



## Variable Production of English Object-Experiencer Psych Predicates by L1 Thai EFL First-Year University Students: An Application of the Missing Surface Inflection Hypothesis (MSIH)

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### ABSTRACT

The purpose of this research is to investigate the variable production of English Object-Experiencer (OE) psych predicates among 80 L1 Thai EFL first-year university students. Psych verbs are notable for posing difficulty for learners due to a unique property that violates Grimshaw's (1990) Thematic Hierarchy. The participants were given a cloze test and a translation test with six psych verbs and corresponding predicates, and six individuals were chosen to perform the spontaneous oral translation. Based on the Missing Surface Inflection Hypothesis (MSIH), the findings validated two of the study's research questions. First, variable production was detected in L1 Thai students' usage of OE psych predicates in three grammatical constructions examined. Second, the MSIH attributed variable production of L2 functional morphology to mapping problems: L1 Thai students were confused about how to link thematic roles to subject and object positions since the OE psych predicates breached the Thematic Hierarchy. Furthermore, the MSIH reveals that phonosyntactic factors play a role in variable production, indicating that during live translation, participants struggled with the *-ed* sound while forming correct copular verbs required in sentences with OE psych predicates.

**Keywords:** variable production, psych verbs, psych predicates, Missing Surface Inflection Hypothesis, MSIH

## Introduction

In linguistic research, psych verbs are of great importance both theoretically and cognitively as they describe mental states or occurrences of an animate experiencing the emotion. *Fear, terrify, excite, admire, like, love, detest, please, amuse, disappoint, interest* and many more are examples of these verbs. According to Levin's (1993) categories of psych verbs, there are around 45 'Admire verbs' (also known as 'Fear-type verbs') and 220 'Amuse verbs' (or 'Frighten-type verbs') in English. Psych verbs represent some psychological condition and include an Experiencer as one of their arguments (Primus, 2004: 377 as cited in Nordquist, 2020) since the animate is experiencing the psychological state and a Theme as the argument that causes such state (White, 2003). There are two major classes of psychological verbs in English: the Subject-Experiencer (SE) class, which allows the Experiencer to appear in the subject position of the sentence, such as *'Natcha'* in (1a.) and the Object-Experiencer (OE) class, which assigns the Experiencer to the object position, such as *'Natcha'* in (1b.):

1. (a.) *'Natcha'* fears the centipede.
- (b.) The centipede frightens *'Natcha'*.

The subject *'Natcha'* in (1a.) carries the thematic relation as the Experiencer of the sentence because she is susceptible to the emotion of fear towards the Theme centipede. The SE psych verb *'fear'* indicates an emotion of the Subject-Experiencer in a straightforward fashion, making it easy for L2 learners to comprehend the meaning of the sentence. A substantial number of previous studies have demonstrated that psych verbs of SE class are not particularly difficult for L2 learners, regardless of their L1 backgrounds. On the contrary, in (1b.) with the OE psych verb *'frighten'*, *'Natcha'*, which is now in the object position bearing the Object-Experiencer argument, L2 learners may be confused as to who frightens who or who fears what.

Many studies in the literature found that English psych predicates posed learning difficulties to L2 learners from different L1 backgrounds (e.g., Chinese and French learners in Chen, 1997; Turkish and Spanish learners in Montrul, 2000, 2001a, b; French, Japanese Malagasy, and Spanish learners in White et al, 1998; and Japanese in Sato, 2003), particularly for OE psych verbs and psych adjectives (referred to as psych predicates). This is thought to be related to the peculiar nature of these OE psych predicates, labeled as the *'Psych Properties'* by White (2003), which do not follow generalizations established about verbs and adjectives in English grammar theories. For instance, the OE psych verbs violate the "Uniformity of Theta Assignment Hypothesis – UTAH" (Baker, 1988; Perlmutter & Postal, 1984), which assumes that a thematic role will always be mapped to an unchangeable structural position. With regular verbs, the thematic role Agent or Experiencer is often assigned to the subject position; for example, *'The bus'* hit a man, whereas Theme is allocated to the object position, like *'a man'* in the same sentence. The situation with the OE psych verbs, on the other hand, is unique: the Experiencer is mapped into the object position rather than the pre-determined subject position.

The violation of "Thematic Hierarchy" (Grimshaw, 1990) is another psych phenomena that describes the unexpected mapping of thematic roles for OE psych verbs. In this hierarchy, a degree of predominance among different theta roles systematically connects these roles to syntactic positions. Theta positions are listed in the order of prominence: those with the most prominence are put higher, while those with the least prominence are placed below. Agent is ranked higher than Experiencer, both of which are more prominent and placed higher than Goal, Source, or Location, followed by Theme. Grimshaw's Thematic Hierarchy is shown below:

- (2.) "(Agent (Experiencer (Goal/Source/ Location (Theme))))"

This mapping formulation is generalizable in the case of English Subject-Experiencer (SE) psych verbs, as in (3.):

(3.) We enjoyed the movie.

The Experiencer *'We'* in (3.) is mapped higher than the Theme *'movie'*; therefore, there is no linking problem in this SE-verb sentence. On the other hand, for a sentence with an OE psych verb, with Theme bearing the required position as the Subject, such as in (4.):

(4.) The movie fascinated the audience.

Sentence (4.) above deviates from the fixed hierarchical order since the Experiencer *'audience'* is placed lower than the Theme *'movie'*. We can infer from this case that ESL/EFL learners may have more difficulties acquiring the use of English OE psych verbs than those of the SE verbs, resulting in variability in the production of OE psych predicates.

