversativity between Verb Type 2 and Verb Type 3. Non-adversative verbs in Verb Type 2 are all neutral while, in Verb Type 3, they include both neutral and beneficial senses. That all unnatural sentences in Thai *thùuk*-passives (Verb Type 3) are non-adversative might be because even though *thùuk* has become somewhat neutralized, it cannot still be used with all non-adversative verbs. Furthermore, beneficial verbs are not commonly used with *thùuk* due to its prototypical adversity and neutralization, as the term implies, does not

entail acceptability in positive contexts. Only some neutral contexts are allowed for this passive marker.

3.1 NORMING SURVEY

As outlined above, the study classified verbs into three categories according to their naturalness and adversity in Thai *thùuk* passives. They are Verb Type 1 (natural and adversative in Thai *thùuk* passives), Verb Type 2 (natural and non-adversative in Thai *thùuk* passives), and Verb Type 3 (unnatural in Thai *thùuk* passives). For naturalness, a norming survey needs to be conducted in order to make sure that the classification of these verbs is not subjective. That is, the survey was done to prove that it did not come solely from the researcher's judgment which can be subjective. Participants rated if each sentence in the survey sounded natural or not.[13] High scores in sentence rating imply that it is natural in Thai. So, Verb Type 1 was predicted to gain the highest scores among the three verb types followed by Verb Type 2 and Verb Type 3, respectively. This conjecture is based on the fact that adversative verbs are highly natural with *thùuk* as this marker is prototypically adversative. Even though the marker has been neutralized, non-adversative verbs in Verb Type 2 still might not be rated as high as Verb Type 1 since this use is not prototypical. For Verb Type 3, as stated earlier, in some cases, non-adversative verbs, especially beneficial ones, are not acceptable and do not sound natural when used with *thùuk*-passives so they may be given relatively low scores.

[13] The terms 'naturalness' and 'natural' in this study refers to native speakers' intuition and opinions about to which degree each test sentence sounds natural or naturally occurs in their native language. It seems close to acceptability; however, I found 'naturalness' more appropriate since native speakers might consider a sentence acceptable but not natural, e.g., that produced by a non-native speaker.

3.1.1 Participants

Respondents of the survey were thirty-one undergraduate and graduate students at Chulalongkorn University. All were native speakers of Thai. They were from various faculties: 27 from the Faculty of Arts, 2 from the Faculty of Science, one from the Faculty of Law, and one from the Faculty of Education. Six of them were graduate students while 25 were undergraduates. The age range is 19 to 27, and the average age is 21.

3.1.2 Stimuli

One hundred forty-five Thai sentences were used in the survey: 55 target sentences and 90 fillers. Used as target items were 16 Verb Type 1 sentences, 20 Verb Type 2 sentences, and 19 Verb Type 3 sentences. The fillers were 20 simple active sentences, 30 sentences with relative clauses, 10 sentences with conditional clauses, 10 syntactically anomalous sentences, and 20 semantically anomalous sentences. Examples are shown in Table 3 below. A complete list of sentences is in Appendix A.

The target passive sentences are formed in the default pattern which is $NP_{patient/theme}$ + *thùuk* + NP_{agent} + VP. The agentive phrases are not omitted. Even though Prasithrathsint (2006) claims that the foreign pattern with *dooj-phrases* is prevailing and the default pattern became rarer in the present day (See 2.2.2 Passives in Thai in Chapter 2), I intended to use the latter pattern so that the sentences would not be considered unnatural because of their foreign structure. When the task is an untimed questionnaire in which raters can apply their linguistic competence, the participants may assume that *dooj-phrase* is equivalent to English *by-phrase* making the sentences sound unnatural due to their "foreignness".

Sentence	Type
หอพักของนักเรียนถูกคลื่นสึนามิทำลายเมื่อเดือนธันวาคม	Verb Type 1 (adversative, natural in Thai *thùuk* passives)
อัลบั้มล่าสุดของเขาถูกค่ายเพลงปล่อยออกมาอาทิตย์ที่แล้ว	Verb Type 2 (non-adversative, natural in Thai *thùuk* passives)
กวีนิพนธ์ดังกล่าวถูกนักเขียนคนโปรดของพวกเราแนะนำในงานหนังสือ	Verb Type 3 (unnatural in Thai *thùuk* passives)
ปัจจุบันเยาวชนติดโทรศัพท์มือถือกันมาก	Filler Active sentences
ครูใหญ่ตีนักเรียนที่รังแกเพื่อนผู้หญิง	Filler Sentences with relative clauses
ถ้าสร้อยไม่โดดเรียนบ่อยขนาดนี้ เธอคงไม่สอบตกหรอก	Filler Sentences with conditional clauses
หล่อนข้าวสามมื้อกินวันละ	Filler Syntactically anomalous sentences
เด็กแรกเกิดจะลงแข่งยิมนาสติกโอลิมปิกปีหน้า	Filler Semantically anomalous sentences

Table 3: Examples of sentences in the norming survey

3.1.3 Data collection

An online questionnaire was employed to elicit data. Created on Google Forms, it consisted of two parts: the main survey concerning the naturalness judgment and participants' background information, e.g., faculty, major, degree, and age. The participants rated each sentence's naturalness on a five-scale rating questionnaire (1 = unnatural, 2 = somewhat unnatural, 3 = not sure, 4 = somewhat natural, 5 = natural) (see Figure 3).

งานที่ต้องใช้ทักษะทางการคำนวณสูงเหมาะกับสุดามาก

	1	2	3	4	5	
ไม่เป็นธรรมชาติ	O	O	O	O	O	เป็นธรรมชาติ

หลาน ๆ เพิ่งขึ้นจากสระว่ายน้ำเมื่อกี้นี้

	1	2	3	4	5	
ไม่เป็นธรรมชาติ	O	O	O	O	O	เป็นธรรมชาติ

โพสต์ในเฟสบุ๊คของหล่อนถูกเพื่อน ๆ ของฉันพูดถึงกันมาก

	1	2	3	4	5	
ไม่เป็นธรรมชาติ	O	O	O	O	O	เป็นธรรมชาติ

Figure 3: Examples of sentences used in the norming survey

3.1.4 Results

Shown in Table 4, the average score of all 145 items was 108.97 out of 155 (70.30%). For the test items, Verb Type 1, Verb Type 2, and Verb Type 3 received 133/155 (85.81%), 86.25/155 (55.65%), and 70.95/155 (45.77%), respectively. This confirms the prediction that Verb Type 1 would be the most natural in passive sentences followed by Verb Type 2 and Verb Type 3, respectively. For the fillers, simple active sentences, conditional sentences, and sentences with relative clauses were rated 148.3/155 (95.68%), 139.5/155 (90%), and 137.77/155 (88.88%), respectively. Syntactically anomalous sentences and semantically anomalous

sentences which were expected to obtain low scores for their naturalness got 40.2/155 (25.94%) and 85.2/155 (54.97%), respectively.

Item	**Average scores (out of 155)**	**%**
Verb Type 1	133	85.8%
Verb Type 2	86.25	55.65%
Verb Type 3	70.95	45.77%
Simple active sentences	148.3	95.68%
Sentences with conditional clauses	139.5	90%
Sentences with relative clauses	137.77	88.88%
Semantically anomalous sentences	85.2	54.97%
Syntactically anomalous sentences	40.2	25.94%
Average	108.97	70.3%

Table 4: Average scores from the norming survey

Results from the survey were analyzed using a one-way ANOVA on the SPSS program with the naturalness scores as the dependent variable and the verb types as the independent variable. A statistical analysis of 55 target items displayed a significant effect of verb types ($F(2,52) = 77.553$, $p < .001$). A Bonferroni post-hoc test was run to check where the significance can be attested. Significant effects can be observed in all pairs of the verb types. Significantly rated higher than Verb Type 3 sentences (70.95 ± 15.68 scores) were Verb Type 1 sentences (133 ± 9.07 scores, $p < .001$) and Verb Type 2 sentences (86.25 ± 18.18 scores, $p = .008$). Additionally, Verb Type 2 sentences were also rated lower than Verb Type 1 sentences with statistical significance ($p < .001$).

It is worth noting that, apart from the verb types, other factors might impact the sentences' naturalness such as the use of full passive and the syntactic schema. However, the results still confirmed the classification in terms of these verb types' naturalness in Thai *thùuk*-passives.

3.2 PERSSON'S TEST FOR ADVERSATIVITY

Since the intended distinction between Verb Type 1 and Verb Type 2 is adversativity, after the norming survey had been completed, sentences with Type 1 verbs and Type 2 verbs were further checked for adversativity by Persson's test (Persson, 1990 as cited in Coto Villalibre, 2015). Verb Type 3 was not tested due to the fact that whether sentences with this verb type were adversative or not was not relevant as they were deemed unnatural in the structure in question to begin with. This test was intended to clearly differentiate Verb Type 1 from Verb Type 2.

Sentences with Verb Types 1 and 2 were rated by three native speakers of Thai. They were asked to complete a questionnaire consisting of 36 Thai sentences which contained 16 Verb Type 1 sentences and 20 Verb Type 2 sentences used in the previous survey. That is, all Verb Type 1 and Verb Type 2 sentences in the norming survey were selected to be tested for their adversitivity in the next test called the Persson's test. The questionnaire asked the raters in Thai *Is it worse to be X than not to be X?* For example, one might be asked "Is it worse to be punished than not to be punished?". An expected answer for each item was either *yes* or *no*. According to Coto Villalibre (2015), if the answer is *yes*, that item is deemed adversative. On the other hand, items with *no* are non-adversative (either neutral or beneficial). This test then verified whether the classification of Verb Type 1 and Verb Type 2 was valid. It

was predicted that sentences with Verb Type 1 would receive *yes* while Verb Type 2 would receive *no*. A list of test items is shown in Appendix B. Below are some examples from the test.

	ใช่	ไม่ใช่
ตัวเลือกอื่น ๆ ถูกผู้บริหารพิจารณาเป็นเวลานาน **สำหรับตัวเลือกอื่น ๆ การ*ถูกพิจารณา*แย่กว่า*การไม่ถูกพิจารณา***		
ขาวบ้านถูกข้าศึกโจมตีกลางดึก **สำหรับชาวบ้าน การ*ถูกโจมตี*แย่กว่า*การไม่ถูกโจมตี***		
คอมพิวเตอร์ถูกพี่สาวของฉันใช้ที่ห้องประชุม **สำหรับคอมพิวเตอร์ การ*ถูกใช้*แย่กว่า*การไม่ถูกใช้***		

Table 5: Examples of the Persson's test

Results, which can be fully seen in Appendix C, revealed that, out of 16 Type 1 verbs, two of them did not pass the test. For 20 sentences with Verb Type 2, four received *yes* making them adversative and failed this criterion. To sum up, 14 sentences with Verb Type 1 and 16 sentences with Verb Type 2 remained for other criteria.

3.3 VALIDITY TEST

To prepare the stimuli for the main experiments, an acceptability judgment task (AJT) and a self-paced reading task (SPRT), all sentences used in the norming survey and the Persson's test were translated from Thai into English. All of them were formed in full passive sentences, that is, with *by-phrase*. A native speaker of American English was asked to check if each sentence sounded acceptable for her.

After that, four experts whose specializations lied in linguistics, translation, and both rated test items' validity and their congruence with the research objectives by using the Index of Item-Objective Congruence (IOC). The index formula is shown below.

$$\text{IOC} = \frac{R}{N}$$

R = the sum of raters' scores

N = the number of raters

If an item's IOC score is higher than 0.5, it is congruent with the research objectives and valid. All the target items in both experiments were verified by their IOC scores which are presented in Appendix D.

After the norming survey, the Persson's test, and the validity test had been completed, the results were taken into account so as to select the test sentences. Out of 55 sentences with Verb Types 1, 2, and 3, thirty items, which satisfied all the criteria, 10 for each verb type, were selected for the main experiments. These thirty sentences were used as target items in the experiments. For Verb Types 1 and 2, only the first 10 sentences for each verb type that received the highest scores in the norming survey and passed the Persson's and validity tests were chosen. On the other hand, for Verb Type 3 sentences, the ten items were those rated with the lowest scores for their naturalness and passing the validity test.

Following are the norming scores of 10 items of each verb type that fulfilled all of the requirements. The average scores of sentences with Verb Type 1, Verb Type 2, and Verb Type 3 were 135.5/155 (87.42%), 97/155 (62.58%), and 60.1 (38.77%), respectively. The statistical analysis showed that differences between the verb types

were statistically significant ($F(2,27) = 159.693$, $p < .001$). A Bonferroni post-hoc test also demonstrated that the significance was found in all pairs. Verb Type 1 (135.5 ± 8.03 scores) was rated significantly different from Verb Type 2 (97 ± 9.59 scores, $p < .001$) and from Verb Type 3 (60.1 ± 10.51 scores, $p < .001$). The difference between Verb Type 2 and Verb Type 3 was also significant ($p < .001$). The results thus justified the categorization of these sentences into three types. The finalized test items for the two main experiments are in Appendix E. Listed below in Table 6 are examples of the test items.

Verb Type 1	Verb Type 2	Verb Type 3
Many employees were fired by the manager due to economic problems.	His report was burnt by his friend just before the due date.	A bird is fed by our daughter every morning.
The students were punished by the headmaster at the football field.	The ruins were lifted by workers from the ground.	This gift was received by his uncle during Songkran.
The children were scolded by their teacher in front of the class.	All the movie tickets were bought by film lovers the other day.	Homework assignments must be submitted by students every Monday.
Villagers were attacked by the enemies at night.	A big box was pushed by the children into the room.	Christmas is celebrated by people around the world every year.
He was blamed by his colleagues because of his recklessness.	This question was asked by the customers a few days ago.	Our country was developed by the government in a noticeable way.

Table 6: Examples of the finalized test items

In sum, in the preparation process for the test items to be used in the main experiments, Thai passive sentences with *thùuk* must get high scores in a norming survey for Verb Type 1 and Verb Type 2 and low scores for Verb Type 3. Then, these sentences' adversativity validated with the Persson's test for their adversativity. The selected sentences were then translated into English and verified by a native speaker

of English. The test items were lastly rated for their validity and congruence with the research objectives by four experts. Only the items that passed every test were used in this study. Figure 4 shows all of the requirements with which the target items complied.

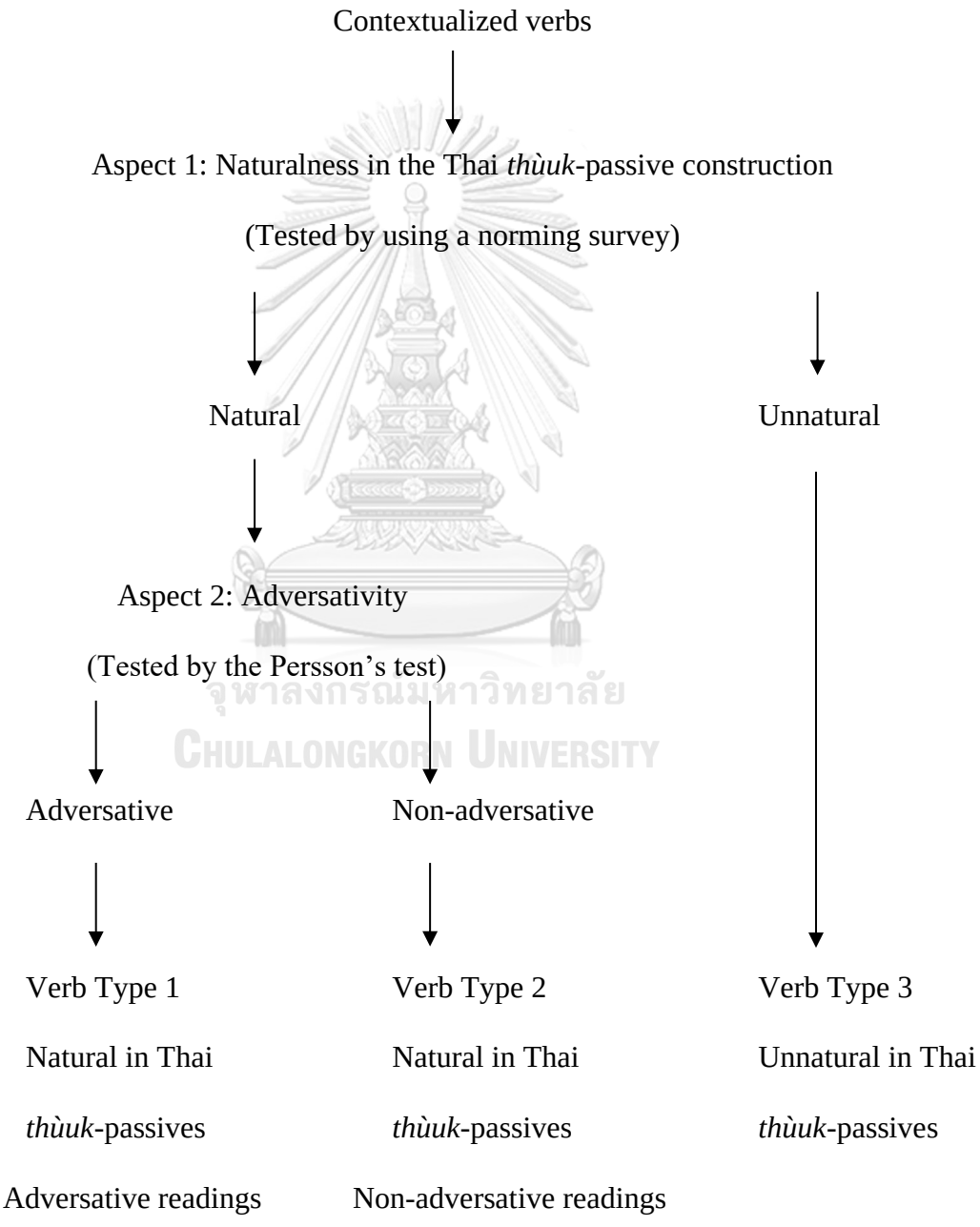

Figure 4: Requirements for the target items to be used for the main experiments

Each verb's frequency was also checked by English Web Corpus 2015 (enTenTen15) which consists of 13 billion words. Table 7 displays the test items' frequencies. However, *frequency* here refers to all occurrences of each item in all constructions. That is, the number represents all possibilities of its verbal forms not limited to only the passive verb form.

Verb Type 1	Frequency	Verb Type 2	Frequency	Verb Type 3	Frequency
Fire	484,140	Lift	495,235	Feed	888,379
Punish	202,729	Buy	2,699,951	Receive	7,100,651
Scold	18,282	Push	1,279,701	Submit	2,051,546
Attack	676,322	Ask	5,883,385	Celebrate	1,632,894
Blame	366,507	Identify	3,459,467	Develop	8,620,092
Tease	108,361	Release	2,627,873	Admire	199,042
Reject	604,687	Open	3,507,485	Improve	4,837,806
Cancel	371,979	Pull	1,249,998	Like	4,715,280
Invade	163,323	Design	3,700,536	Recognize	2,072,673
Destroy	998,406	Consider	5,063,518	Heal	371,072

Table 7: Test items' frequencies in enTenTen15

This chapter only presents the preparation process of the target sentences to be used in the two main experiments. However, both experiments consisted of different filler sentences. The filler sentences in the AJT and the SPRT will be mentioned in Chapter 4 and Chapter 5, respectively

Chapter 4
EXPERIMENT 1: The acceptability judgment task (AJT)

This chapter focuses on the first experiment in which the acceptability judgment task was used to collect data for off-line processing. The methodology and results are presented in this chapter. Section 4.1 describes stimuli, a pilot study, participants, and data collection procedure. Section 4.2 then deals with data analysis and results. The last section, Section 4.3, provides a detailed discussion of the results.

4.1 METHODOLOGY

The first experiment employed an acceptability task (AJT) to elicit off-line processing data from Thai learners of English. The judgment tasks have been widely employed for data collection in SLA research, partly due to their practicality (Plonsky et al., 2019). It is claimed that the judgment tasks have been used to tap into learners' explicit knowledge, the knowledge of which learners are aware (Spinner & Gass, 2019). The AJTs normally ask participants to rate if sentences are acceptable or not. According to Plonsky et al. (2019), the response types vary, which could be dichotomous, scaled, and dichotomous and "don't know."

4.1.1 Stimuli

The stimuli used in this task were 75 English sentences including 30 target sentences and 45 fillers. Thirty target items included 10 sentences per each verb type (N=10 for Verb Type 1, N=10 for Verb Type 2, and N=10 for Verb Type 3). The target items were those successfully fulfilled the three criteria mentioned in Chapter 3. The fillers consisted of 15 semantically acceptable active sentences and 30

semantically unacceptable, anomalous sentences. The latter included 20 active and 10 passive sentences. Semantically acceptable active sentences were added as distractors. That is, acceptable sentences needed to include both active and passive sentences. Anomalous sentences were used for participants to rate sentences with low acceptability scores unless all sentences would be acceptable and participants would rate them without interpreting their acceptability. These sentences were both active and passive sentences to counterbalance the acceptable items in order that participants would not make an assumption that different voice categories are related to the degree of acceptability. Examples of the stimuli are shown in Table 8.

Sentence	**Type**
Many employees were fired by the manager due to economic problems.	Verb Type 1
The ruins were lifted by workers from the ground.	Verb Type 2
A bird is fed by our daughter every morning.	Verb Type 3
Susan talked to me last night.	Acceptable, Active
This cave hit every single tiger.	Unacceptable, Active
The cat was eaten by the cheese.	Unacceptable, Passive

Table 8: Examples of the test items in EXPERIMENT 1

4.1.2 Pilot study

A pilot study was conducted to validate the task and the comprehensibility of its instruction. Five undergraduate students participated in the pilot study. They were asked to complete a questionnaire created on Google Forms.

In the questionnaire, all sentences were randomly ordered (see Appendix F for a complete list of sentences). The researcher informed participants that during the test they were not allowed to visit any websites or consult any other resources except an online dictionary website provided (https://dict.longdo.com). The participants were to

rate the acceptability of 75 English sentences. The Likert, five-point scale rating was employed (1 = unacceptable, 2 = somewhat unacceptable, 3 = not sure, 4 = somewhat acceptable, 5 = acceptable). After the rating task had been completed, the second part of the questionnaire regarding on personal information, e.g., age, faculty, and university year followed. The instruction was given in Thai so as to make sure that all participants could understand it without any language barrier.

Results from the pilot study revealed that participants rated sentences with Verb Type 1, Verb Type 2, and Verb Type 3 with the mean score of 44.2 (88.4%), 42.8 (85.6%), and 40 (80%), respectively, with the full score of 50. Out of 75, acceptable fillers received the average of 62.4 (83.2%) while unacceptable filler sentences' average score was 46.8 (31.2%) out of 150. It was found that the questionnaire worked well and the instruction is understandable. Below, Figure 5 shows examples of the AJT questionnaire.

Pat’s job is stressful.

	1	2	3	4	5	
ไม่ยอมรับ	O	O	O	O	O	ยอมรับได้มากที่สุด

That colorful calendar sleeps well.

	1	2	3	4	5	
ไม่ยอมรับ	O	O	O	O	O	ยอมรับได้มากที่สุด

Technologies were improved by scientists again.

	1	2	3	4	5	
ไม่ยอมรับ	O	O	O	O	O	ยอมรับได้มากที่สุด

Figure 5: Examples of sentences in the AJT

4.1.3 Participants

EXPERIMENT 1’s participants were 40 Thai undergraduate students from various faculties. They were recruited and divided into two groups according to their CU-TEP (Chulalongkorn University Test of English Proficiency) scores. The first group had 20 students whose scores ranged from 42 to 69 out of 120 with the average of 55.3. This is equivalent to the B1 level[14] of the Common European Framework of Reference for Languages (CEFR)[15]. The second group included 20 students who had CU-TEP scores between 99 and 113 out of 120 with the mean score of 103.8. Their

[14] According to the Common European Framework of Reference for Languages (CERF), B1 students are those who “can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. Can deal with most situations likely to arise whilst travelling in an area where the language is spoken. Can produce simple connected text on topics which are familiar or of personal interest. Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans.”

[15] The comparison between CU-TEP and CEFR can be found in Wudthayagorn’s work (2018).

proficiency was equivalent to the C1 level[16] of CEFR. They will be referred to as intermediate and advanced learners, respectively, for the rest of this work. More information about the participants can be found in Appendix H.

4.1.4 Data collection procedure

Similar to the pilot study, the participants responded to an online questionnaire on Google Forms. The instruction and process were identical to the pilot study.

4.2 RESULTS

It is found that overall, the advanced learners rated the test items and acceptable filler sentences more acceptable than the intermediate learners: the average score was 90.98/100 (90.98%) for the former and 83.27/100 (83.27%) for the latter. Considering only the test items only, overall, Thai learners found sentences with Verb Type 1 the most acceptable with the average score of 183.2/200 (91.6%) followed by sentences with Verb Type 2 with the mean score of 170.7/200 (85.35%) and sentences with Verb Type 3 with the mean score of 165/200 (82.5%), respectively. Acceptable fillers were rated with the mean score of 176.8/200 (88.4%) while unacceptable ones received 72.73/200 (36.37%) as the average rating score.

Taking proficiency levels into consideration, for the target sentences, advanced learners rated Verb Type 1, Verb Type 2, and Verb Type 3 with the average score of 94.8/100 (94.8%), 86.8/100 (86.8%), and 82.9/100 (82.9%), respectively. These learners' average score of acceptable filler sentences was 96.6/100 (96.6%). In

[16] C1 students are those who "Can understand a wide range of demanding, longer texts, and recognise implicit meaning. Can express him/herself fluently and spontaneously without much obvious searching for expressions. Can use language flexibly and effectively for social, academic and professional purposes. Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices."

the intermediate learners, Verb Types 1, 2, and 3, and the acceptable fillers were rated with the average score of 88.4/100 (88.4%), 83.9/100 (83.9%), 82.1/100 (82.1%), and 80.2/100 (80.2%), respectively. Furthermore, the latter group was more likely to accept unacceptable sentences than the former one. That is, the intermediate learners rated unacceptable fillers with the average score of 38.9/100 (38.9%) while the advanced learners' average score of these fillers was 33.83/100 (33.83%). Table 9 presents learners' acceptability rate in percentage.

Item type	**N**	**Advanced**	**Intermediate**	**Average**
Verb Type 1	10	94.8%	88.4%	91.6%
Verb Type 2	10	86.8%	83.9%	85.35%
Verb Type 3	10	82.9%	82.1%	82.5%
Acceptable fillers	15	96.6%	80.2%	88.4%
Unacceptable fillers	30	33.83%	38.9%	36.37%

Table 9: Acceptability rates of all items in percentage

A two-way ANOVA with verb types and proficiency levels as independent variables was conducted via the SPSS program. The verb types indicated statistical significance ($F1(2,114) = 9.575$, $p < .001$). Proficiency was marginally significant ($F1(1,114) = 3.757$, $p = .055$). There was no interaction between proficiency levels and the verb types ($F1(2,114) = .884$, $p = .146$). Given that the verb types showed significant effects, a Bonferroni post hoc test concerning the verb types was run. It was shown that Verb Type 1 (4.58 ± .075 scores) was accepted significantly more than Verb Type 2 (4.268 ± .075 scores, $p = .012$) and Verb Type 3 (4.125 ± 0.75

scores, $p < .001$). However, the acceptability rates of Verb Type 2 and Verb Type 3 did not yield any significant difference ($p = .549$).

Similar to the by-subjects analysis, the by-items analysis suggested that the verb types yielded significant effects ($F2(2, 54) = 6.128$, $p = .004$). Unlike the participant analysis, proficiency levels were not statistically significant, not even marginally ($F2(1,54) = 2.404$, $p = .127$). Proficiency levels and verb types did not interact with each other ($F2(2,54) = .566$, $p = .571$). As the verb types indicated significant effects in the by-items analysis, a Bonferroni post hoc analysis was conducted. The test indicated that Verb Type 1 was accepted more than the others showing marginally significant effects between Verb Type 1 (9.16 ± .188 scores) and Verb Type 2 (8.535 ± .188 scores, $p = .067$) and statistical significance between Verb Type 1 and Verb Type 3 (8.25 ± .188 scores, $p = .004$). Such a phenomenon was not found between Verb Type 2 and Verb Type 3 ($p = .866$).

Considering each test item, it can be seen that most of the sentences with Verb Type 1 were accepted by the advanced learners more than the intermediate learners. Nonetheless the two groups of learners rated two instances with Verb Type 1 which were *punish* and *cancel* with the same score. In sentences with Verb Type 2, there were five items that the intermediate learners judged acceptable more than the advanced learners. These items included *open*, *ask*, *push*, *pull*, and *design*. Furthermore, the intermediate learners also accepted six sentences with Verb Type 3 which were *improve*, *feed*, *develop*, *like*, *heal*, and *submit* with higher rating scores than the advanced learners did. All of these might lead to the non-significant effect of proficiency levels in the by-items analysis.

Both participant and item analyses indicated that the verb types had significant effects on the acceptability rating. A one-way ANOVA was further run to check such influences in each group of learners. Within the intermediate group, there was no statistical significance of the verb types in both by-subjects ($F1(2,57) = 1.72$, $p = .188$) and by-items ($F2(2,27) = 1.613$, $p = .218$) analyses. However, the influence of the verb types effects can be attested within the advanced group in the by-subjects ($F1(2,57) = 12.568$, $p < .001$) and the by-items ($F2(2,27) = 4.833$, $p = .016$) analyses. Bonferroni post hoc tests in the two analyses, however, differed. In the by-subjects analysis, similar to the earlier two-way ANOVA, Verb Type 1, which was accepted most among the three verb types, (4.74 ± .24149 scores) significantly differed from Verb Type 2 (4.34 ± .43577 scores, $p = .005$) and Verb Type 3 (4.145 ± .43707 scores, $p < .001$) while Verb Type 2 and Verb Type 3 showed no significant effect ($p = .338$). The by-items analysis, on the other hand, revealed that statistical significance can only be seen between Verb Type 1 (9.48 ± .36757 scores) and Verb Type 3 (8.29 ± 1.27231 scores, $p = .015$) whereas Verb Type 2 (8.68 ± .72847 scores) indicated significance with neither Verb Type 1 ($p = .151$) nor Verb Type 3 ($p = .98$).

It can be observed that both the participant and item analyses reported that the verb types played a pivotal role in the acceptability of English passive sentences. The two analyses also had the same tendency for the differences found in the post hoc tests. That is, Verb Type 2 and Verb Type 3 were rated with little differences. On the contrary, Verb Type 1 was rated differently from Verb Types 2 and 3, although there was a marginal effect between Verb Type 1 and Verb Type 2 in the Bonferroni post hoc test in the by-items analysis. Even though proficiency levels were not a key factor in the by-items analysis and were marginally significant in the by-subjects analysis, it

is noteworthy that they had some effects on the judgments as well. The advanced group were overall more likely to rate acceptable sentences as more acceptable than did the intermediate group. Additionally, the effects of verb types appeared to be more strongly manifested in the advanced learners than in the intermediate learners.

4.3 DISCUSSION

The first hypothesis states that L2 Thai learners' comprehension of English passives is affected by verb types to various degrees depending on their L2 proficiency. It is hypothesized that the advanced learners accept all target items regardless of their verb types while the intermediate learners are influenced by the verb types in accepting English passive sentences. The findings partially support the first hypothesis. First, irrespective of their proficiency levels, Thai learners of English were found to be sensitive the different verb types. The study used English passive sentences' equivalents which are adversative, natural in Thai *thùuk*-passives (Verb Type 1), non-adversative, natural in Thai *thùuk*-passives (Verb Type 2), or unnatural in *thùuk*-passives (Verb Type 3). It can be summarized that the verb types are a major factor predisposing Thai learners to accept English passive sentences while proficiency levels are not influential.

The high acceptance of Verb Type 1 indicates that adversity plays an important role in the acquisition of English passive sentences in Thai learners as the Thai *thùuk*-passive construction is prototypically adversative. That is, translated equivalents in English (L2) of the most natural Thai *thùuk*-passives (L1) are likely to be accepted most. From this, L1 transfer potentially helps these learners to comprehend L2 sentences since adversative passives are acceptable in both languages.

The acceptability rating of sentences with Verb Type 2 was somewhat between those with Verb Type 1 and Verb Type 3. That is, they were acceptable to some extent due to the fact that verbs belonging to this type, despite their non-adversity, still sound natural in Thai *thùuk*-passives. Therefore, the neutralization of *thùuk* and language contact between Thai and English (Prasithrathsint, 1985, 1988, 2001, 2006) could partly facilitate Thai learners' acceptability of the sentences with this verb type because the passive sentences in the two languages are both acceptable. Nonetheless, since non-adversative *thùuk*-passives are non-prototypical in Thai, Verb Type 2 was found to be less acceptable than Verb Type 1 as indicated by the statistical analysis. Verb Type 3 received the lowest scores from both groups of learners because verbs in this type are not natural in Thai.

The two post-hoc tests revealed that Verb Type 2 and Verb Type 3 were not significantly different and both of them differed from Verb Type 1. These two verb types share one characteristic, namely non-adversity. Even though sentences with Verb Type 1 and those with Verb Type 2 are both natural in Thai *thùuk*-passives, their acceptability scores were obviously different. It can then be inferred that naturalness in Thai *thùuk*-passives might not be a crucial factor in the judgment task as the disparity between Verb Type 2 and Verb Type 3, which differ in terms of their naturalness in Thai *thùuk*-passives, was not of statistical significance. On the other hand, adversity, which is a unique component in only Verb Type 1 seems to have a considerable influence on the acceptability rates of the three verb types. However, the influence was more pronounced in the advanced group than in the intermediate group. It is possible that as the advanced learners presumably possess higher metalinguistic awareness that helps in distinguishing nuances between the verb types. Such nuances

could also be influenced by prescriptivists and translation scholars who emphasize the use of *thùuk* in adversative readings only (Jitaree, 2010; Pinmanee, 2012a, 2012b; Suphon 1998, Wisesmanee, 2014).