Variable production of functional morphology observed among L2 learners is a crosslinguistic phenomenon, particularly in the morphological forms present in the learners' second language but absent in their first language (Dulay & Burt, 1974). Although many researchers agreed that age is a factor influencing the variable production of grammatical features in L2 acquisition (e.g., Birdsong, 1992; Bialystock, 1997; Johnson & Newport, 1989, 1991; Schachter, 1989, 1990;), it is unclear what causes such variability.

Scholars exploring variable production of L2 learners' functional morphology believe in two major arguments based on Principles and Parameters theory (Chomsky, 1967; 1986/1993). Firstly, the "Missing Surface Inflection Hypothesis – MSIH" (Lardiere, 1998, 2003) proposes that regardless of their mother tongue, L2 learners have target-like syntactic representations and an intuitive awareness of functional morphology and the syntax that supports it. This account argues that variable production by L2 learners occurs during the operational procedure of mapping a specified syntax onto a surface morphological form.

The "Failed Functional Features Hypothesis – FFFH" (Hawkins, 2001; Hawkins & Liszka, 2003), on the other hand, links variable production to non-target-like syntactic representations that are assumed to hinder morphological development in L2 acquisition. In this view, there are two types of impairments: global and local. The first, known as the 'strong' version, claims that L2 acquisition is completely impossible. However, the argument for local impairment (the 'weak' version) suggests a less extreme stance, which explains that if the syntactic categories in question are present in their L1, L2 learners will acquire them as well. As a result, the theory validates the non-target-like syntactic representations concept. Furthermore, several supporters of the local strand of FFFH proposed that there is also a critical period for resetting parameters relevant to functional properties in the L2, which is set differently than in the L1. These factors, according to Hawkins (2001), may be irreversible for adult L2 learners, resulting in syntactic impairments in L2 acquisition.

Employing the MSIH as a theoretical framework, the purposes of this research study are i.) to examine variable production of English OE psych predicates by Thai EFL first-year university students, and ii.) to investigate possible causes of the variable production of English OE psych predicates found among these participants.

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## Literature Review

### Main Theories and Concepts

#### *Missing Surface Inflection Hypothesis (MSIH)*

The MSIH theory suggests that L2 learners can fully acquire L2 morphological features but may struggle to develop the correct morphology due to mapping issues. Lardiere (1998; 2003) perfected the account of MSIH in her classic set of longitudinal studies of a native Chinese speaker, 'Patty,' who was 32 years old at the time of the research and had lived in the United States for around 10 years. The data for the analysis came from Patty's spontaneous production in three audio-recorded discussions. It was found that Patty produced a low rate (less than 35%) of past tense morphemes in obligatory contexts despite having extensive exposure to English, but her overall rate of past tense marking suppliance was found to be more than twice as high, at 78% suppliance in mandatory situations, based on 21 e-mail samples written by Patty over a five-year period. Lardiere assumed that Patty's deletion of past tense markers was not caused by a lack of the  $[+/-past]$  feature in Chinese because Patty's written email data showed a relatively high rate of past tense suppliance. It is believed that Patty's inability to produce past tense morphemes accurately in the spoken data was due to other factors, such as post-syntactic or extra-syntactic influences, i.e., the lack of word final consonant cluster in her pronunciation of the *(-ed)* past tense form, which is common among L1 Chinese speakers.

Another prominent study that supported the MSIH is White's (2003) experiment. She examined an adult L1 Turkish female, 'SD,' who was 50 at the time of the study and had lived in Canada for about 10 years. White gathered the data for the analyses through spontaneous oral production during four interviews with SD over the course of two months. It was discovered that SD had an average of 80% suppliance of lexical verbs and tense agreement. Conversely, she showed omissions of most determiners, particularly the indefinite articles 'a' and 'an,' which were supplied only about 60%, compared to 72% suppliance of the definite article 'the' in obligatory contexts. According to the data, SD did not always use definite articles instead of indefinite articles. As a result, determiners, especially indefinite articles, appeared to be more difficult for SD than verbal morphology or plural marking. According to White, L2 learners often mistake definite articles for  $[+specific]$  and indefinite articles for  $[-specific]$ , resulting in the overuse of definite articles in specific indefinite contexts. Despite that the Turkish language recognizes morphological specificity, SD never switched definite articles for indefinites or vice versa. Therefore, White concluded that SD was susceptible to the grammar rules of definite and indefinite articles, i.e., the distinction of definiteness is target-like in her syntactic representations.

#### *Failed Functional Feature Hypothesis (FFFH)*

The local strand of FFFH observes that learners with different L1s have some degree of success in acquiring structural items of a target language, and their ability to acquire L2 functional categories is subject to a critical period (CP). After a certain age, L2 learners will be unable to attain the inactivated morphosyntactic categories.

Hawkins and Liszka (2003) conducted the first study to substantiate this claim. They examined how advanced L2 English speakers from three different languages: Japanese, Chinese, and German, used English simple past tense marking. The study's findings were collected using test questionnaires with 120 gap-fill test items and spontaneous production elicited from two tasks: the story-retelling of a Charlie Chaplin film extract and the narration of each speaker's unforgettable incident. L1 Chinese participants supplied the lowest rate of English past tense marking when compared to L1 Japanese and L1 German speakers. The researchers assumed that the Chinese respondents' low suppliance rate was related to their inability to represent the feature  $[+past]$  rather than extra-syntactic factors, such as the absence of a word ending consonant cluster

in the L1 language. This assumption was justified since the Japanese speakers with [+/-past] but not the final consonant cluster in their L1 could produce more correct English past tense morphemes than their L1 Chinese counterparts. Therefore, the lack of [+/-past] in Chinese was the only explanation for this variance.