This aligns with Wang and Pongpairoj (2021), who found that Chinese learners whose NL's passives are also adversative tended to avoid passive sentences in non-adversative contexts and can productively use such sentences in adversative readings. The results also correspond to findings in Chantajinda (in press). Using naturalness in Thai *thùuk*-passives as the main criterion to distinguish English verbs into two types, the research found that no statistical significance can be observed. However, Thai learners tended to produce passive sentences which were naturally formed with *thùuk* in Thai more than those whose Thai equivalents in *thùuk*-passives are odd. The reason that there was no statistical significance in Chantajinda (in press) could be because naturalness in L1 structure may not be a crucial factor concerning L2 acquisition of English passives.

This experiment utilized an untimed acceptability judgment task which is believed to demonstrate learners' explicit knowledge (Plonsky et al., 2019; Spinner & Gass, 2019), the results were compatible Chantajinda (in press), whose task focused on the production which presumably aimed at explicit or metalinguistic knowledge of learners. The experiment in the next chapter employs a self-paced reading task which reveals learners' automatic processing (Marsden et al., 2018) and can be used together with the AJT to give a more complete picture of learners' comprehension of English passive sentences. It can also test if adversity and naturalness in Thai *thùuk*-passives play a vital role in on-line processing for English passives.

Chapter 5
EXPERIMENT 2: The self-paced reading task (SPRT)

Outlined in this chapter is the second experiment using a self-paced reading task to investigate on-line processing of English passive sentences in Thai learners. Section 5.1 presents the methodology including the stimuli, participants, and data collection process. Data analysis is described in Section 5.2. After that, Section 5.3 reports results from the EXPERIMENT 2. The chapter ends with discussions in Section 5.4.

5.1 METHODOLOGY

A self-paced reading task (SPRT) is a psycholinguistic technique which has been long used in language processing studies. In this psycholinguistics-based method, participants sit in front of a computer installed with an experimental program and read texts presented on the computer screen. Measured and analyzed are reading times reflecting how participants process each segment which can be a word or a phrase presented on the screen (Marinis, 2003; McDonough & Trofimovich, 2012). Gass and Mackey (2011) claimed that the longer the reading times, the more difficult language processing is. Unlike the AJTs which are normally used to investigate explicit knowledge, online methods such as measurement of reaction time minimize the influence of explicit knowledge (Jiang, 2012) and aim at investigating automatic processing. Since the judgment tasks and self-paced reading tasks have different focal points, the two tasks have been usually used together to complement each other and to investigate the differences between off-line knowledge and on-line processing (Gass & Mackey, 2011; Marsden et al., 2018; Spinner & Gass, 2019).

5.1.1 Stimuli

Seventy-five English sentences were used as stimuli for EXPERIMENT 2. These include 30 target sentences (10 for each of the three verb types) and 45 fillers. The target sentences were identical to those in EXPERIMENT 1 while the filler sentences were different. If the filler sentences in the AJT including both acceptable and anomalous sentences are also used in the SPRT, anomalous sentences will potentially contribute to increased reading times resulting in inaccurate learners' comprehension reading times and results. The fillers in this experiment were thus grammatical active sentences. Examples are shown in Table 10. Each item was followed by a comprehension question with two choices. For the test items of each verb type, half of them (five sentences) had the first choice as correct responses to the questions and the other half had second choice as correct responses. This was also true for the fillers. The first choice was the correct answer in 23 sentences and the second choice was the correct answer in 22 sentences. In other words, the choices of answers to the comprehension questions were counterbalanced: details are in Table 11.

Sentence	**Type**
Many employees were fired by the manager due to economic problems.	Verb Type 1
The ruins were lifted by workers from the ground.	Verb Type 2
A bird is fed by our daughter every morning.	Verb Type 3
Her friend lived in this town two years ago.	Filler

Table 10: Examples of sentences in EXPERIMENT 2

Condition	**Correct answer**	**Agent**	**Patient/theme**	**Oblique**	**N**	
Verb Type1	First	3	2	-	5	10
	Second	2	3	-	5	
Verb Type 2	First	3	2	-	5	10
	Second	2	3	-	5	
Verb Type 3	First	3	2	-	5	10
	Second	2	3	-	5	
Fillers	First	9	8	6	23	45
	Second	9	10	3	22	

Table 11: Summary of different types of comprehension questions in the SPRT

It can be seen that the number of questions about the agent and patient/theme arguments in the three verb types are asymmetrical. This is because each verb type consists of 10 items. Half of them (5 items) have the first choice as the correct response and the second choice is for the other half (5 items). As the number is odd (5), it is impossible to make the number of questions symmetrical considering the correct answer choice classification but possible when looking at the overall picture of the whole verb type to have 5 items asking about the agent and 5 items asking about the patient/theme.

5.1.2 Participants

The process of participant recruitment in this experiment was identical to that in EXPERIMENT 1. Two groups of participants were recruited based on their CU-TEP scores. The first group of participants consisted of 20 undergraduate students whose

CU-TEP scores ranged from 99 to 110 with the average score of 102.95 out of 120 (advanced learners) and the second group included 20 undergrads who had CU-TEP scores between 39 and 68 with the average score of 55.75 out of 120 (intermediate learners). More information can be found in Appendix I.

5.1.3 Data collection procedure

To create a self-paced reading task, E-Prime 2.0[17] was utilized. Each sentence was divided into four regions: SUBJECT, VERB, ADJUNCT/COMPLEMENT, and ADJUNCT. For the test items, the passive verb form was used in the second region (VERB) and the agentive *by-phrase* appeared in the third region (ADJUNCT). Since some distractors included a copula or linking verb, their third region was a subjective complement. The last region comprising adjuncts was added so that each sentence would not be too short with the third region serving as both the spillover region and the last region at the same time. Sentences (22) and (23) are examples of how each sentence was segmented.

(22) The rabbit was healed by the vet after an accident.

The rabbit |	was healed	| by the vet	| after an accident.
SUBJECT	VERB	ADJUNCT	ADJUNCT
Region 1	Region 2	Region 3	Region 4

[17] E-Prime is a software for behavioral/psychological research. It can be used to design, generate and run experiments, and to collect reaction time data. More information about this program is available on pstnet.com/products/e-prime

(23) His tutor explained this section clearly.

His tutor |	explained	| this section	| clearly.
SUBJECT	VERB	COMPLEMENT	ADJUNCT
Region 1	Region 2	Region 3	Region 4

The method employed in this study was the moving window or non-cumulative version of SPRTs, meaning that only one region appeared on the screen at a time (Jegerski, 2014; Jiang, 2012). That is, when participants pressed a button, the previous region would disappear and the next one would be shown on the computer screen. In this experiment, all regions were presented in the center of the screen so that participants would not be aware of the length of the sentences. Thus, specifically, the self-paced reading task in the present study was the non-cumulative center version as described in Marinis (2003).

To begin the experiment, the participants sat in front of a computer screen and read the instructions presented on it. They were informed that sentences were divided into parts and, to proceed to another part or sentence, they needed to press the spacebar. After the last region of each sentence, they answered a comprehension question with two choices. They had to press “A” on the keyboard to select the first choice and “B” for the second choice.

Before reading 75 experiment items, the participants were presented with 10 practice trial sentences followed by a comprehension question for each trial. This practice aimed to familiarize the participants with the process of the experiment. The test items were randomized. No more than two consecutive sentences belonging to the same verb type were placed together. All items are in Appendix G.

5.2 DATA ANALYSIS

Participants' accuracy of correct responses to the comprehension questions was high. Out of the 75 sentences, the mean accuracy score was 73.78 (98.33%) with 75 (100%) as the highest score and 69 (90.78%) as the lowest score. The mean accuracy rates of sentences with Verb Type 1, Verb Type 2, and Verb Type 3 were 0.99/1 (99%), 0.99/1 (99%), and 0.9825/1 (98.25%), respectively. Sentences with incorrect answers for their comprehension questions were excluded from the analysis. This accounted for only 49 sentences (1.63%) of all data and 2,951 sentences (98.37%) remained for further analysis.

For the process of data analysis, firstly, in each region, raw RTs with more than 2.5 standard deviations (SD)[18], were identified as outliers and were trimmed. That is, reaction times greater than the average ($\bar{x}$) of all participants' RTs + 2.5 SD were removed from the data analysis. The cleaning process resulted in the exclusion of 352 segments (2.98%) out of 11,804 segments. In Region 1, 92 segments were excluded (3.12%). In Region 2, 91 segments were removed (3.08%). In Region 3, 70 segments were excluded (2.37%). Lastly, in Region 4, 99 segments were removed (3.35%). Accordingly, after removing sentences with incorrect responses and regions whose RTs were beyond 2.5 SD of the average RTs, 11,452 data points (95.43%) remained for further analysis. To take into consideration participants' reading pace,

[18] According to Keating and Jegerski (2015), an outlier cutoff ranges from two to three standard variations (SD) beyond the mean score. However, Marsden et al. (2018) synthesized research methodologies found in academic articles employing self-paced reading and suggested that, out of 20 research papers using standard deviations, RTs 2.5 SD plus the average was the most frequent range for data cleaning. That is, 2.5 SD was considered a mode of self-paced reading studies in SLA using SDs. Accordingly, the present research followed this trend employing 2.5 SD to remove outliers.

residual reading times were then calculated by a regression equation (Ferreira & Clifton, 1986; Trueswell, Tanenhaus & Garnsey, 1994)[19].

Region 2 (VERB) and Region 3 (ADJUNCT1) are the two main regions for data analysis. Region 2 is deemed critical and of particular interest as it contains passivized verbs from the three verb types. Region 3 where the *by-phrase* is presented is included for further analysis since this post-critical region can show delayed or spillover effects. This means that participants possibly continue to process the critical region even after moving from the critical region to the next one. So, there might be some processing effects spilling over onto the next region (Jiang, 2012; Keating & Jegerski, 2015; McDonough & Trofimovich, 2012).

5.3 RESULTS

Table 12 displays average residual RTs of all four regions in all sentences including Verb Type 1, Verb Type 2, Verb Type 3, and the fillers. Overall, participants read sentences with Verb Type 1 with the shortest reading times followed by those with Verb Type 3 and those with Verb Type 2, respectively. Furthermore, in Table 13 and Table 14, average residual RTs of all four regions in all sentences in the advanced and intermediate learners are shown, respectively. It was found that overall RTs from all segments of the advanced group ($\bar{x}$ = -7.87566 ms) and those of the

[19] To calculate residual reading times, first, the remaining raw RTs are calculated to yield INTERCEPT and SLOPE values from the INTERCEPT and SLOPE functions in Microsoft Excel. Predicted RTs which represent the RTs that are expected for each participant to spend based on individual participants' RTs in milliseconds (ms) per character (word length) can then be obtained using the formula below. After that, predicted RTs were subtracted from actual RTs yielding residual RTs. Positive residual RTs (+) indicate that participants react to that region slower than expected while negative residual RTs (-) show that their reactions are faster than expected (Keating & Jegerski, 2015). Below are the formulae of predicted RTs and residual RTs.

Predicted reaction times = INTERCEPT + LENGTH × SLOPE
Residual reaction times = Actual RTs - Predicted RTs
(Actual RTs - [INTERCEPT + LENGTH × SLOPE])

intermediate group ($\bar{x}$ = -7.58654 ms) were not much different. Considering verb types, data from each group of learners conformed with the overall results. In both groups, sentences with Verb Type 1 were read fastest followed by those with Verb Type 3 and those with Verb Type 2, respectively.

Item	**Region 1**	**Region 2**	**Region 3**	**Region 4**	**Average**
Sentences with Verb Type 1	-24.7206	-28.8085	-29.7015	-71.6903	-38.7302
Sentences with Verb Type 2	10.95831	38.77442	55.25486	-36.5774	17.10255
Sentences with Verb Type 3	-39.9165	3.90916	-22.0482	-14.4542	-18.1274
Fillers	12.78361	-2.64359	-1.40761	26.64013	8.843135

Table 12: Mean residual RTs (in milliseconds) of all sentences

Item	**Region 1**	**Region 2**	**Region 3**	**Region 4**	**Average**
Sentences with Verb Type 1	0.567297	-44.1944	-52.5386	-34.3874	-32.6383
Sentences with Verb Type 2	-4.1794	35.74168	64.52897	-16.8637	19.80689
Sentences with Verb Type 3	9.994369	-36.3352	-39.6724	-44.6843	-27.6744
Fillers	-1.42475	9.52614	6.598358	21.3127	9.003112

Table 13: Mean residual RTs (in milliseconds) of all sentences in the advanced group

Item	**Region 1**	**Region 2**	**Region 3**	**Region 4**	**Average**
Sentences with Verb Type 1	-50.0084	-13.4226	-6.86439	-108.993	-44.8221
Sentences with Verb Type 2	26.09603	41.80713	45.88076	-56.291	14.37323
Sentences with Verb Type 3	-89.8273	44.15348	-4.42391	15.77594	-8.58045
Fillers	26.99196	-14.8133	-9.41358	31.96756	8.68316

Table 14: Mean residual RTs (in milliseconds) of all sentences in the intermediate group

In the critical region (Region 2), results from all participants revealed that Verb Type 1 ($\bar{x}$ = -28.8085 ms) was read faster than Verb Type 3 ($\bar{x}$ = 3.9092 ms) and Verb Type 2 ($\bar{x}$ = 38.7744 ms), respectively (see Table 15). In light of proficiency levels, the aforementioned pattern can only be observed in the advanced learners. They read Verb Type 1 fastest ($\bar{x}$ = -44.1944 ms) and read Verb Type 3 ($\bar{x}$ = -36.3352 ms) faster than Verb Type 2 ($\bar{x}$ = 35.7417 ms) (Verb Type 1 < Verb Type 3 < Verb Type 2) (see Table 15 and Figure 4). However, in the intermediate learners, Verb Type 1 ($\bar{x}$ = -13.4226 ms) was read fastest and Verb Type 2 ($\bar{x}$ = 41.8072 ms) was read faster than Verb Type 3 ($\bar{x}$ = 44.1535 ms) (Verb Type 1 < Verb Type 2 < Verb Type 3) (see Table 15 and Figure 6).

	Verb Type 1	**Verb Type 2**	**Verb Type 3**
Advanced	-44.1944 ms (89.48445)	35.7417 ms (133.614)	-36.3352 ms (90.48047)
Intermediate	-13.4226 ms (74.17867)	41.8072 ms (137.0935)	44.1535 ms (147.0488)
Average	-28.8085 ms (83.61637)	38.7744 ms (135.3989)	3.9092 ms (128.5482)

Table 15: Mean residual RTs (in milliseconds) found in Region 2 with standard deviations in parenthesis

When considering the average reading times of all learners, a similar trend can be observed in the spillover region (Region 3) with Verb Type 1 ($\bar{x}$ = -29.7015 ms) read fastest followed by Verb Type 3 ($\bar{x}$ = -22.0482 ms) and Verb Type 2 ($\bar{x}$ = 55.2549 ms), respectively (see Table 15). Specifically, in the advanced learners, sentences with Verb Type 1 were read the fastest ($\bar{x}$ = -52.5386 ms) followed by those

with Verb Type 3 ($\bar{x}$ = -39.6724 ms) and those with Verb Type 2 ($\bar{x}$ = 64.6290 ms), respectively (Verb Type 1 < Verb Type 3 < Verb Type 2) (see Table 15 and Figure 6). Similarly, the intermediate group also read sentences with Verb Type 1 the fastest ($\bar{x}$ = -6.8644 ms) followed by those with Verb Type 3 ($\bar{x}$ = -4.4239 ms) and those with Verb Type 2 ($\bar{x}$ = 45.8808 ms), respectively (Verb Type 1 < Verb Type 3 < Verb Type 2) (see Table 15 and Figure 7) In sum, both groups of learners followed the overall pattern in Region 3. Figure 8 illustrates the comparison of average residual RTs of all regions found in both groups of learners.