Another important study that verified the FFFH was conducted by Franceschina (2001) with a subject named 'Martin,' who was an L1 English learner of Spanish. Martin had been actively exposed to Spanish-speaking environment for 24 years at the time of the study. The researcher and the participant had a 94-minute spontaneous conversation, which was recorded for this study. According to Franceschina, Martin performed flawlessly on Spanish nouns, adverbs, and possessive forms but had difficulty with all Spanish gender targets, including adjectives, articles, pronouns, and demonstratives. Based on Martin's overuse of masculine form, Franceschina concluded that he had problems with gender agreement and that the difference between his L1 and L2 was the source of it. Because English lacks syntactic gender agreement, it is assumed that Martin's language faculty lacks this trait as well. The problem did not arise from the mapping procedure as reported by the MSIH but the lack of a gender system in the L1 English. The data also revealed that Martin's numerical agreement errors accounted for only 7% of overall errors on target-of-gender categories, as opposed to the staggering 93% remaining faults caused by gender inaccuracies. If Martin's low percentage of number errors was due to processing difficulties identified by the MSIH, it was hypothesized that the considerably higher percentage of gender errors would show Martin's undefined or even inadequate gender features from his L2 abstract knowledge. It was assumed that critical period had come into play and caused Martin's underlying syntactic representations to deviate from those of native Spanish speakers.

In conclusion, variable production is caused by a failure in the mapping process between underlying syntactic representations and surface morphological forms, according to the MSIH. In contrast, the variability is produced by the L2 learners' impaired grammatical competency, which means that if the categories were not activated in the L1 grammar, they will not be available in the learners' L2, according to the FFFH. Since the debate over which hypothesis is preferable continues, there is still no absolute consensus on which one generates the cause of variable production of L2 functional morphology. Therefore, more research in this field is needed to find the most plausible explanations for this cross-linguistic phenomena.

## Previous Studies Related to Psych Predicates

White et al. (1998) discussed the nature of psych verbs in different L1s (French, Japanese, Malagasy, and Spanish), as well as the challenges in L2 acquisition of this grammatical item. It was revealed that psych arguments can be mapped systematically to syntactic positions in L2 grammars. L2 learners intuitively understood that the Theme is the verb's internal argument in the D-Structure, and that the Experiencer projects to a higher location than the Theme, regardless of whether the Experiencer belongs to the SE or OE classes. The study tested the hypothesis that, in the absence of a clear solution to the mapping of English psych verbs, L2 learners experienced more difficulties with the OE psych verbs. Because of their deviant behavior against the UTAH (Baker, 1988) and the Thematic Hierarchy (Grimshaw, 1990), the Theme in OE psych verbs climbs to the subject position. The study discovered that learners had almost no trouble using English SE psych verbs but employed the OE class incorrectly by placing Experiencer in the subject position. The data showed that L2 learners observed the UTAH and the Thematic Hierarchy without relying on L1 grammar or L2 feature input.

Chen (1997) explored the acquisition of English psych predicates by adult L1 Chinese and L1 French learners. Her work was divided into two parts: a study of psych predicates in three languages (Chinese, French, and English) and a test of L1 Chinese and L1 French learners' understanding of English psych predicates. Chen included verbs (e.g., *blame* and *annoy*), adjectives in the present and past participle (e.g., *annoying* and *annoyed*), and psych nominals (e.g., *annoyance*)

from both the SE and OE psych predicates in this study. She hypothesized that if L2 English learners had trouble comprehending the causative nature of OE psych verbs and *-ing* adjectives, they would have difficulty recognizing the correct argument structure and grammaticality of backwards binding with these predicates. The participants were given an image identification task, a multiple-choice exercise, a grammaticality assessment, and a correction activity. Chen discovered that learners had difficulty distinguishing between SE and OE classes of English psych verbs. She concluded that both low-level and intermediate-level L1 Chinese and L1 French learners struggled more with the OE psych verbs because they assumed that the Experiencer was the subject. The findings of this study support previous research on psych verbs (e.g., White et al., 1998) where learners had little difficulty with SE verbs but suffered with OE verbs.

Sato (2003) investigated if problems with causative psych verbs would occur among L1 Japanese learners. The research group included 50 Japanese university students, while there were 10 native English speakers in the control group. Sato administered two tests: the sentence completion exam and the grammaticality assessment test to both groups. It was found that Japanese participants had difficulty with causative psych verbs, particularly in sentences containing Theme as the subject. Sato's first and second hypotheses were confirmed: firstly, L1 Japanese learners had more difficulty with OE verbs than SE verbs, and secondly, adjectival passives were accepted more than OE transitive sentences with Theme as the subject. However, Sato's third prediction that the verb 'make' in periphrastic construction would serve as a substitute for Japanese causative morpheme was not validated as L1 Japanese learners showed lower acceptance of periphrastic causative construction than OE transitive sentences. According to Sato, this was because 'make' in a periphrastic sentence is not a bound morpheme, whereas the Japanese causative morpheme *-(s)ase* is. Since the periphrastic causative was poorly accepted by the control group, it indicated that this feature is less common than the simple transitive causative. Sato concluded that L1 Japanese learners were guided by Grimshaw's Thematic Hierarchy (1990), resulting in difficulties in the acquisition of English causative psych verbs.