	Verb Type 1	**Verb Type 2**	**Verb Type 3**
Advanced	-52.5386 ms (141.7983)	64.6290 ms (151.7797)	-39.6724 ms (148.8106)
Intermediate	-6.8644 ms (140.8673)	45.8808 ms (160.1405)	-4.4239 ms (176.2592)
Average	-29.7015 ms (143.1667)	55.2549 ms (156.2975)	-22.0482 ms (164.0627)

Table 15: Mean residual RTs (in milliseconds) found in Region 3 with standard deviations in parenthesis

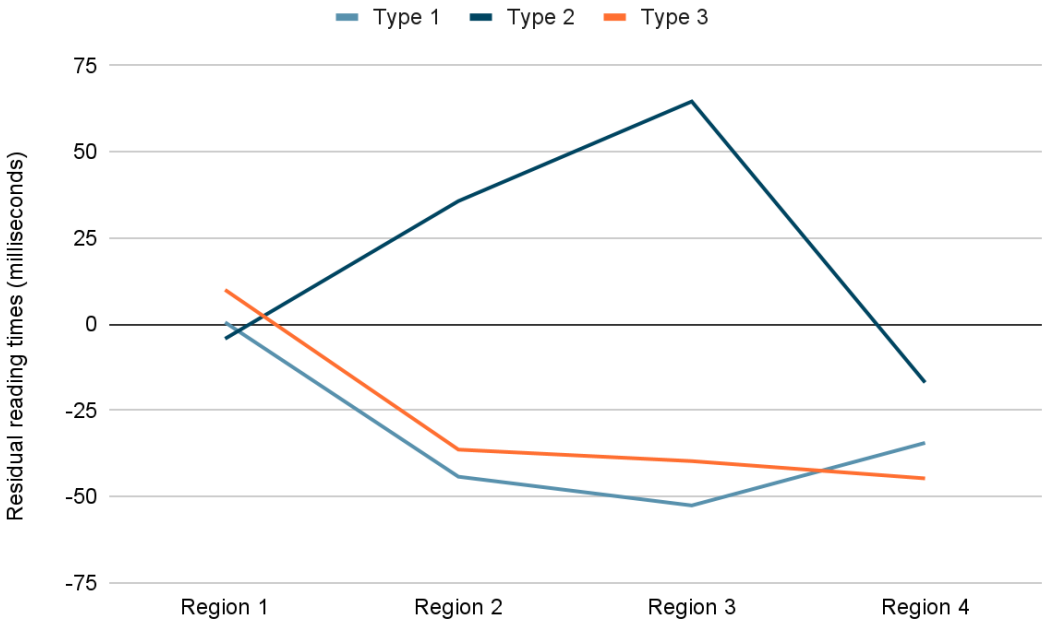

Figure 6: Mean residual RTs (in milliseconds) in the four regions in the advanced group

Type 1 = Sentences with Verb Type 1, Type 2 = Sentences with Verb Type 2, Type 3 = Sentences with Verb Type 3

Region 1 = the Subject region, Region 2 = the Verb/critical region, Region 3 = the Adjunct 1/spillover region, Region 4 = the Adjunct 2 region

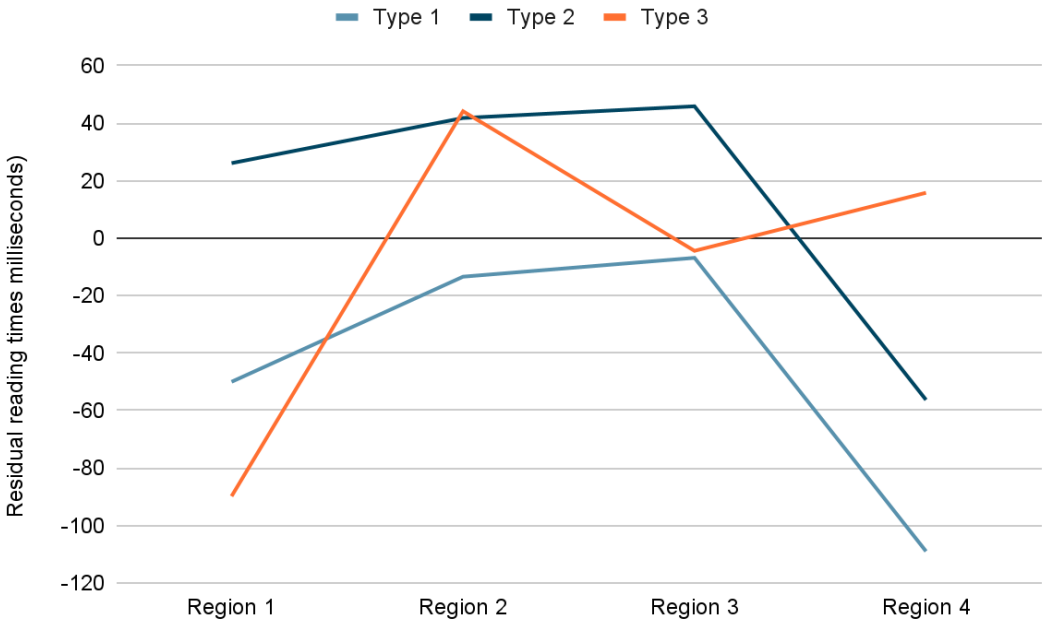

Figure 7: Mean residual RTs (in milliseconds) in the four regions in the intermediate group

Type 1 = Sentences with Verb Type 1, Type 2 = Sentences with Verb Type 2, Type 3 = Sentences with Verb Type 3

Region 1 = the Subject region, Region 2 = the Verb/critical region, Region 3 = the Adjunct 1/spillover region, Region 4 = the Adjunct 2 region

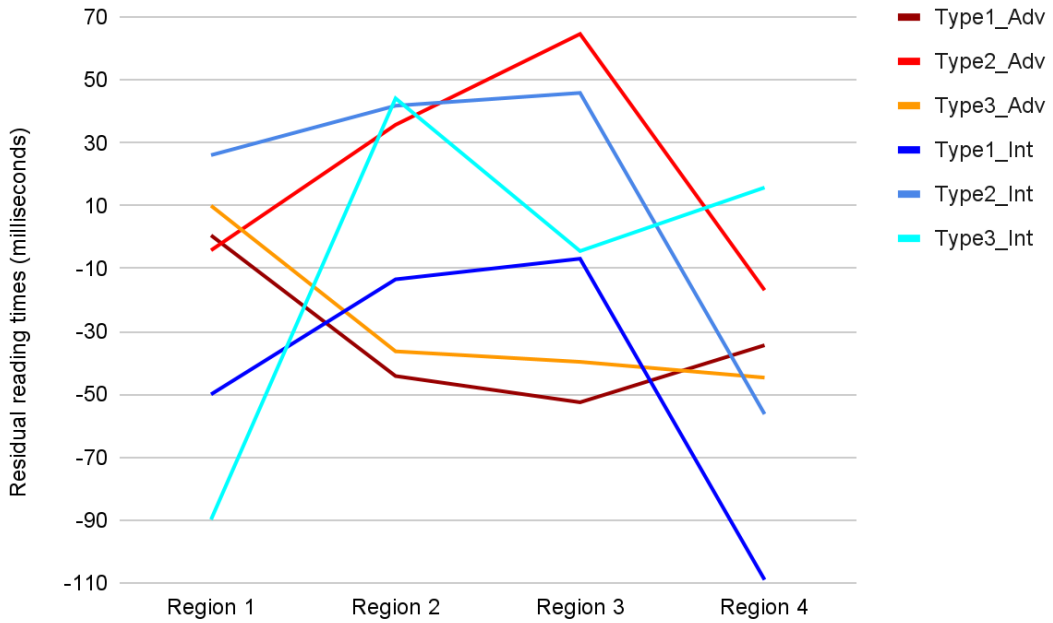

Figure 8: Mean residual RTs (in milliseconds) in the four regions of both groups of learners

Type 1 = Sentences with Verb Type 1, Type 2 = Sentences with Verb Type 2, Type 3 = Sentences with Verb Type 3, Adv = Advanced learners, Int = Intermediate learners

Region 1 = the Subject region, Region 2 = the Verb/critical region, Region 3 = the Adjunct 1/spillover region, Region 4 = the Adjunct 2 region

Apart from the descriptive statistics shown above, a 2 × 3 (proficiency levels × verb types) two-way ANOVA was conducted with reading time as a dependent variable. In Region 2, Marginal significance can be observed for proficiency levels ($F1(1,114) = 3.271$, $p = .073$) while verb types manifested statistically significant effects ($F1(2,114) = 3.257$, $p = .042$). No interaction between proficiency levels and verb types was found ($F1(2,114) = 1.024$, $p = .362$). A Bonferroni post hoc test was conducted to check the verb types effects. The test revealed that sentences with Verb Type 1 (-28.809 ± 18.728 ms) were read significantly faster than those with Verb Type 2 (38.774 ± 18.728 ms, $p = .036$). Such effects were not found between Verb

Type 1 and Verb Type 3 (3.909 ± 18.728 ms, p = .658) and between Verb Type 2 and Verb Type 3 (p = .572). A one-way ANOVA with verb types as factors was further conducted with each group to examine if the effects of verb types were present in both groups of learners. It was found that such effects were found only in the advanced learners ($F1$(2,57) = 3.25, p = .046). Akin to the two-way ANOVA, Verb Type 1 was read with the fastest pace revealing a marginally significant difference between Verb Type 1 (-44.1944 ± 91.80911 ms) and Verb Type 2 (35.7417 ± 137.08510 ms, p = .073), which had the longest reading time. Again, the differences between sentences with Verb Type 2 and those with Verb Type 3 (-36.3352 ± 92.83101 ms, p = .125) and between those with Verb Type 1 and those with Verb Type 3 were not significant (p < .05). However, the verb types did not play a pivotal role in the intermediate group ($F1$(2,57) = 1.318, p = .276). This shows that, in the critical region, verb types significantly affected Thai learners' comprehension of English passives. To be more specific, Verb Type 1 was generally read faster than Verb Type 2. The effect was also obvious in the advanced group, where Verb Type 1 had shorter RTs than Verb Type 2. Proficiency levels possibly had some effects on the comprehension, but they were not as significant as verb types.

In Region 3, sentences with Verb Type 1 were read faster than those with Verb Type 3 and those with Verb Type 2, respectively. Congruent with the previous region (Region 2), only verb types showed statistical significance ($F1$(2,114) = 3.55, p = .032). Proficiency levels were, nonetheless, non-significant ($F1$(1,114) = .518, p = .473). In this region, the interaction between proficiency levels and the verb types was not found ($F1$(2,114) = .481, p = .620). Results from a Bonferroni post hoc test for the spillover region were also in line with those from the critical region. Verb Type 2

(55.255 ± 24.942 ms) was read slower than Verb Type 1 (-29.701 ± 24.942 ms) with significant effects (p = .053). Also, the effects found in the comparison between Verb Type 2 and Verb Type 3 (-22.048 ± 24.942 ms) were marginal (p = .091). However, the comparison of the residual RTs between Verb Type 1 and Verb Type 3 (p > .05) showed no significant difference. A one-way ANOVA analysis was further conducted. Results showed significant effects of verb types solely in the advanced group ($F1$(2,57) = 3.605, p = .034). Only the comparison between Verb Type 1 (-52.5386 ± 145.48203 ms) and Verb Type 2 (64.6290 ± 155.72266 ms) revealed statistically marginal significance (p = .052). When comparing the residual RTs of sentences with Verb Type 2 to those with Verb Type 3 (-39.6724 ± 152.67644 ms), such significance was not found (p = .1). This also happened to the comparison between Verb Type 1 and Verb Type 3 (p < .05). In line with the analyses of Region 2, the verb types did not lead to any statistical effect in the intermediate learners ($F1$(2,57) = .66, p = .521). Similar to the previous region, it can be noted that verb types were a crucial factor significantly affecting learners' comprehension of English passives. It can again be observed that Verb Type 1 was read faster than Verb Type 2. This was, nonetheless, apparent in the advanced learners, but not in the intermediate learners. Proficiency levels did not influence learners' reading times.

The other two regions, Region 1 (SUBJECT) and Region 4 (ADJUNCT 2), were also tested by a two-way ANOVA. The pre-critical region (Region 1) did not show any main effect. Specifically, proficiency levels did not seem to play a role ($F1$(1,114) = 2.214, p = .14) and neither did the verb types ($F1$(2,114) = 1.256, p = .289). Besides, there was no interaction between the two independent variables ($F1$(2,114) = 1.986, p = .142). In the last region (Region 4), English proficiency levels

(*F1*(1,114) = .655, *p* = .42) and different types of verbs (*F1*(2,114) = 2.283, *p* = .107) did not display any significant effect on Thai learners' reading times. Nevertheless, an interaction between the two variables was found (*F1*(2,114) = 3.364, *p* = .038). Due to the significant interaction, a one-way ANOVA was run to investigate the verb types effects within each learner group. Differences between each verb type found in the advanced learners' residual RTs were non-significant (*F1*(2,57) = .312, *p* = .733). However, significant differences can be observed in the intermediate learners (*F1*(2,57) = 4.755), *p* = .012). A post hoc test revealed that, in the intermediate group, the comparisons between Verb Type 1 (-108.9932 ± 109.26503 ms) and Verb Type 3 (15.7759 ± 132.85508 ms) in Region 4 were significant (*p* = .01). The other pairwise comparisons, between Verb Type 1 and Verb Type 2 (-56.2910 ± 141.12586 ms, *p* = .599) and between Verb Type 2 and Verb Type 3 (*p* = .244), however, showed no significant effect. In sum, the results from Region 1 did not give any relevant information and this region indicated no significant effect. On the contrary, Region 4 revealed an interaction between verb types and proficiency levels showing that verb types were a significant factor in the intermediate learners who read sentences with Verb Type 1 faster than those with Verb Type 3.

The by-items statistical analysis in both Region 2 and Region 3 showed no significance. That is, both verb types and proficiency levels were non-significant and the two variables did not interact with each other. They did not affect learners' comprehension of the English passive construction.

5.4 DISCUSSION

One of the predictions of this experiment was that the advanced learners are not affected by the verb types. In the intermediate learners, however, sentences with Verb Type 1 (e.g., *destroy*) would be read with the shortest amount of time as they are adversative in meaning and most naturally occur in Thai *thùuk*-passives. Sentences with Verb Type 2 (e.g., *push*) would be read faster than those with Verb Type 3 (e.g., *admire*) since the former are to some extent natural Thai *thùuk*-passives and language transfer might help learners comprehend English passives. Sentences with Verb Type 3 were expected to be read with the longest time as they are unnatural in learners' L1. In other words, some delays were expected due to the differences between Thai and English passives. The experimental results, nonetheless, followed the predictions only partially.

Results from Region 2 (the critical region) and Region 3 (the spillover region) shared the same pattern indicating that RTs in Region 2 spilled over onto the next region, Region 3. Thus, the spillover region should be taken into account together with the critical one. The statistical analyses of the two regions revealed that the verb type was a significant variable. That is, they greatly impacted Thai learners' comprehension of English passive sentences during this online processing task. The effects were, however, clearly extant solely in the advanced group. Additionally, only Verb Type 1 was evidently read faster than Verb Type 2. Verb Type 1, as expected, was read with the fastest pace due to the fact that this verb type is natural in Thai *thùuk*-passives and also prototypical, i.e., it is adversative. It is, therefore, possible to assume that L1 facilitates Thai learners to read sentences with Verb Type 1 during the online task. Nonetheless, contrary to the prediction, Verb Type 3 was not statistically

different from Verb Type 1 and tended to be read faster than Verb Type 2. One possible explanation is that when learners were reading Verb Type 3 and found that this verb type was not compatible with its equivalent in their L1 passives with *thùuk*, they just parsed the sentences with Verb Type 3 by mainly focusing on the L2 structure rather than on their naturalness in Thai. So, Thai learners presumably retrieved some information from L1 when reading English passives with Verb Type 3. If they noticed that sentences with Verb Type 3 were not natural in their L1 passives with *thùuk*, they read passive sentences structurally without relying on English equivalents in Thai *thùuk*-passives. In a nutshell, it is possible that learners can easily process the most natural verb type (Verb Type 1) and the least natural verb type (Verb Type 3). These two types are on the opposite side of the verb type classification. If the sentence is impossible (unnatural) in *thùuk*-passives, learners can automatically process it because there is no equivalent in L1 to compare with. On the other hand, if the sentence is highly possible (natural) and prototypical in *thùuk*-passives, the availability of that sentence in L1 and its adversative reading increase learners' automaticity of sentence processing.

Given that Verb Type 2 had the longest RT, it was the most difficult one to be processed online. This is also unexpected as it was hypothesized that RT of this verb type should be between that of Verb Type 1 and that of Verb Type 3. That Verb Type 2 was considered somewhere in-between was due to the verb type classification. In the online task, this in-between position might cause processing problems. Even though Verb Type 2 is more natural than Verb Type 3, its naturalness is still significantly lower than Verb Type 1 according to the norming survey. This is because *thùuk* is a prototypical adversative passive marker in Thai. Found for the first

time in 1912, the neutral use of *thùuk* is claimed to be widely used since (Prasithrathsint, 1985). For instance, Prasithrathsint (2001) found that more than half of her data were neutral *thùuk*-passives. However, although the neutral use has existed for more than a century, it is clear that the neutral *thùuk*-passives are still not as natural as the adversative ones. Moreover, prescriptivists and translation scholars still advise that *thùuk* be used in adverse contexts (Jitaree, 2010; Pinmanee, 2012a, 2012b; Suphon 1998, Wisesmanee, 2014). Consequently, that the neutral passives with *thùuk* are not prototypical, i.e., though somewhat natural in Thai, they are non-adversative, may lead to difficulties in processing sentences with the neutral use (Verb Type 2). The influence of adversity again was consistent with Wang and Pongpairoj's study (2021) on Chinese learners' avoidance of English passive sentences. They found that the learners produced more passive sentences when they were adversative. In addition, Chantajinda (in press) found that naturalness of English equivalents in *thùuk*-passives was non-significant. The findings align with the second experiment.