Only a few studies had been conducted to explore the difficulties with psych verbs among L1 Thai learners. Shutt and Pongpairoj (2011) studied problems with OE psych verbs and determined if the difficulties were related to the mapping phenomena found among learners of different L1 backgrounds. The research examined the written production of English OE psych verbs by 38 Thai students from two high school levels (10th and 12th grades). Participants were given a cloze test and a translation task from L1 Thai to L2 English in which they inflected the given verbs into the correct forms. The findings revealed that OE psych verbs are problematic for L1 Thai learners in all three grammatical constructions studied: the *subject-verb-object (SVO)*, the *-ing*, and the *-ed*. It was assumed that OE psych verbs' violation of Grimshaw's Thematic Hierarchy (1990) in which Experiencer is mapped into the object position, made it difficult for L1 Thai learners to link the argument to the correct position. Apart from that, semantic challenges were found in the translation data because of thematic role misinterpretation. It was revealed that L1 Thai learners overgeneralized the rules and relied on some L1 transfer to convey the correct meaning into English by replicating the Thai causative sentence pattern: *make+object+psych verb* with the OE psych verbs in the *SVO* construction.

Namtapi (2018) studied L1 Thai learners to see if the *-ing* or *-ed* psych adjectives in English were more difficult to acquire. He recruited 150 Thai students from a public university and divided them into three groups based on their English proficiency. Five native English speakers were enlisted for the control group. Namtapi gave the participants a pretest to check if they could correctly identify the correct form of participial adjectives followed by a noun using non-psych *-ed* and *-ing* adjectives. After that, each group's participants were asked to complete a Picture Description Task (PDT) and a Sentence Interpretation Task (SIT) to assess their knowledge of the mapping of arguments of SE-like and OE-like psych adjectives onto sentential subjects. PDT and SIT data revealed that all three study groups performed significantly better on *-ed* adjectives than *-ing* adjectives. It was also discovered that as participants' English abilities increased, so did their accuracy in identifying both types of psych adjectives. The results of the two primary tasks revealed

that all three study groups performed much better on SE-like psych adjectives than their OE counterparts. He assumed that this tendency was due to the Thematic Hierarchy (Grimshaw, 1990): whenever participants were unsure which adjective type to use, they were prone to choose the SE-like one, which requires the more prominent thematic role, the Experiencer, as the subject, rather than the Theme. This has resulted in a preference for *-ed* adjectives over *-ing* adjectives. The data also suggested that lower-proficiency participants used animacy as a hint to guess the argument of psych adjectives. When an animate is the subject of a sentence, learners favored an *-ed* adjective over its *-ing* counterpart. This was due to learners' association of *-ed* adjectives with animate subjects and *-ing* with inanimate subjects, as shown in Thai elementary/low-intermediate English textbook.

Witoon and Singhapreecha (2012) investigated which class of English psych verbs was more challenging for Thai EFL learners. They also explored how participants' attempts to match accurate arguments with the relevant sentential position were impacted by L1 transfer. Because OE psych verbs are not an available feature in Thai, participants would perform better on the English causative sentences (*CAUS*), which is a syntactical feature in Thai, rather than its OE counterparts. The study included 92 high school and university students from Thailand's Ubon Ratchathani province. They were placed into three groups based on their Michigan Test English proficiency levels. The Vocabulary Test, the Grammaticality Judgment Test (GJT), and the Picture Elicited Production (PEP) Test were given to all participants. Five OE verbs (*impress, annoy, angry, scare, amuse*) and five SE verbs (*admire, hate, blame, dread, enjoy*) were included in the tests. The *CAUS* items containing cartoon images as well as a sentence part, such as [*made impressed*] were also included in the PEP. The findings highlighted the importance of L1 transfer, as L1 Thai learners reverted to the *CAUS* structure, which is commonly used in Thai. The data also revealed that participants scored better on SE and *CAUS* verbs than on OE, implying that L1 interference is important in this study because the OE psych structure, which allows the Experiencer to be in the object position of the sentence, does not exist in Thai. The researchers assumed that the participants instinctively depended on the Thematic Hierarchy (Grimshaw, 1990), making it difficult for them to raise the Theme to the counter-directional subject position.

There has been little research on English psych verbs, particularly the acquisition of OE verbs by L1 Thai learners, so there are several interesting topics for future research in this area. These include experimental studies using the explicit instruction method to teach OE psych verbs to L1 Thai learners to see if they can achieve higher scores in their post-test.

## Research Methodology

### Participants

#### *Participants of the Study Groups*

Eighty EFL English learners in their first year at a public university in Bangkok, Thailand were recruited for the research. All participants were L1 Thai with an average age of 19 and had an average English exposure of 12 years in their formal education. The Oxford Quick Placement Test (OQPT) was administered to the participants to categorize them into two groups based on their English proficiency. Due to the COVID-19 lockdown, an online OQPT assessment was prepared using Google Docs program and shared the link with all participants. Those who received the scores between 30 and 39 were categorized as members of the Intermediate Group (CEFR: B1), while those who received 19 and 29 were assigned to the Elementary Group (EEFR: A1 & A2). There were 40 students equally in each group.

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## ***Pilot Study***

The pilot study involved 80 first-year Thai EFL students from another public university in Thailand as sampling groups. The students were also divided into two groups based on their OQPT scores for English proficiency, each with 40 students. The data from the pilot study was analyzed to ensure each exam item was legitimate for use in the assessments with the research group participants. The Index of Item-Objective Congruence (IOC) was utilized as a model to evaluate the test content validity. The researcher revised the flawed test items, conducted the placement test, and administered the exam to the study groups via online classrooms. The results of the Pilot study were not reported or compared to the results of other study groups presented in this study.

## **Research Instruments**

### ***Research Stimuli***

Six English OE psych verbs were chosen from among the most frequently used, including *annoy*, *excite*, *frighten*, *interest*, *shock*, and *surprise*. These verbs are relevant to Thai EFL students because they are found in all types of major English examinations, such as O-NET, TOEIC, or TOEFL tests. The high frequencies of the selected OE psych verbs and their participial inflections in the *-ing* and *-ed* forms were determined using data from Longman Communication 3000, which is a list of 3000 most frequently used words in both spoken and written English in the Longman Corpus Network ([https://www.lex tutor.ca/freq/lists\\_download/longman\\_3000\\_list.pdf](https://www.lex tutor.ca/freq/lists_download/longman_3000_list.pdf)). These words are highlighted in Longman's online dictionary along with special symbols: *W1*, *W2*, and *W3* for words in the top 1000, 2000, and 3000 most frequently written words, and *S1*, *S2*, and *S3* for words in the top 1000, 2000, and 3000 most spoken words.

### ***Cloze Test***

Cloze tests are used in the first part of the written exam. Participants were required to fill in the correct answers in the blank spaces using the SE or OE psych verbs in the brackets to produce an appropriate grammatical structure in a total of 30 test questions (See Appendix A). The cloze test was intended to assess participants' knowledge of English psych verbs in three grammatical constructions: subject-verb-object (*SVO*), *-ing* adjectives, and *-ed* adjectives. Questions 1-18 included six OE psych verbs: *annoy*, *excite*, *terrify*, *interest*, *shock*, and *surprise*, which were expected to be utilized appropriately in all three forms: the *SVO* and the corresponding participial adjective constructions. Questions 19-30 focused on four SE psych verbs, including *like*, *know*, *fear*, and *hate*, which were expected to be used appropriately in the *SVO* structure, as well as *missing*, *loving*, *trusting*, *supporting*, and *forgotten*, *hated*, *needed*, and *respected*, which were expected to be used in the *-ing* and *-ed* adjective forms.

### ***Sentence Translation***

Part 2 contains 30 Thai sentences with English psych verbs in brackets. Participants were instructed to use the verbs to translate the sentences from Thai to English. Questions 31-48 provided six OE psych verbs, the same ones used in the cloze test in Part I to be used in the English translation, while Questions 49-60 provided four SE psych verbs given in the cloze test in Part 1 to be translated into English using *-ing* and *-ed* adjective forms. This written translation task was designed to provide further information on participants' variable production, specifically how they consider using English psych verbs in different given scenarios.



## ***Live Translation***

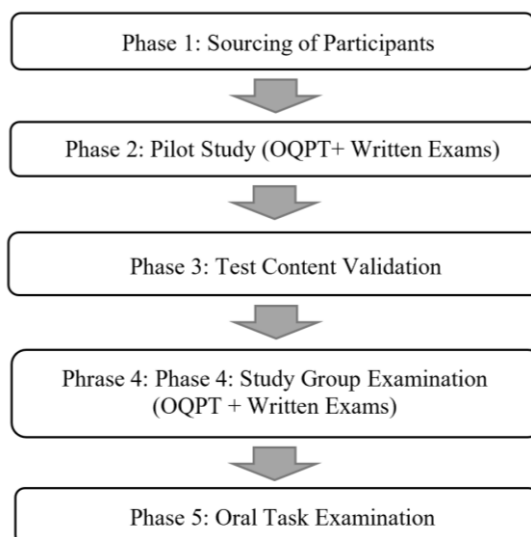
Questions 61-78 in Part 3 is a live translation test (See Appendix B), which required only six participants, chosen at random from both study groups. They were asked to interpret 18 Thai sentences into English using assigned OE psych verbs. This task aimed to see how participants performed under time pressure to inflect the correct OE psych verbs in the translation. After mentally reading each sentence, they were expected to finish the translation vocally and spontaneously. Six OE psych verbs, the same ones used in Part 1 and Part 2, were used for this task. At the time of the study, the participants observed the social distancing measures during the COVID-19 lockdown; therefore, they completed the live translation via Google Classroom. The recordings were transcribed and examined to detect variable production.

## **Data Collection**

The data collection of this research occurred in five phases as per Figure 1 below:

**Figure 1**

*Flowchart of the Data Collection Process of the Present Study*



## **Data Analysis**

The percentages and mean scores of both written activities, namely the Cloze Test and the Written Sentence Translation, from both the Intermediate and Elementary study groups were compared to indicate the accuracy scores. In the discussion section, the statistical results of all three constructions of English psych predicates, including psych verbs in subject-verb-object (*SVO*) construction, psych adjectives in present participle (*-ing*) construction, and psych adjectives in past participle (*-ed*) construction, were compared and reviewed. The live translation findings were transcribed and summarized for further analysis.

## Results

### Results of the Study Groups

#### *Cloze Test Results*

**Table 1**

*Accuracy Scores, Percentages, and Means from the Cloze Test of OE and SE Psych Predicates by the Elementary Study Group*

Cloze test (n=40)	OE Psych Preds				SE Psych Preds			
	SVO	-ing	-ed	Total Score	SVO	-ing	-ed	Total Score
<b>TOTAL</b>	96/240	164/240	165/240	<b>425/720</b>	85/160	102/160	94/160	<b>281/480</b>
<b>Percentage</b>	40.00%	68.33%	68.75%	<b>59.03%</b>	53.13%	63.75%	58.75%	<b>58.54%</b>
<b>Mean Score</b>	2.4	4.1	4.13	<b>10.63</b>	2.13	2.55	2.35	<b>7.03</b>

Table 1 shows that the total accuracy score for the 40 participants in the Elementary study group was 425, with a maximum accuracy score of 59.03%. The mean *SVO* score was 2.40 out of a possible maximum score of 6, the mean *-ing* adjective score was 4.10, and the mean *-ed* score was 4.13. The total average score of the OE psych predicates was 10.63, with a maximum possible score of 18.