During the processing of the test items, the learners probably consider whether the English passive sentences are natural in Thai *thùuk*-passives or not. If they are (with Verb Type 1 and Verb Type 2), prototypicality comes into play. The prototypical verb type is easy to process as it is well-established in L1 and acts as a facilitator of L2 processing. Processing difficulties, on the contrary, arise when learners are reading the non-prototypical instance even though it is natural in L1 to some extent. It is reasonable to believe that although Verb Type 1 and Verb Type 2 are available in Thai *thùuk*-passives and the presence of their counterparts in Thai possibly helps learners to process English passive sentences, prototype effects are quite strong as attested in Verb Type 2, which learners spent longer time to process.

Its RT showed a tendency to be slower than that of Verb Type 3 whose equivalent in Thai is unnatural. This experiment exhibited that Verb Type 1 was read faster than Verb Type 2. Furthermore, Verb Type 3, which is in the middle of the continuum from the results in this experiment, was likely to have shorter RT than Verb Type 2 and longer RT than Verb Type 1.

The results also indicated that the differences between Verb Type 1 and Verb Type 2 sentences in Region 2 and 3 had stronger effects in the advanced learners than in the intermediate learners. This aligned with what was found in EXPERIMENT 1. That is, both the AJT and the SPRT found that the advanced learners were more sensitive to the verb types than the intermediate ones. Similar to what was discussed in the previous Chapter, it is possible that these advanced students were meta-linguistically aware of distinctions between Thai and English passives. Owing to the differences between L1 and L2, the advanced group was then affected by the verb types.

At first glance, the residual RTs found in Region 4 in the intermediate learners seemed to follow what was predicted. In this last segment, Verb Type 1 was read fastest and was significantly different from Verb Type 3. One might assume that, according to the RTs of this region, reliance on L1 was found and it helped learners to process English passive sentences. However, Jiang (2012) suggested that RT researchers should not include the last region in data analysis as this segment is believed to contain “sentence wrap-up”. That is, participants are likely to take a longer time to react to stimuli in the last region (Keating & Jegerski, 2015). As a result, this region does not accurately reflect how it is really processed due to possible delays (Jiang, 2012). To conclude, even though the results found in Region 4 in the

intermediate learners appeared to be compatible with the prediction, including them in data analysis and discussion could be invalid as this region is highly prone to wrap-up effects potentially resulting in reading delays.

In the present experiment, significant effects were not obtained in the by-items analysis. This perhaps came from the fact that some items had extremely lower RTs than the others. All regions of an item in Verb Type 2, *ask* in "This question was asked by the customers a few days ago", for instance, were read with the fastest reading pace compared to the other items in all verb types, especially in the advanced learners. This could be due to the words that frequently collocate with *ask* such as *question* and *customers*. This made them read the critical, spillover, and adjunct regions with ease. In other words, predictive effects and collocations in some items could play a role in the by-items analysis.

Chapter 6
General discussion and conclusion

This chapter concludes the research study. Section 6.1 summarizes the results from EXPERIMENT 1 and EXPERIMENT 2 and presents similarities and differences between the off-line judgment and online processing of English passive sentences in Thai learners. Section 6.2, lastly, deals with limitations and suggestions for future research.

6.1 THE EXPERIMENTS

This study attempts to examine the influence of L1 on the acquisition of English passives by Thai learners in an off-line judgment task and an online processing task. The passive constructions in Thai and English differ in several aspects. Of particular interest are the restrictions of Thai passive construction with *thùuk* as the passive marker. This marker is claimed to be prototypically adversative and has been neutralized due to language contact with English (Prasithrathsint, 1995, 2001). Furthermore, researchers seem to have a unanimous agreement of the neutralization of *thùuk* (Iwasaki & Ingkaphirom, 2009; Prasithrathsint, 2001; Timyam, 2015). That is, *thùuk* can be naturally used in both adversative and neutral (non-adversative) contexts. Nevertheless, certain non-adversative *thùuk*-passives still sound unnatural.

The present research classifies verbs into three types using two criteria, i.e., naturalness in Thai *thùuk*-passives and adversity: Verb Type 1 (natural in Thai *thùuk*-passives and adversative), Verb Type 2 (natural in Thai *thùuk*-passives and non-

adversative), and Verb Type 3 (unnatural in Thai *thùuk*-passives). Unlike English *be*-passives, *thùuk*-passives cannot occur in all circumstances naturally. Thus, if Thai students learn English passive sentences by comparing them to *thùuk*-passives in Thai, they may be hindered by this asymmetry between L1 and L2 or language transfer. In the AJT, it was predicted that the advanced learners would not be affected by verb types and would accept all passive sentences while the intermediate learners would find sentences with Verb Type 1 most acceptable and those with Verb Type 3 least acceptable. In the SPRT, it was conjectured that the advanced learners would read English passive sentences without verb types effects while the intermediate learners would read sentences with Verb Type 1 fastest and those with Verb Type 3 slowest.

6.1.1 Results from the AJT

In the AJT, the Thai learners judged sentences with Verb Type 1 more acceptable than those with Verb Type 2 and those with Verb Type 3. This offline judgment task pointed to the influence of language transfer, or crosslinguistic influence. Since *thùuk*-passives are prototypically adversative and Verb Type 1 is both adversative and natural in Thai *thùuk*-passives, L1 then positively affected learners' judgment. On the other hand, sentences with Verb Type 2, though considered acceptable to some degree, were still less acceptable than those with Verb Type 1 due to their non-prototypicality in Thai *thùuk*-passives. To put it differently, although Verb Types 1 and 2 are both natural in Thai *thùuk*-passives, the former is prototypical in that it expresses adversity in Thai *thùuk*-passives. Prototype effects thus explain why the most prototypical verb type was the most acceptable one. As

expected, Verb Type 3 was the most unacceptable verb type due to its lack of equivalents in *thùuk*-passives and it was noticeably less acceptable than Verb Type 1.

In addition, the effect of English proficiency was found to be marginally significant. The advanced learners tended to judge the sentences as more acceptable than the intermediate learners. Furthermore, when each group was examined separately, the verb types effects found between Verb Type 1 and the other two types were observable only in the advanced learners. This could result from the fact that they possessed high metalinguistic awareness and noticed contrasts between Thai and English passives. They were, accordingly, influenced by such differences.

Considering the two factors used in the classification of the verb types, naturalness in Thai *thùuk*-passives and adversity, the latter seemed to have a more powerful effect as it can be seen that Verb Type 1, which is the only adversative verb type, was deemed significantly more acceptable than the other two verb types. However, a correlation between the two factors may exist as the degree of naturalness probably depends on the degree of adversity. That is, the more adversative a sentence is, the more natural it sounds in Thai *thùuk*-passives. If naturalness in Thai played a role as an independent factor, one might expect to see a marked difference between Verb Type 2 (non-adversative and natural) and Verb Type 3 (unnatural) as well. That difference, nonetheless, was not observed. EXPERIMENT 1, thus, suggested that differences between Thai and English passives influenced Thai learners, especially the advanced learners, in the acceptability, offline judgment of English passive sentences with different verb types.

6.1.2 Results from the SPRT

Unlike EXPERIMENT 1, the SPRT (EXPERIMENT 2) reported different patterns of results. In the critical and spillover regions, Thai learners read sentences with Verb Type 1 faster than those with Verb Type 2. Sentences with Verb Type 3 tended to be read slower than those of Verb Type 1 but faster than those of Verb Type 2. It is not surprising that sentences with Verb Type 1 were processed the fastest since their equivalents are prototypical, that is, adversative and natural, in Thai *thùuk*-passives. In fact, it was also initially hypothesized that unnaturalness of Verb Type 3 would cause reading delays, and this verb type would have the longest RT. However, contrary to the hypothesis, sentences with Verb Type 2 tended to be read slower than those with Verb Type 3, which were likely to be read slower than those with Verb Type 1.

That sentences with Verb Type 1 were read the fastest suggested that while the learners were reading the stimuli sentences, positive transfer facilitated their online comprehension. With Verb Type 2, however, although the sentences are natural in *thùuk*-passives, they are non-adversative. This non-prototypical feature delayed the learners' comprehension of English passive sentences. Sentences with Verb Type 3, on the other hand, are not natural in Thai *thùuk*-passives. As a result, there were thus no equivalents in the two languages. Reading these English passives that are atypical in Thai, the learners ignored differences between Thai and English passives altogether, yielding relatively faster RTs than passives with Verb Type 2.

The experiment further reported that while Verb Type 1 and Verb Type 2 were statistically different in their RTs, there was no difference between Verb Types 1 and 3, or Verb Types 2 and 3. This gives rise to the proposal that adversity had greater

impacts on Thai learners than naturalness in *thùuk*-passives. To illustrate, while Verb Types 1 and 2 are both natural in Thai, adversity is their distinguishing feature. The adversity effect is so strong that Verb Type 1, which is adversative, was read faster than Verb Type 2, which is non-adversative. In contrast, naturalness, which distinguishes Verb Type 3 from the other two verb types, did not affect the RTs. Adversity, hence, plays a more important role than naturalness in Thai *thùuk*-passives.

The SPRT also showed that proficiency levels were of marginal significance in the critical region. That is, the advanced group was likely to read the stimuli sentences faster than the intermediate group. Furthermore, similar to the AJT, only the advanced learners were evidently influenced by the verb types. These learners read sentences with Verb Type 1 significantly differently from those with Verb Type 2. They presumably had high metalinguistic awareness and were conscious of the differences between the passives in the two languages.

In brief, for the passive sentences naturally occuring in Thai *thùuk*-passives, prototype effects emerged. Only the adversative sentences (Verb Type 1) which are prototypical in Thai *thùuk*-passives were easy to read due to L1 positive transfer. As the non-adversative sentences (Verb Type 2) are non-prototypical in Thai *thùuk*-passives, they were more difficult to comprehend compared to the prototypical ones. EXPERIMENT 2 demonstrated that, to some extent, Thai learners, especially the advanced group, were affected by the differences between Thai and English in their self-paced reading of English passive sentences with different verb types.

6.1.3 Further discussion

According to Spinner and Gass (2019), judgment tasks usually measure learners' explicit knowledge. On the other hand, in self-paced reading where learners' comprehension automaticity is examined, such knowledge is minimized (Jiang, 2012). Since the two tasks have different foci, the dissimilar patterns found in EXPERIMENT 1 and EXPERIMENT 2 might result from task effects. That is, the observed differences are assumed to be task-based. In the AJT, Verb Type 1 was accepted more than Verb Type 2 and Verb Type 3. Conversely, in the SPRT, Verb Type 1 was read faster than Verb Type 2 only. It can be seen that in the untimed judgment task (the AJT), learners used their explicit knowledge concerning the differences between L1 and L2 passives. However, as the timed online processing task (the SPRT) minimized such knowledge, these learners were conscious of the contrasts between Thai and English to some degree only, i.e., less than their awareness found in the AJT.

That crosslinguistic influence became less obvious in the online comprehension task (the SPRT) and was more pronounced in the offline judgment task (the AJT) possibly demonstrated that target-convergent performance can be found in the online task while non-target-like performance occurred in the offline task. As mentioned earlier, the two tasks employed in this study are generally used to examine different types of knowledge. They, thus, yielded different patterns. Several studies utilizing offline and online tasks to investigate L2 learners also achieved the same results: different behaviors in the two tasks due to the task effects. These studies compared the responses of non-native speakers and native speakers. The majority found that L2 online processing is more target-like while L2 offline judgment is

target-divergent (Cho, 2020; Hopp, 2007, Ionin et al., 2021; Orfitelli & Polinsky, 2017; Zufferey et al., 2015). Orfitelli and Polinsky (2017) explained that offline judgment tasks, specifically grammaticality judgment tasks (GJTs) cannot fully represent L2 grammatical knowledge since there are other extra-linguistic factors, namely, increased processing and metalinguistic awareness, resulting in non-target-like performance. Such tasks tap into metalinguistic judgments and require higher processing demands which are deemed difficult for non-native speakers, including L2 learners and heritage language speakers. Online comprehension tasks, on the contrary, minimize metalinguistic reasoning and extra-linguistic factors are not at work. These studies emphasized that different tasks measure different types of knowledge (Cho, 2020; Ionin et al., 2021). Even though the present study did not include native speakers of English, it is in line with the aforementioned studies on the assumption that stronger crosslinguistic influence indicates more target-divergent behavior.

Some studies, however, reported a completely different picture from offline and online experiments: online tasks showed more non-target-like behavior while L2 learners performed like native speakers in offline tasks. According to Roberts et al. (2008), language processing in an online, eye-tracking experiment was much more limited for L2 learners which lead to non-native-like performance. Dudley & Slabakova (2021) also found that L2 learners were more sensitive to the incorrect use of French subjunctives in the AJT than in the eye-tracking task. They concluded that the participants in their research might not have internalized the use of French subjunctives yet and their knowledge concerning French subjunctives was stored in an explicit form. This explained why the learners showed non-target-like performance in the online experiment as this task did not tap into explicit knowledge and the learners

cannot apply it during the online processing task. It is unanimously obvious that task demands affect offline and online behavior of second language learners. However, there exist vigorous debates over which task reveals more target-like behavior.

The results of both experiments lead to the speculation that adversity is a more influential factor than naturalness in Thai *thùuk*-passives when Thai learners comprehend English passive sentences. This prototypical feature affected both their judgment and reading times in the experiments. In the AJT, Verb Type 1, the only adversative verb type, was more acceptable than the others, and, in the SPRT, it was read faster than Verb Type 2 and tended to have shorter RT than Verb Type 3. As mentioned in Chapters 4 and 5, the findings were consistent with Wang and Pongpairoj (2021), who found that Chinese learners used more passives in adversative contexts and avoided using them in non-adversative contexts, and also with Chantajinda (in press), who found that English verbs whose degrees of naturalness in Thai *thùuk*-passives differed were produced with non-significant differences.

Another noteworthy point is that in both experiments the advanced learners were found to be more influenced by the contrastive features between Thai and English passives than the intermediate learners. In other words, crosslinguistic influence was significantly much stronger in the advanced group than in the intermediate group. This noticeable cross-linguistic effect, nonetheless, did not indicate that learners with lower English proficiency outperformed the more proficient learners. Overall, the latter group was still likely to judge English passives in all verb types more correctly and read passive sentences faster than the former. This research study simply showed that crosslinguistic influence can be strong in high proficiency

learners while their overall performance was better than those with lower English proficiency.

Given that prescriptive rules and translation textbooks suggest that *thùuk* be preferably used to depict adverse events only (Jitaree, 2010; Pinmanee, 2012a, 2012b; Suphon 1998, Wisesmanee, 2014), the advanced learners, who are assumed to have higher metalinguistic awareness of L1 and L2 contrasts, could be affected by this. This can account for the results from EXPERIMENT 1, in which Verb Type 1 was more acceptable than Verb Types 2 and 3, and from EXPERIMENT 2, in which Verb Type 1 was read faster than Verb Type 2. As for the use of *thùuk* in present day Thai, Prasithrathsint (2006) found that *thùuk* can be used in neutral contexts. She also proposed that the marker completely lost its prototypical (adversative) and non-prototypical (non-adversative, neutral) meanings. The marker is only used for grammatical purposes, i.e., to mark sentences as passives. However, Po-ngam (2008) found that *thùuk* is still prevalently used in adverse contexts. *Thùuk*-passives are thus frequently employed to convey adverse events. The norming survey and the main experiments indicated that even though Prasithrathsint (2006) argued that *thùuk* is now an "empty passive marker" without any specific meaning and it is only used for the syntactic structure of Thai passives with all classes of transitive verbs, the preference for *thùuk* to occur in adversative contexts remains. When reading English passives, Thai advanced learners, who presumably noticed such differences, were, hence, affected by the degree of adversity. Lastly, below is Table 16 summarizing key similarities and differences found in the offline judgment and online comprehension tasks.

	AJT	SPRT
Overall	Verb Type 1 > Verb Type 2 > Verb Type 3 (> = more scores = more acceptable)	Verb Type 1 < Verb Type 3 < Verb Type 2 (< = fewer RTs = read faster)
Significant effects	Verb Type 1 was more acceptable than Verb Types 2 and 3	Verb Type 1 was read faster than Verb Type 2
	Apparent in the advanced group	Apparent in the advanced group
Explanations	Prototype effects	Prototype effects (only when there were natural equivalents in Thai)
	In the advanced group Higher metalinguistic reasoning Translation scholars and prescriptive rules	In the advanced group Higher metalinguistic reasoning Translation scholars and prescriptive rules
Stronger factor	Adversity (Verb Type 1 was different from the other types)	Adversity (Verb Type 1 was different from Verb Type 2)

Table 16: Similarities and differences from the two experiments

As an implication for the field of applied linguistics, the results revealed that the contrasting restrictions between the constructions in Thai and English had impacts on Thai students. To reduce crosslinguistic influence that might cause difficulties in comprehending English passive sentences, when teaching English passives, language teachers might consider including all verb types as example sentences or input. This is to familiarize students with passive sentences that might be odd in L1 but can be found in L2. To put it differently, language teachers should provide a wide variety of input so that students are exposed to passives with different verb types, including those which sound unnatural in Thai *thùuk*-passives as well.

This study also provides linguistic implications. It proves that the prevalence of the prototypicality of *thùuk*-passives still affects L2 learners even though there is

an increasing use of their non-prototypical feature. The results also present an applied psycholinguistic implication as they indicated task effects found in different behavioral patterns in offline and online tasks related to the effects of L1 on L2. Finally, this work is the pioneering study focusing on online processing in Thai learners and the English passive construction from one perspective. It is expected that there will be more research studies on L2 processing in Thai learners of English not only on the passive construction but on a wide range of structural varieties.

6.2 LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

There exist some limitations in this study. Firstly, it was difficult to control animacy of the subject in each passive sentence due to verb meaning. In their passive forms, *punish* (Verb Type 1), for example, usually has an animate subject while *design* (Verb Type 2) generally takes an inanimate subject. In this work, sentences with Verb Type 1 consisted of 8 animate and 2 inanimate subjects. All subjects in Verb Type 2 were inanimate. Verb Type 3 contained 2 animate and 8 inanimate subjects. Observing whether animacy effects occur in this work is, as a consequence, not possible. Future works may systematically investigate the effect of animacy on comprehension of passive sentences. In fact, Harris (1978) found that children and adults who were native speakers of English tended to produce more passive sentences when their subjects were animate. Animacy can, therefore, be considered as a potential factor in L2 learners' comprehension and production of English passives.

Secondly, in the norming test, all Thai passive sentences with *thùuk* were formed with the agents placed between *thùuk* and the main verb. Even though they sounded natural given the norming survey, it is possible that the presence of the

agentive phrases might affect sentences' naturalness. This assumption is based on Prasithrathsint (2006) who suggested that *thùuk* is commonly agentless or occurs with *dooj*-phrases. Additionally, even though Po-gnam (2008) found that diachronic data revealed a trend of *thùuk* increasingly used in full passives, the majority of them were still agentless. It is hence interesting to examine agentless passives in L2 learners.

Third, this study only follows each verb's frequency in all possible occurrences. It is highly suggested that future works focus on the frequency in their passivized forms only to get the most accurate frequency which is beneficial for controlling frequency effects. The length of each test item was not controlled as well. It is possible that this could affect their reading pace or cause difficulties, especially in the SPRT.

The majority of the experiment sentences were formed in their past simple forms with regular passive participles. However, modal verbs, present forms, and irregular passive participles can be found in some items. It is advisable that these issues be considered in future research to control experimental conditions.

The number of participants in the current study was also relatively small. Only 31 respondents and 80 participants partook in the norming survey and in the main experiments, respectively. That is, only 20 advanced and 20 intermediate learners joined the first experiment and 20 advanced and 20 intermediate learners took part in the second experiment. One might, thus, consider having a larger pool of participants.

Finally, since this work did not aim at comparing native and non-native speakers of English, future research might compare L2 data with those of English native speakers. To put it differently, it is interesting to test whether or not second language processing and native processing show similar patterns. Native speakers

might also be included as part of future research as the native control group. Results from the comparison will provide a better understanding of Thai learners' acquisition of English passive sentences are native-like.

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APPENDICES

Appendix A
Norming survey's items

Items	Item types
งานที่ต้องใช้ทักษะทางการคำนวณสูงเหมาะกับสุดามาก	Filler
หลาน ๆ เพิ่งขึ้นจากสระว่ายน้ำเมื่อกี้นี้	Filler
โพสต์ในเฟสบุ๊คของหล่อนถูกเพื่อน ๆ ของฉันพูดถึงกันมาก	Verb Type 2
เทคโนโลยีถูกนักวิทยาศาสตร์ปรับปรุงอีกครั้ง	Verb Type 3
หนังสือที่นิสิตซื้อมาอ่านกันกลายเป็นที่นิยมในชั่วข้ามคืน	Filler
เราต้องรีบตื่นนอน ไม่อย่างนั้นจะไปขึ้นรถไฟไม่ทัน	Filler
งานจิตรกรรมชิ้นนี้ถูกผู้เชี่ยวชาญส่วนใหญ่จำได้ในฐานะผลงานชิ้นโบว์แดง	Verb Type 3
ตัวเลือกอื่น ๆ ถูกผู้บริหารพิจารณาเป็นเวลานาน	Verb Type 2
ม้าที่ชนะการแข่งเมื่อวานกำลังกินหญ้าอยู่ในสนาม	Filler
เขากลัวสิงโตที่ยืนคำรามอยู่จนตัวหดหมดแล้ว	Filler
นกถูกลูกสาวให้อาหารทุกเช้า	Verb Type 3
ฝนตกหนักมากจนต้องหุบร่ม	Filler
ย่าบอกให้น้องสาวฝึกทำอาหารไทยไว้บ้าง	Filler
หอพักของนักเรียนถูกคลื่นสึนามิทำลายเมื่อเดือนธันวาคม	Verb Type 1
สมุดไม่มีเส้นช่วยให้เราเขียนให้ตรงเส้นได้มากขึ้น	Filler
เก้าอี้รถนิลานั่งสบายมาก	Filler
สมศรีเล่นโทรศัพท์ทั้งวัน	Filler
กระต่ายถูกสัตวแพทย์รักษาหลังเกิดอุบัติเหตุ	Verb Type 3
เที่ยวบินของคุณตาถูกสายการบินยกเลิกกะทันหัน	Verb Type 1
ช่างมาเอาเครื่องเสียงที่เพิ่งจะเสียไปซ่อม	Filler
หนังที่ศรียืมไปน่าจะหายไปแล้ว	Filler

อัลบั้มล่าสุดของเขาถูกค่ายเพลงปล่อยออกมาอาทิตย์ที่แล้ว	Verb Type 2
หมิวไม่มีความรับผิดชอบเลย	Filler
ในที่สุดเหตุการณ์ดังกล่าวก็คลี่คลายลงด้วยดี	Filler
ทารกถูกพี่เลี้ยงแต่งตัวให้ในห้องนอน	Verb Type 3
ผู้ต้องสงสัยถูกตำรวจจับกุมเมื่อคืนตอนห้าทุ่ม	Verb Type 1
เมื่อวานฉันเจอเพื่อนเธอที่ชอบดูแฮร์รี่ พอตเตอร์	Filler
ภาษาอังกฤษสำคัญมากต่อการทำงานในอนาคต	Filler
ฉันคงต้องบอกผู้จัดการ ถ้าอีกห้านาทีอาหารยังไม่มา	Filler
อาหารค่ำถูกแม่ครัวเตรียมไว้สำหรับแขกจากต่างประเทศ	Verb Type 2
เด็กพิการถูกกลุ่มอันธพาลแกล้งในสวน	Verb Type 1
ไขมันเป็นอาหารเสริมสำหรับคนที่อยากมีรูปร่างดี	Filler
เงินถูกเจ้านายเก็บไว้ในตู้เซฟ	Verb Type 2
ฟิล์มไปเที่ยวเกาหลีปีละหลายหน	Filler
ถ้าเขายังพูดมากอยู่ ฉันคงต้องลุกไปเตือนเขาหน่อยแล้วล่ะ	Filler
ปัจจัยต่าง ๆ ถูกผู้วิจัยระบุไว้แล้วพร้อมกับเงื่อนไขอื่น ๆ	Verb Type 2
ผู้ชายที่นั่งอยู่ริมสุดเป็นวิศวกรมือหนึ่งของบริษัทเรา	Filler
ใบสมัครของวินัยถูกโรงเรียนชื่อดังตอบรับทันที	Verb Type 3
คนที่พูดภาษาอังกฤษเก่งมักจะเป็นคนหัวดี	Filler
เสื้อที่เธอได้มาจากเชียงรายสวยดีนะ	Filler
นักเรียนถูกครูใหญ่ลงโทษที่สนามฟุตบอล	Verb Type 1
กรุงเทพฯ เข้าหน้าหนาวแล้ว	Filler
บ้านเป็นที่ที่เต็มไปด้วยความทรงจำ	Filler
ถ้าระวังตัวมากกว่านี้ โทรศัพท์คงไม่ตกแตก	Filler
เขาถูกเพื่อนร่วมงานตำหนิเพราะความสะเพร่า	Verb Type 1
ตั๋วภาพยนตร์ถูกคอหนังซื้อไปจนหมดเมื่อวันก่อน	Verb Type 2
น้ำกระป๋องอัดลมบนวางอยู่โต๊ะ	Filler

แม่ทิ้งปฏิทินที่ไม่ใช้แล้วไปหลายอัน	Filler
ฐานข้อมูลถูกวิศวกรหลายคนค้นทุก ๆ สามชั่วโมง	Verb Type 3
เมืองที่ไร้ซึ่งแสงสีก็เหมือนเมืองร้างเมืองหนึ่ง	Filler
เพื่อนที่ฉันสนิทจริง ๆ มีอยู่ไม่กี่คนหรอก	Filler
รายงานของเขาถูกเพื่อนเผาก่อนวันส่ง	Verb Type 1
จินนี่ดินน้ำมันปั้นก้อนสีฟ้า	Filler
สัตว์ที่อาศัยอยู่ในทะเลบางตัวก็เป็นสัตว์เลี้ยงลูกด้วยนม	Filler
วันคริสต์มาสถูกผู้คนทั่วทุกมุมโลกเฉลิมฉลองทุก ๆ ปี	Verb Type 3
โทรทัศน์ละครดังฉายวันอังคารทุก	Filler
คอมพิวเตอร์ถูกพี่สาวของฉันใช้ที่ห้องประชุม	Verb Type 2
การอาบน้ำโดยไม่ใช้น้ำช่วยให้ร่างกายสะอาดยิ่งขึ้น	Filler
เจนนิเฟอร์ทำงานหน้าคอมพิวเตอร์วันละหลายชั่วโมง	Filler
ขาวบ้านถูกข้าศึกโจมตีกลางดึก	Verb Type 1
เชือกถูกกะลาสีดึงขึ้นมาจากทะเล	Verb Type 2
เวลาเปลี่ยน คนก็เปลี่ยน	Filler
การ์ตูนแนวสอบสวนที่ป้าชอบดูคือโคนัน	Filler
กวีนิพนธ์ดังกล่าวถูกนักเขียนคนโปรดของพวกเราแนะนำในงานหนังสือ	Verb Type 3
ห้ามไม่ให้ผู้หญิงไทยเข้าร่วมประกวดเวทีนางสาวไทย	Filler
ขนมหวานที่ราขึ้นตรวจแล้วไม่พบเชื้อรา	Filler
รองเท้าหนังของพ่อถูกแม่ขัดทุกวัน	Verb Type 2
บัตรใบนี้หักซะแล้ว	Filler
เด็กผู้ชายถูกวิญญาณร้ายสิงที่สุสาน	Verb Type 1
ไม่น้องเรียนอยากเคมีแล้ว	Filler
ต้นไม้ที่ทรายปลูกกำลังทิ้งใบ	Filler
เครื่องหมายการค้าถูกบริษัทขึ้นทะเบียนตามกฎหมายเมื่อปีที่แล้ว	Verb Type 3
การจราจรในกรุงเทพฯ ในช่วงค่ำติดขัดมาก	Filler

ลูกแมวตัวนั้นมีพ่อเป็นหมาและมีแม่เป็นไก่	Filler
วันก่อนเพื่อนสนิทเอาน้ำมะนาว 0% มาฝาก	Filler
กล่องใบใหญ่ถูกเด็ก ๆ ผลักไปไว้ในห้อง	Verb Type 2
สถานการณ์ทางการเมืองในฝรั่งเศสยังคงตึงเครียด	Filler
บอยรักหมาที่ญาติเพิ่งให้มามาก	Filler
แบกสมใจคอมพิวเตอร์ด้วยไปทำงาน	Filler
ข้อเสนอของเขาถูกกรรมการปฏิเสธสามวันให้หลัง	Verb Type 1
ห้องถูกภารโรงเปิดไว้เพื่อรับลม	Verb Type 2
เก้าใช้ทิชชู่จนหมดเกลี้ยง	Filler
โทรศัพท์ของฉันถูกแม่ชาร์จในห้องนั่งเล่น	Verb Type 3
ปัจจุบันเยาวชนติดโทรศัพท์มือถือกันมาก	Filler
ประเทศของเราถูกต่างชาติกบุกรุกเมื่อหลายร้อยปีก่อน	Verb Type 1
มุกมักจะไปนั่งร้านกาแฟที่ชงมอคค่าอร่อย ๆ	Filler
รถจักรยานถูกคุณน้าซ่อมที่โรงรถ	Verb Type 2
ป๊อปคงจะบาดเจ็บน้อยกว่านี้ ถ้าไม่ดื่มแล้วขับ	Filler
น้ำที่สะอาดจริงต้องผ่านการกรองหลายขั้นตอน	Filler
ยิงตำรวจคนร้ายดับที่คา	Filler
สมบัติถูกหิมะฝังเมื่อสองปีก่อน	Verb Type 2
น้องลืมทำการบ้าน	Filler
พระราชวังที่ใหญ่ที่สุดในยุโรปอยู่ที่สเปน	Filler
ระบบทุนนิยมถูกรัฐบาลสนับสนุนอย่างต่อเนื่อง	Verb Type 3
การบ้านที่ครูสั่งยากมาก	Filler
พลเมืองถูกกลุ่มผู้ก่อการร้ายฆ่าที่ใจกลางเมือง	Verb Type 1
เจ้านายขึ้นเงินเดือนให้กับพนักงานที่ทำงานได้ตามเป้า	Filler
เสมียนที่ทำงานให้พ่อฉันมากว่าสิบปีจะเกษียณแล้ว	Filler
อาร์มจะโดนเรียกไปตักเตือน ถ้ายังมาทำงานสาย	Filler

โทรศัพท์รุ่นนี้ถูกผู้ใช้จำนวนมากชอบเพราะว่าฟังก์ชันของมัน	Verb Type 3
อากาศในห้องเย็นมาก เพราะไม่ได้เปิดแอร์ทิ้งไว้	Filler
เสาอาคารที่โอบอ้อมอารีหักไปเมื่อคืนนี้	Filler
ครีมบำรุงผิวทำให้เค้กเลี่ยน	Filler
ประเทศถูกรัฐบาลพัฒนาอย่างเห็นได้ชัด	Verb Type 3
ครูใหญ่ตีนักเรียนที่รังแกเพื่อนผู้หญิง	Filler
ไฟฟ้ารถขับมากเร็ว	Filler
เทคโนโลยีพัฒนาอย่างก้าวกระโดดมากในช่วงหลายสิบปี	Filler
ซากปรักหักพังถูกคนงานยกขึ้นจากพื้น	Verb Type 2
ทหารที่ไม่มีระเบียบวินัยมักจะต้องฝึกหนัก	Filler
หม้อหุงข้าวมีไว้เพื่อไม่ให้หุงข้าวโดยเฉพาะ	Filler
การศึกษาถูกภาคเอกชนส่งเสริมด้านการเงิน	Verb Type 3
คนที่ใส่เสื้อเชิ้ตสีขาวเป็นแฟนเก่าพี่ฉันเอง	Filler
ลูกจิงโจ้ฟักจากไข่สีชมพู	Filler
โบสถ์หลังนั้นถูกสถาปนิกชื่อดังออกแบบในยุคกลาง	Verb Type 2
พระจันทร์ข้างแรมทำให้กลางคืนสว่างไสว	Filler
เขาไม่เคยกินชา เพราะว่าชามีรสเค็ม	Filler
การบ้านถูกนักเรียนส่งทุกวันจันทร์	Verb Type 3
มันทอดฝรั่งมีขายร้านซื้อสะดวกที่	Filler
นาฬิกาเรือนนี้ถ่านหมด จึงบอกเวลาที่เชื่อถือได้	Filler
เด็ก ๆ ถูกคุณครูดุหน้าชั้นเรียน	Verb Type 1
ของขวัญชิ้นนี้ถูกลุงของเขาได้รับในช่วงสงกรานต์	Verb Type 3
เด็กแรกเกิดจะลงแข่งยิมนาสติกโอลิมปิกปีหน้า	Filler
หล่อนข้าวสามมื้อกินวันละ	Filler
เขาถูกแม่เลี้ยงเกลียดสมัยเด็ก ๆ	Verb Type 1
ผู้หญิงที่สวยแบบธรรมชาติมีอยู่ถมเถไป	Filler