The total accuracy score for the SE psych predicates was 281, or 58.54%, which was just slightly lower than the OE's total percentage of 59.03. The *SVO* has a percentage of 53.13, the *-ing* adjectives have a percentage of 63.75, and the *-ed* adjectives have a percentage of 58.75. The Elementary participants scored better in the *SVO* construction of SE than the OE psych verbs (53.13% vs. 40%), but not for the *-ing* and *-ed* adjectives. The OE results are better than the SE class in the *-ing* and *-ed* constructions, with 68.33% versus 63.75% for the *-ing* and 68.75% versus 58.75% for the *-ed*. The total mean scores was 7.03 out of a possible maximum score of 12, while the *SVO* mean score was 2.13, the *-ing* adjectives' mean score was 2.55, and the *-ed* adjectives' mean score was 2.35 out of a possible maximum score of 4.

**Table 2**

*Accuracy Scores, Percentages, and Means from the Cloze Test of OE and SE Psych Predicates by the Intermediate Study Group*

Cloze test (n=40)	OE Psych Preds				SE Psych Preds			
	SVO	-ing	-ed	Total Score	SVO	-ing	-ed	Total Score
<b>TOTAL</b>	121/240	198/240	186/240	<b>505/720</b>	107/160	126/160	115/160	<b>348/480</b>
<b>Percentage</b>	50.42%	82.50%	77.50%	<b>70.14%</b>	66.88%	78.75%	71.88%	<b>72.50%</b>
<b>Mean Score</b>	3.03	4.95	4.65	<b>12.63</b>	2.68	3.15	2.88	<b>8.7</b>

According to Table 2, the total accuracy score of the cloze test with OE psych predicates for the 40 participants in the Intermediate group was 505, or 70.14%. The percentages of accuracy scores for the *SVO* construction were 50.42%, 82.50% for the *-ing*, and 77.50% for the *-ed*. The mean *SVO* score was 3.03 out of a maximum score of 6, the mean *-ing* adjective score was 4.95, and the mean *-ed* adjective score was 4.65. The total mean score of the OE psych predicates was 12.63, while the highest possible score is 18.

The SE psych predicates results showed that the Intermediate group performed better than the Elementary group in all three grammatical constructions. The total accuracy score for the SE psych predicates was also higher, at 348 or 72.50%. The accuracy percentages for the *SVO* construction were 66.88%, 78.75% for the *-ing*, and 71.88% for the *-ed*. The mean *SVO* score was 2.68 out of a maximum of 4, the mean *-ing* score was 3.15, and the mean *-ed* score was 2.88. The total mean score of the SE psych predicates was 8.70, with a maximum possible score of 12.

### *Sentence Translation Results*

**Table 3**

*Accuracy Scores, Percentages, and Means from the Sentence Translation using given OE and SE Psych Verbs by the Elementary Study Group*

Sentence Translation (n=40)	OE Psych Preds				SE Psych Preds			
	SVO	-ing	-ed	Total Score	SVO	-ing	-ed	Total Score
<b>TOTAL</b>	86/240	152/240	148/240	<b>386/720</b>	109/160	127/160	124/160	<b>360/480</b>
<b>Percentage</b>	35.83%	63.33%	61.67%	<b>53.61%</b>	68.13%	79.38%	77.50%	<b>75.00%</b>
<b>Mean Score</b>	2.15	3.8	3.7	<b>9.65</b>	2.73	3.18	3.1	<b>9</b>

Table 3 shows that the total accuracy score of the OE psych predicates from participants in the Elementary group was 386 or 53.61%. The *SVO* score was 86 or 35.83%, whereas the *-ing* score was 152 or 63.33%, and the *-ed* score was 148 or 61.67%. The mean *SVO* score was 2.15 out of a possible maximum score of 6, the mean *-ing* score was 3.80, and the mean *-ed* score was 3.70. The total OE mean score was 9.65 out of 18.

The Elementary participants performed better with SE psych predicates in all three grammatical constructions, with *SVO*'s accuracy score of 109 (68.13%), the *-ing* score of 127 (79.38%), and the *-ed* score of 124 (77.50%), bringing the SE's overall accuracy score to 360 (75%). The SE psych predicates had a total mean score of 9.0 out of a possible maximum of 12, whereas the *SVO* mean score was 2.73, the *-ing* mean score was 3.18, and the *-ed* mean score was 3.10 out of a possible maximum of 4.

**Table 4**

*Accuracy Scores, Percentages, and Means from the Sentence Translation using given OE and SE Psych Verbs by the Intermediate Study Group*

Sentence Translation (n=40)	OE Psych Preds				SE Psych Preds			
	SVO	-ing	-ed	Total Score	SVO	-ing	-ed	Total Score
<b>TOTAL</b>	163/240	191/240	172/240	<b>526/720</b>	110/160	138/160	126/160	<b>374/480</b>
<b>Percentage</b>	67.92%	79.58%	71.67%	<b>73.06%</b>	68.75%	86.25%	78.75%	<b>77.92%</b>
<b>Mean Score</b>	4.08	4.78	4.3	<b>13.15</b>	2.75	3.45	3.15	<b>9.35</b>

In Table 4, for the OE psych predicates, the total accuracy score is reported at 526 from participants in the Intermediate group, or 73.06%. The accuracy scores of all three grammatical constructions are higher than those of the Elementary group; namely, the *SVO* score was 163 or 67.92%, the *-ing* score was 191 or 79.58%, and the *-ed* score was 172 or 71.67%, with mean scores

of 4.08, 4.78, and 4.30 respectively, out of a possible maximum score of 6. The total mean score of the OE psych predicates was 13.15 out of a possible maximum of 18.