กังหันลมจะหมุนเร็วมากเมื่อไม่มีลม	Filler
ระบบความปลอดภัยถูกวิศวกรคอมพิวเตอร์ของพวกเราควบคุมจนถึงห้าปีที่แล้ว	Verb Type 2
ถ้าสร้อยไม่โดดเรียนบ่อยขนาดนี้ เธอคงไม่สอบตกหรอก	Filler
หนูได้คุยกับแม่ชีที่แม่เข้าไปคุยด้วยเมื่อวันก่อน	Filler
เจ เค โรว์ลิ่งกำลังเขียนนิยายเรื่องใหม่	Filler
พนักงานหลายคนถูกเจ้านายไล่ออกเพราะปัญหาทางเศรษฐกิจ	Verb Type 1
ม่านถูกแม่บ้านปิดไม่ให้แสงเข้า	Verb Type 2
เขาคงจะได้รับอภัยโทษ ถ้าไม่ชิงหนีไปเสียก่อน	Filler
รถคันนี้จอดอยู่หน้าบ้านมาหลายวันแล้ว	Filler
ค่าใช้จ่ายของงานเลี้ยงถูกผู้จัดเตรียมงานประมาณการไว้อย่างรอบคอบ	Verb Type 3
ขนมปังเนื้อนุ่มชิ้นนี้กรอบอร่อยมาก	Filler
สุชาติไปสวนลุมอาทิตย์ละห้าวัน	Filler
ร้านกาแฟถูกผู้บริโภคฟ้องเนื่องจากพนักงานไม่สุภาพ	Verb Type 1
ถ้าเพื่อนร่วมงานมีจุดยืนแบบนี้ เราคงต้องสู้กันสักยก	Filler
นอนแมวอีกแล้วกลางวัน	Filler
วัดพระแก้วถูกนักท่องเที่ยวชื่นชมเนื่องจากความสวยงามของวัด	Verb Type 3
คำถามนี้ถูกลูกค้าถามเมื่อสองสามวันก่อน	Verb Type 2
ถ้าเธอไม่สารภาพ ฉันจะแจ้งความ	Filler
กระเป๋าที่เธอใช้วันนั้นสวยดีออก	Filler
งบประจำปีถูกผู้จัดการจำกัดไว้ตามนโยบาย	Verb Type 2

Appendix B
The Persson's adversity test

แบบสอบถามประโยคภาษาไทย

อ่านประโยคในตารางและตอบคำถามในช่องเดียวกับประโยคนั้น ๆ

	ใช่	ไม่ใช่
ตัวเลือกอื่น ๆ ถูกผู้บริหารพิจารณาเป็นเวลานาน **สำหรับตัวเลือกอื่น ๆ การ*ถูกพิจารณา*แย่กว่าการ*ไม่ถูกพิจารณา***		
ขาวบ้านถูกข้าศึกโจมตีกลางดึก **สำหรับชาวบ้าน การ*ถูกโจมตี*แย่กว่าการ*ไม่ถูกโจมตี***		
คอมพิวเตอร์ถูกพี่สาวของฉันใช้ที่ห้องประชุม **สำหรับคอมพิวเตอร์ การ*ถูกใช้*แย่กว่าการ*ไม่ถูกใช้***		
รายงานของเขาถูกเพื่อนเผาก่อนวันส่ง **สำหรับเขา การ*ถูกเผา*แย่กว่าการ*ไม่ถูกเผา***		
คำถามนี้ถูกลูกค้าถามเมื่อสองสามวันก่อน **สำหรับคำถามนี้ การ*ถูกถาม*แย่กว่าการ*ไม่ถูกถาม***		
งบประจำปีถูกผู้จัดการจำกัดไว้ตามนโยบาย **สำหรับงบประจำปี การ*ถูกจำกัด*แย่กว่าการ*ไม่ถูกจำกัด***		
หอพักของนักเรียนถูกคลื่นสึนามิทำลายเมื่อเดือนธันวาคม **สำหรับหอพัก การ*ถูกทำลาย*แย่กว่าการ*ไม่ถูกทำลาย***		
รองเท้าหนังของพ่อถูกแม่ขัดทุกวัน **สำหรับรองเท้าหนังของพ่อ การ*ถูกขัด*แย่กว่าการ*ไม่ถูกขัด***		
ข้อเสนอของเขาถูกกรรมการปฏิเสธสามวันให้หลัง **สำหรับเขา การ*ถูกปฏิเสธ*แย่กว่าการ*ไม่ถูกปฏิเสธ***		

พลเมืองถูกกลุ่มผู้ก่อการร้ายฆ่าที่ใจกลางเมือง **สำหรับพลเมือง การ*ถูกฆ่า*แย่กว่าการ*ไม่ถูกฆ่า***		
เด็กพิการถูกกลุ่มอันธพาลแกล้งในสวน **สำหรับเด็กพิการ การ*ถูกแกล้ง*แย่กว่าการ*ไม่ถูกแกล้ง***		
เชือกถูกกะลาสีดึงขึ้นมาจากทะเล **สำหรับเชือก การ*ถูกดึงขึ้น*แย่กว่าการ*ไม่ถูกดึงขึ้น***		
ห้องถูกภารโรงเปิดไว้เพื่อรับลม **สำหรับห้อง การ*ถูกเปิด*แย่กว่าการ*ไม่ถูกเปิด***		
ม่านถูกแม่บ้านปิดไม่ให้แสงเข้า **สำหรับม่าน การ*ถูกปิด*แย่กว่าการ*ไม่ถูกปิด***		
ประเทศของเราถูกต่างชาติบุกรุกเมื่อหลายร้อยปีก่อน **สำหรับประเทศ การ*ถูกบุกรุก*แย่กว่าการ*ไม่ถูกบุกรุก***		
ซากปรักหักพังถูกคนงานยกขึ้นจากพื้น **สำหรับซากปรักหักพัง การ*ถูกยกขึ้น*แย่กว่าการ*ไม่ถูกยกขึ้น***		
เด็กผู้ชายถูกวิญญาณร้ายสิงที่สุสาน **สำหรับเด็กผู้ชาย การ*ถูกสิง*แย่กว่าการ*ไม่ถูกสิง***		
เที่ยวบินของคุณตาถูกสายการบินยกเลิกกะทันหัน **สำหรับคุณตา การ*ถูกยกเลิก*แย่กว่าการ*ไม่ถูกยกเลิก***		
ผู้ต้องสงสัยถูกตำรวจจับกุมเมื่อคืนตอนห้าทุ่ม **สำหรับผู้ต้องสงสัย การ*ถูกจับกุม*แย่กว่าการ*ไม่ถูกจับกุม***		
รถจักรยานถูกคุณน้าซ่อมที่โรงรถ **สำหรับรถจักรยาน การ*ถูกซ่อม*แย่กว่าการ*ไม่ถูกซ่อม***		
เด็ก ๆ ถูกคุณครูดุหน้าชั้นเรียน **สำหรับเด็ก ๆ การ*ถูกดุ*แย่กว่าการ*ไม่ถูกดุ***		
นักเรียนถูกครูใหญ่ลงโทษที่สนามฟุตบอล		

สำหรับนักเรียน การ*ถูกลงโทษ*แย่กว่าการ*ไม่ถูกลงโทษ*		
ร้านกาแฟถูกผู้บริโภคฟ้องเนื่องจากพนักงานไม่สุภาพ **สำหรับร้านกาแฟ การ*ถูกฟ้อง*แย่กว่าการ*ไม่ถูกฟ้อง***		
อัลบั้มล่าสุดของเขาถูกค่ายเพลงปล่อยออกมาอาทิตย์ที่แล้ว **สำหรับอัลบั้มล่าสุดของเขา การ*ถูกปล่อยออกมา*แย่กว่าการ*ไม่ถูกปล่อยออกมา***		
อาหารค่ำถูกแม่ครัวเตรียมไว้สำหรับแขกจากต่างประเทศ **สำหรับอาหารค่ำ การ*ถูกเตรียม*แย่กว่าการ*ไม่ถูกเตรียม***		
ตั๋วภาพยนตร์ถูกคอหนังซื้อไปจนหมดเมื่อวันก่อน **สำหรับตั๋วภาพยนตร์ การ*ถูกซื้อ*แย่กว่าการ*ไม่ถูกซื้อ***		
เงินถูกเจ้านายเก็บไว้ในตู้เซฟ **สำหรับเงิน การ*ถูกเก็บไว้*แย่กว่าการ*ไม่ถูกเก็บไว้***		
โบสถ์หลังนั้นถูกสถาปนิกชื่อดังออกแบบในยุคกลาง **สำหรับโบสถ์หลังนั้น การ*ถูกออกแบบ*แย่กว่าการ*ไม่ถูกออกแบบ***		
พนักงานหลายคนถูกเจ้านายไล่ออกเพราะปัญหาทางเศรษฐกิจ **สำหรับพนักงานหลายคน การ*ถูกไล่ออก*แย่กว่าการ*ไม่ถูกไล่ออก***		
ระบบความปลอดภัยถูกวิศวกรคอมพิวเตอร์ของพวกเราควบคุมจนถึงห้าปีที่แล้ว **สำหรับระบบความปลอดภัย การ*ถูกควบคุม*แย่กว่าการ*ไม่ถูกควบคุม***		
เขาถูกเพื่อนร่วมงานตำหนิเพราะความสะเพร่า **สำหรับเขา การ*ถูกตำหนิ*แย่กว่าการ*ไม่ถูกตำหนิ***		
โพสต์ในเฟสบุ๊คของหล่อนถูกเพื่อน ๆ ของฉันพูดถึงกันมาก **สำหรับโพสต์ของหล่อน การ*ถูกพูดถึง*แย่กว่าการ*ไม่ถูกพูดถึง***		
สมบัติถูกหิมะฝังเมื่อสองปีก่อน **สำหรับสมบัติ การ*ถูกฝัง*แย่กว่าการ*ไม่ถูกฝัง***		
เขาถูกแม่เลี้ยงเกลียดสมัยเด็ก ๆ **สำหรับเขา การ*ถูกเกลียด*แย่กว่าการ*ไม่ถูกเกลียด***		

ปัจจัยต่าง ๆ ถูกผู้วิจัยระบุไว้แล้วพร้อมด้วยเงื่อนไขอื่น ๆ **สำหรับปัจจัยต่าง ๆ การ*ถูกระบุ*แย่กว่าการ*ไม่ถูกระบุ***		
กล่องใบใหญ่ถูกเด็ก ๆ ผลักไปไว้ในห้อง **สำหรับกล่องใบใหญ่ การ*ถูกผลัก*แย่กว่าการ*ไม่ถูกผลัก***		

Appendix C
Rating results of the target items used in the experiment from the Persson's adversity test

Verb Type 1				
Items	Rater 1	Rater 2	Rater 3	Average
พนักงานหลายคนถูกเจ้านายไล่ออกเพราะปัญหาทางเศรษฐกิจ	/	/	/	/
นักเรียนถูกครูใหญ่ลงโทษที่สนามฟุตบอล	/	/	/	/
เด็ก ๆ ถูกคุณครูดุหน้าชั้นเรียน	/	/	/	/
ขาวบ้านถูกข้าศึกโจมตีกลางดึก	/	/	/	/
เขาถูกเพื่อนร่วมงานตำหนิเพราะความสะเพร่า	/	/	x	/
เด็กพิการถูกกลุ่มอันธพาลแกล้งในสวน	/	/	/	/
ข้อเสนอของเขาถูกกรรมการปฏิเสธสามวันให้หลัง	/	/	/	/
เที่ยวบินของคุณตาถูกสายการบินยกเลิกกะทันหัน	/	/	/	/
ประเทศของเราถูกต่างชาติบุกรุกเมื่อหลายร้อยปีก่อน	/	/	/	/
หอพักของนักเรียนถูกคลื่นสึนามิทำลายเมื่อเดือนธันวาคม	x	/	/	/
Verb Type 2				
Items	Rater 1	Rater 2	Rater 3	Average
ซากปรักหักพังถูกคนงานยกขึ้นจากพื้น	x	x	x	x
ตั๋วภาพยนตร์ถูกคอหนังซื้อไปจนหมดเมื่อวันก่อน	x	/	x	x
กล่องใบใหญ่ถูกเด็ก ๆ ผลักไปไว้ในห้อง	/	x	x	x
คำถามนี้ถูกลูกค้าถามเมื่อสองสามวันก่อน	x	x	x	x
ปัจจัยต่าง ๆ ถูกผู้วิจัยระบุไว้แล้วพร้อมด้วยเงื่อนไขอื่น ๆ	x	x	x	x
อัลบั้มล่าสุดของเขาถูกค่ายเพลงปล่อยออกมาอาทิตย์ที่	x	x	x	x

แล้ว				
ห้องถูกภารโรงเปิดไว้เพื่อรับลม	x	x	x	x
เชือกถูกกะลาสีดึงขึ้นมาจากทะเล	x	/	x	x
โบสถ์หลังนั้นถูกสถาปนิกชื่อดังออกแบบในยุคกลาง	x	x	x	x
ตัวเลือกอื่น ๆ ถูกผู้บริหารพิจารณาเป็นเวลานาน	x	x	x	x

Appendix D
The IOC scores of individual target items in the two experiments

Items	Rater 1	Rater 2	Rater 3	Rater 4	Average
Many employees were fired by the manager due to economic problems.	1	1	1	1	1
The students were punished by the headmaster at the football field.	1	1	1	1	1
The children were scolded by their teacher in front of the class.	1	1	1	1	1
Villagers were attacked by the enemies at night.	1	1	1	1	1
He was blamed by his colleagues because of his recklessness.	1	1	1	1	1
A handicapped kid was teased by gangsters in the garden.	1	1	1	1	1
His proposal was rejected by the committee three days later.	1	1	1	1	1
Grandfather's flight was cancelled by the airline at the last minute.	1	1	1	1	1
Our country was invaded by other nations hundreds of years ago.	1	1	1	1	1
The students' dormitory was destroyed by a tsunami in December.	1	1	1	1	1
The ruins were lifted by workers from the ground.	1	1	0	1	0.75
All the movie tickets were bought by film lovers the other day.	1	1	1	1	1
A big box was pushed by the children into the room.	1	1	1	1	1
This question was asked by the customers a few days ago.	1	1	1	1	1
The factors were identified by the researcher together with other conditions.	1	1	1	1	1
His new album was released by the music company last week.	1	1	1	0	0.75
The room was opened by the janitor to let fresh air in.	1	1	1	1	1
The rope was pulled by the sailors from the sea.	1	1	1	1	1
That church was designed by a well-known architect in the Middle Ages.	1	1	1	1	1

Other options were considered by executive managers at length.	1	1	1	1	1
A bird is fed by our daughter every morning.	1	1	1	1	1
This gift was received by his uncle during Songkran.	1	1	0	1	0.75
Homework assignments must be submitted by students every Monday.	1	1	1	0	0.75
Christmas is celebrated by people around the world every year.	1	1	1	1	1
Our country was developed by the government in a noticeable way.	1	1	1	0	0.75
The Temple of the Emerald Buddha is admired by tourists for its beauty.	1	1	1	1	1
Technologies were improved by scientists again.	1	1	1	0	0.75
This phone was liked by several users because of its functions.	1	1	1	0	0.75
This painting was recognized by most specialists as a masterpiece.	1	1	1	1	1
The rabbit was healed by the vet after an accident.	1	1	1	0	0.75

Appendix E
The target items of the three verb types

Verb Type 1
Many employees were fired by the manager due to economic problems.
The students were punished by the headmaster at the football field.
The children were scolded by their teacher in front of the class.
Villagers were attacked by the enemies at night.
He was blamed by his colleagues because of his recklessness.
A handicapped kid was teased by gangsters in the garden.
His proposal was rejected by the committee three days later.
Grandfather's flight was cancelled by the airline at the last minute.
Our country was invaded by other nations hundreds of years ago.
The students' dormitory was destroyed by a tsunami in December.
Verb Type 2
The ruins were lifted by workers from the ground.
All the movie tickets were bought by film lovers the other day.
A big box was pushed by the children into the room.
This question was asked by the customers a few days ago.
The factors were identified by the researcher together with other conditions.
His new album was released by the music company last week.
The room was opened by the janitor to let fresh air in.
The rope was pulled by the sailors from the sea.
That church was designed by a well-known architect in the Middle Ages.
Other options were considered by executive managers at length.