Participants in the Intermediate study group performed better in the *-ing* adjective construction with the SE verbs than with the OE psych verbs, with an accuracy score of 138 out of 160, or 86.25% (vs. 76.58%). The percentages of the SE's *SVO* and *-ed* constructions are slightly lower than those of the OE, with the *SVO* scoring 110 out of 160, or 68.75%, and the *-ed* psych adjectives scoring 126 out of 160, or 78.75%. The SE psych predicates had a total mean score of 9.35 out of a possible maximum of 12, with the *SVO* mean score of 2.75, the *-ing* mean score of 3.45, and the *-ed* mean score of 3.15 out of a possible maximum of 4.

## Comparisons of Results of the Study Groups

Comparisons of percentages of accuracy scores between the Elementary and Intermediate study groups are included in Figures 2 to Figure 5 as follows:

### Comparisons of Cloze Test Results

**Figure 2**

*Comparisons of Accuracy Scores from the Cloze Test of OE Psych Predicates between the Elementary and the Intermediate Students in the Study Groups*

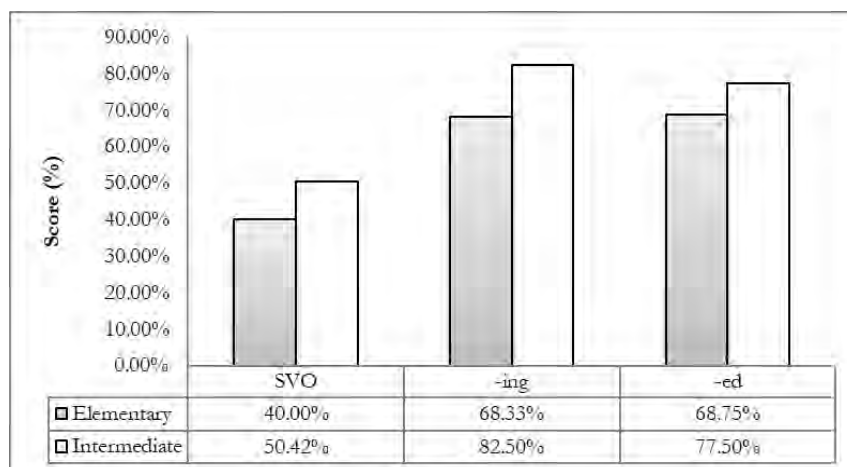
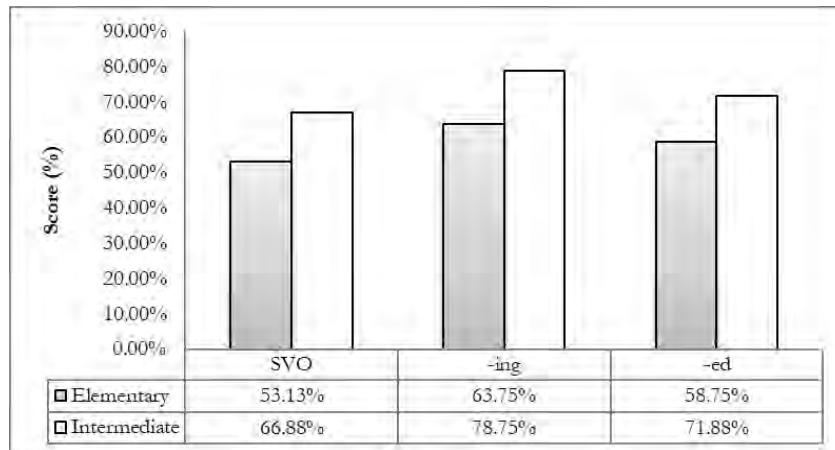


Figure 2 demonstrates that participants in the Intermediate group outperformed those in the Elementary group in all three grammatical structures of the OE psych predicates, with a percentage of 50.42 versus 40 for the *SVO*, 82.50 versus 68.33 for the *-ing*, and 77.50 versus 68.75 for the *-ed*. The results also revealed that the accuracy scores of both groups' *SVO* construction were significantly lower comparing to the *-ing* and *-ed* forms.

The Elementary group's performance on the *-ing* and *-ed* adjectives was very close (68.33% vs. 68.75%). Meanwhile, when data from the Intermediate group was considered, their performance on the *-ing* was superior to that of the *-ed* (82.50% vs. 77.50%).

**Figure 3**

*Comparisons of Accuracy Scores from the Cloze Test of SE Psych Predicates between the Elementary and the Intermediate Students in the Study Groups*