Verb Type 3
A bird is fed by our daughter every morning.
This gift was received by his uncle during Songkran.
Homework assignments must be submitted by students every Monday.
Christmas is celebrated by people around the world every year.
Our country was developed by the government in a noticeable way.
The Temple of the Emerald Buddha is admired by tourists for its beauty.
Technologies were improved by scientists again.
This phone was liked by several users because of its functions.
This painting was recognized by most specialists as a masterpiece.
The rabbit was healed by the vet after an accident.

Appendix F
The items in EXPERIMENT 1

Items	Item types
Pat's job is stressful.	Filler
Ten buildings suffer from headaches.	Filler
That colorful calendar sleeps well.	Filler
Grandfather's flight was cancelled by the airline at the last minute.	Verb Type 1
The cat was eaten by the cheese.	Filler
Nuclear weapons are safe because they are dangerous.	Filler
Technologies were improved by scientists again.	Verb Type 3
People in Tokyo walk so fast that tourists feel amused.	Filler
Our country was invaded by other nations hundreds of years ago.	Verb Type 1
That plant has avoided me for months.	Filler
The Temple of the Emerald Buddha is admired by tourists for its beauty.	Verb Type 3
This cave hit every single tiger.	Filler
He was blamed by his colleagues because of his recklessness.	Verb Type 1
The room was opened by the janitor to let fresh air in.	Verb Type 2
His air conditioner is possibly angry.	Filler
The internet signal was controlled by his wallet.	Filler
The children were scolded by their teacher in front of the class.	Verb Type 1
This novel is worth reading.	Filler
The students' dormitory was destroyed by a tsunami in December.	Verb Type 1
That bird was hunted by an insect.	Filler
The big mall over there belongs to my friend’s dad.	Filler
A bird is fed by our daughter every morning.	Verb Type 3
The stories visit Greece.	Filler

That quiet toy was played with by the loud watch.	Filler
His proposal was rejected by the committee three days later.	Verb Type 1
The river smells sweet and rotten.	Filler
Our country was developed by the government in a noticeable way.	Verb Type 3
I did not know that this was a serious issue.	Filler
All cookies were drunk by the windows.	Filler
My father was pregnant again last year.	Filler
Many employees were fired by the manager due to economic problems.	Verb Type 1
Every penguin has three feet.	Filler
Christmas is celebrated by people around the world every year.	Verb Type 3
My dog is using his phone to call his girlfriend.	Filler
The small house is big.	Filler
Alex begged me to turn the lights on.	Filler
The White House was rebuilt by ants.	Filler
This question was asked by the customers a few days ago.	Verb Type 2
These trees have to run because of the cold weather.	Filler
Other options were considered by executive managers at length.	Verb Type 2
Susan talked to me last night.	Filler
This cup looks beautiful.	Filler
His new album was released by the music company last week.	Verb Type 2
Joe is busy looking for some documents.	Filler
This gift was received by his uncle during Songkran.	Verb Type 3
These puppies were cleaned by mud.	Filler
My friend’s bad temper is nice.	Filler
A big box was pushed by the children into the room.	Verb Type 2
Our doll needs to wash our maid.	Filler

The factors were identified by the researcher together with other conditions.	Verb Type 2
This phone was liked by several users because of its functions.	Verb Type 3
The term “euthanasia” has its origin from Greek.	Filler
A handicapped kid was teased by gangsters in the garden.	Verb Type 1
This painting was recognized by most specialists as a masterpiece.	Verb Type 3
Our trip to London has fallen apart.	Filler
The rope was pulled by the sailors from the sea.	Verb Type 2
The tree in front of my house has grown very big.	Filler
The rabbit was healed by the vet after an accident.	Verb Type 3
Humans live on the sun.	Filler
We will be discussed by this interesting issue next week.	Filler
That church was designed by a well-known architect in the Middle Ages.	Verb Type 2
That bed threw a ball to me.	Filler
All the movie tickets were bought by film lovers the other day.	Verb Type 2
The elephant cured the apple.	Filler
Villagers were attacked by the enemies at night.	Verb Type 1
There are a lot of movies for us to watch.	Filler
The engineer was fixed by beauty.	Filler
The aquarium feels bored.	Filler
The ruins were lifted by workers from the ground.	Verb Type 2
The radio fights against the TV.	Filler
He spent a lot of money traveling in Europe.	Filler
Two programmers are smoothly set up by this application.	Filler
A total eclipse rarely happens.	Filler
The students were punished by the headmaster at the football field.	Verb Type 1

Homework assignments must be submitted by students every Monday.	Verb Type 3

Appendix G
The items in EXPERIMENT 2

The symbol "|" divided each part of the sentences into four regions: (1) SUBJECT (2) VERB (the critical region) (3) ADJUNCT 1/COMPLEMENT (the spillover region), and (4) ADJUNCT 2.

Items	Questions	Choice 1	Choice 2	Item types
Our professor | speaks | English | with fluency.	What does our professor speak?	English	Spanish	Trial
My cousin | finished | all chemistry problems | within a week.	Who finished all the chemistry problems?	My brother	My cousin	Trial
He | punched | his friend | at the supermarket.	Who did he punch?	His enemy	His friend	Trial
That girl | spoiled | the whole party | last night.	What did that girl spoil?	The whole party	The whole trip	Trial
The investor | created | more jobs | for our community.	Who created more jobs?	The governor	The investor	Trial
Our boss | wanted | three chairs | for the meeting room.	What did our boss want?	Three chairs	Three desks	Trial
He | drove | that red car | for ten years.	What did he drive?	That red truck	That red car	Trial
The guests | visited | our place | every year.	Who visited our place?	The strangers	The guests	Trial
The doctor | treated | that patient | with new methods.	Who did the doctor treat?	That patient	That nurse	Trial
That little guy | runs | with his son | every evening.	How often does that little guy run?	Every evening	Every morning	Trial
His dad | turned off | the air conditioner | at midnight.	What did his dad turn off?	The television	The air conditioner	Filler
That boy | fainted | from loss of blood | two hours ago.	When did that boy faint?	Two days ago	Two hours ago	Filler
That guy | married | her older sister | last month.	Who did that guy marry?	Her younger sister	Her older sister	Filler
A bird is fed by our daughter every morning.	Who feeds the bird?	Our daughter	Our son	Verb Type 3
That football player | broke | a window | the	What did that football player	A door	A window	Filler

other day.	break?			
The rope | was pulled | by the sailors | from the sea.	What did the sailors pull from the sea?	The treasure box	The rope	Verb Type 2
The parents | assigned | different tasks | to each of their children.	Who assigned different tasks to their children?	The parents	The teachers	Filler
Working as a youtuber | is | common | nowadays.	When is working as a youtuber common?	Nowadays	In the past	Filler
The students | were punished | by the headmaster | at the football field.	Who punished the students?	The headmaster	The parents	Verb Type 1
An English teacher | retired | from the school | last week.	When did the English teacher retire?	Last month	Last week	Filler
All the movie tickets | were bought | by film lovers | the other day.	What did the film lovers buy?	All the movie tickets	All the movie magazines	Verb Type 2
Her cousin | left | his school | in August.	Who left his school?	Her cousin	Her friend	Filler
The neighbors | found | their cat | in the garage.	Who found the cat?	The security guards	The neighbors	Filler
Villagers | were attacked | by the enemies | at night.	Who did the enemies attack?	The villagers	The allies	Verb Type 1
Fires | burnt | the Amazon jungle | last year.	What did the fires burn?	The Amazon jungle	The Monteverde jungle	Filler
A lot of people | support | the peace movement | internationally.	What do a lot of people support?	The political movement	The peace movement	Filler
Technologies were improved by scientists again.	What did scientists improve again?	Textbooks	Technologies	Verb Type 3
One of the company's clients called the employee last night.	Who did one of the company's clients call?	The employee	The employer	Filler
Many employees were fired by the manager due to economic problems.	Who fired many employees?	The manager	The CEO	Filler
That church was designed by a well-known architect in the Middle Ages.	What did the well-known architecture design?	That stadium	That church	Verb Type 2

The lecturer provided several books beforehand.	Who provided several books?	The lecturer	The librarian	Filler
Her friend lived in this town two years ago.	When did her friend live in the town?	Two years ago	Two months ago	Filler
The rabbit was healed by the vet after an accident.	What did the vet heal?	The squirrel	The rabbit	Verb Type 3
His tutor explained this section clearly.	Who explained this section?	His tutor	His senior	Filler
He was blamed by his colleagues because of his recklessness.	Who blamed him?	His colleagues	His family	Verb Type 1
This question was asked by the customers a few days ago.	Who asked this question?	The customers	The manager	Verb Type 2
Her aunt purchased a television from that shopping mall.	Who purchased a television?	Her uncle	Her aunt	Filler
The colleagues presented their project to the CEO.	Who presented the project to the CEO?	The colleagues	The clients	Filler
Other options were considered by executive managers at length.	Who considered other options?	Employees	Executive managers	Verb Type 2
Cloth bags are popular among teenagers.	Among whom are cloth bags popular?	Teenagers	Adults	Filler
His proposal was rejected by the committee three days later.	Who rejected his proposal?	The officers	The committee	Verb Type 1
Her parents spent their summer holiday in Europe.	Who spent the summer holiday?	Her relatives	Her parents	Filler
She took tissue paper from her bag.	What did she take?	A mobile phone	Tissue paper	Filler
The Temple of the Emerald Buddha is admired by tourists for its beauty.	Who admires the Temple of the Emerald Buddha?	local people	tourists	Verb Type 3
The factors were identified by the researcher together with other conditions.	Who identified the factors?	The researcher	The trainee	Verb Type 2
The old lady begged us	Who did the old	Us	Them	Filler

for urgent help.	lady beg?			
This train arrives at 11 p.m. every day.	How often does this train arrive?	Every two days	Every day	Filler
Some tribes make no contact with the outside world.	Who makes no contact with the outside world?	Some tribes	Some introverts	Filler
The earth orbits around the sun systematically.	How does the earth orbit around the sun?	Systematically	Randomly	Filler
His new album was released by the music company last week.	What did the music company release?	His new movie	His new album	Verb Type 2
The students' dormitory was destroyed by a tsunami in December.	What did a tsunami destroy?	The teachers' dormitory	The students' dormitory	Verb Type 1
Our country was developed by the government in a noticeable way.	Who developed the country?	The government	The private sector	Verb Type 3
She needs some good rest because of her jet lag.	What does she need?	Some good food	Some good rest	Filler
Our country was invaded by other nations hundreds of years ago.	What did other nations invade?	Our neighboring countries	Our country	Verb Type 1
Their older brother met his friend in the garden.	Who did their older brother meet?	His friend	His girlfriend	Filler
They studied English grammar in high school.	What did they study?	Chinese grammar	English grammar	Filler
The room was opened by the janitor to let fresh air in.	Who opened the room?	The receptionist	The janitor	Verb Type 2
Christmas is celebrated by people around the world every year.	Who celebrates Christmas every year?	People around the world	European people	Verb Type 3
Her classmate drank a cup of bubble milk tea immediately.	Who drank a cup of bubble tea?	Her roommate	Her classmate	Filler
A lot of people have health problems these days.	What do a lot of people have?	Health problems	Economic problems	Filler
This phone was liked by several users because of its functions.	Who liked this phone?	Few users	Several users	Verb Type 3
The teaching assistant	Who discussed a	The teacher	The teaching	Filler

discussed a difficult topic with several teaching materials.	difficult topic?		assistant	
Those kids followed the instructions during their math class.	Who followed the instructions?	Those babysitters	Those kids	Filler
Grandfather's flight was cancelled by the airline at the last minute.	What did the airline cancel?	Grandfather's bag	Grandfather's flight	Verb Type 1
Australia lost a lot of local animals in bushfires.	Who lost a lot of local animals?	Australia	New Zealand	Filler
His girlfriend held his hand tightly.	Who held his hand?	His girlfriend	His mother	Filler
This painting was recognized by most specialists as a masterpiece.	What did most specialists recognize?	This sculpture	This painting	Verb Type 3
Those children play hide-and-seek regularly.	What does those children play?	Merry-go-round	Hide-and-seek	Filler
The government closed many deserted museums in 2017.	What did the government close?	Many deserted museums	Many deserted shopping malls	Filler
Some kids prefer playing in a playground with others.	What do some kids prefer?	Staying at home	Playing in a playground	Filler
The ruins were lifted by workers from the ground.	Who lifted the ruins?	The workers	The engineers	Verb Type 2
Her roommate finished the term paper last week.	Who finished the term paper?	Her classmate	Her roommate	Filler
Those internet users expressed their political opinions on Twitter.	What did those internet users express?	Their religious opinions	Their political opinions	Filler
People walk so fast in Tokyo.	Where do people walk so fast?	In Tokyo	In Seoul	Filler
This gift was received by his uncle during Songkran.	What did his uncle receive?	This gift	This car	Verb Type 3
Going to bed late affects people's health in the long run.	What does going to bed late affect?	People's health	Children's growth	Filler
A handicapped kid was teased by gangsters in the garden.	Who teased the handicapped kid?	The nerds	The gangsters	Verb Type 1
Many teenagers eat healthy food due to its	Who eats healthy food?	Many children	Many teenagers	Filler

benefits.				
The children were scolded by their teacher in front of the class.	Who did the teacher scold?	The children	The assistants	Verb Type 1
McDonald's increased the price of its French fries two months ago.	Who increased the price of its French fries?	McDonald's	Burger King	Filler
Plastic products harm living creatures globally.	What do plastic products harm?	Living creatures	Factories	Filler
A big box was pushed by the children into the room.	What did the children push?	A big box	A big desk	Verb Type 2
Her grandmother washes the dishes every morning.	Who washed the dishes?	Her stepmother	Her grandmother	Filler
Homework assignments must be submitted by students every Monday.	What must the students submit?	Homework assignments	Portfolios	Verb Type 3
Many rivers dried up last year in Southeast Asia.	Where did many rivers dry up?	In Southeast Asia	In South Asia	Filler

Appendix H
EXPERIMENT 1's participants information

Advanced learners			
Code	**Age**	**Faculty**	**CU-TEP score**
a01	19	Arts	113
a02	21	Arts	100
a03	23	Arts	103
a04	19	Arts	99
a05	20	Arts	105
a06	23	Science	109
a07	22	Engineering	105
a08	23	Arts	106
a09	22	Arts	99
a10	19	Communication Arts	99
a11	21	Arts	105
a12	21	Arts	100
a13	21	Arts	103
a14	18	Arts	106
a15	22	Commerce and Accountancy	100
a16	21	Dentistry	102
a17	21	Medicine	99
a18	21	Arts	110
a19	22	Political Science	110
a20	20	Commerce and Accountancy	103
	Mean = 20.95		Mean = 103.8

Intermediate learners

Code	Age	Faculty	CU-TEP score
b01	21	Arts	56
b02	20	Arts	66
b03	18	Veterinary Science	59
b04	19	Commerce and Accountancy	50
b05	20	Pharmaceutical Science	64
b06	22	Science	34
b07	22	Commerce and Accountancy	69
b08	20	Arts	67
b09	22	Science	46
b10	22	Science	45
b11	22	Commerce and Accountancy	69
b12	20	Commerce and Accountancy	47
b13	20	Fine and Applied Arts	42
b14	23	Science	47
b15	20	Commerce and Accountancy	53
b16	20	Commerce and Accountancy	51
b17	21	Arts	46
b18	23	Science	59
b19	19	Commerce and Accountancy	45
b20	20	Arts	57
	Mean = 20.7		Mean = 53.6

Appendix I
EXPERIMENT 2's participant information

Advanced learners			
Code	**Age**	**Faculty**	**CU-TEP score**
ar01	18	Arts	103
ar02	23	Arts	100
ar03	21	Psychology	101
ar04	22	Arts	99
ar05	21	Veterinary Science	100
ar06	20	Arts	107
ar07	19	Arts	104
ar08	20	Arts	100
ar09	20	Arts	106
ar10	21	Veterinary Science	100
ar11	21	Veterinary Science	101
ar12	19	Political Science	106
ar13	22	Arts	104
ar14	19	Arts	103
ar15	23	Political Science	106
ar16	19	Arts	106
ar17	18	Engineering	101
ar18	18	Engineering	99
ar19	24	Dentistry	103
ar20	19	Engineering	110
	Mean = 20.35		Mean = 102.95

Intermediate learners			
Code	**Age**	**Faculty**	**CU-TEP score**
br01	22	Arts	57
br02	21	Education	65
br03	22	Arts	68
br04	20	Arts	68
br05	20	Science	40
br06	21	Science	42
br07	20	Science	62
br08	21	Science	45
br09	20	Commerce and Accountancy	54
br10	19	Pharmaceutical Science	66
br11	20	Arts	64
br12	20	Psychology	45
br13	19	Political Science	58
br14	20	Political Science	55
br15	22	Psychology	67
br16	19	Science	68
br17	21	Psychology	67
br18	21	Psychology	39
br19	19	Psychology	60
br20	20	Arts	61
	Mean = 20.35		Mean = 57.55

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