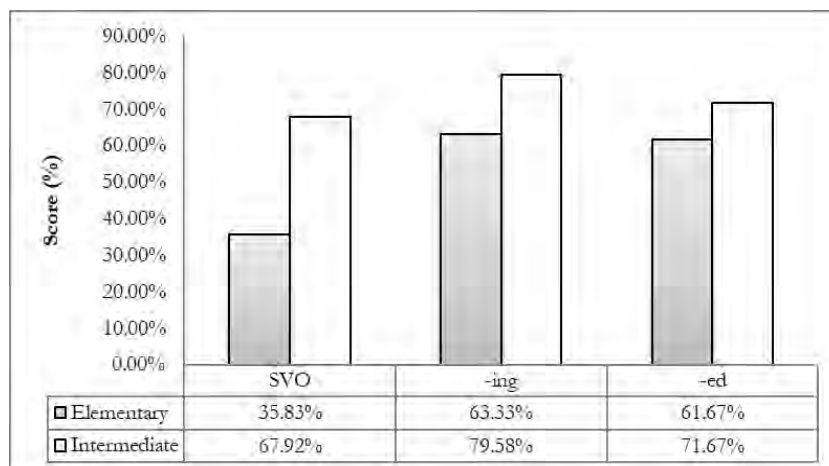


The results in Figure 3 shows that participants in the Intermediate group outperformed those in the Elementary group in all three grammatical constructions, with a percentage of 66.88 against 53.13 in the *SVO*, 78.75 against 63.75 in the *-ing*, and 71.88 against 58.75 in the *-ed*. The comparisons also indicated that the accuracy score differences between the two groups in all three structures are around the same range of 13% to 15%, making the bar charts in this Figure appear asymmetric. Participants in both the Intermediate and Elementary groups have the highest *-ing* accuracy percentages while having the lowest *SVO* accuracy percentages.

**Comparisons of Sentence Translation Results**

**Figure 4**

*Comparisons of Accuracy Scores from the Sentence Translation of OE Psych Predicates between the Elementary and the Intermediate Students in the Study Groups*



Based on the sentence translation scores of OE psych predicates in Figure 4, participants in the Elementary group showed lower performance than those in the Intermediate group in all three grammatical structures: with percentages of 35.83 versus 67.92 in the *SVO*, 63.33 versus 79.58 in the *-ing*, and 61.67 versus 71.67 in the *-ed*. The Elementary group’s *SVO* percentage is much lower than the Intermediate group, although the percentages of *-ing* and *-ed* adjectives are not significantly different.

**Figure 5**

*Comparisons of Accuracy Scores from the Sentence Translation of SE Psych Predicates between the Elementary and the Intermediate Students in the Study Group*

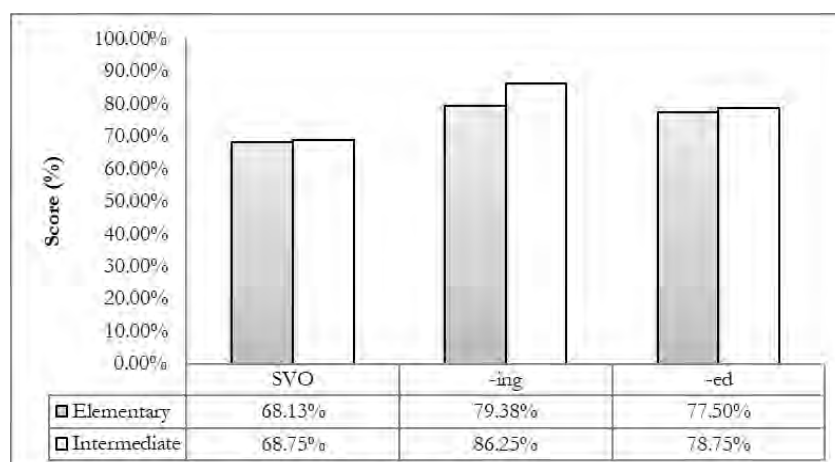


Figure 5 clearly shows that participants in the Intermediate group performed only slightly better than participants in the Elementary group in all three grammatical structures, with a percentage of 68.75 versus 68.13 in the *SVO*, 86.25 versus 79.38 in the *-ing*, and 78.75 versus 77.50 in the *-ed*. Furthermore, both groups performed better in the *-ing* than the *-ed* construction, with just a minor difference in the Elementary group and a wider gap (7.5%) in the Intermediate group.

## Discussions

### Research questions I: What is the variable production of English OE psych predicates by Thai EFL first-year university students?

According to the results of this study, variable production was found in Thai EFL first-year university students' usage of English psych predicates, both in the SE class and the OE class. Participants demonstrated more than one variant of supplying the English psych predicates in the cloze test and sentence translation, which aimed to examine psych predicates in three grammatical structures: the *SVO* construction, the present participle (*-ing*) adjectives, and the past participle (*-ed*) adjectives. The results also revealed that the usage of *SVO* with both SE and OE psych verbs had the lowest scores across all assessments, including the cloze test, sentence translation, and live translation. This has led to the belief that the *SVO* is the most difficult grammatical point out of the three constructions evaluated in this present study. To prove this assumption, we compared the percentages of SE and OE accuracy scores between participants in the Elementary group and those in the Intermediate group. For the cloze test with SE psych verbs, the findings of the *SVO* construction indicated that participants in both groups had the lowest *SVO* accuracy percentages. On the other hand, the results of the OE accuracy percentages of sentence translation in the *SVO* construction revealed that the scores of both groups were the lowest and were significantly lower than the scores of the *-ing* and the *-ed* constructions.

Recognizing the *SVO* construction of the OE psych predicates as the most challenging structure for Thai EFL learners is consistent with the results from the study by Shutt and Pongpaioj (2011), which investigated the problems of OE psych verbs faced by L1 Thai learners. It was discovered that the accuracy scores of the OE psych verbs in the *SVO* by both study groups were extremely low (22.2% vs. 17.5% for the cloze test, 0% vs. 0% for sentence translation), implying that L1 Thai learners found the usage of OE psych verbs in the *SVO* construction to be the most difficult compared to other predicates.

While the present study does not aim to determine whether the *-ing* or the *-ed* psych adjectives is more difficult for Thai EFL learners, the results showed that in both written tasks of the SE predicates, participants in both the Intermediate and Elementary groups performed better in the *-ing* than the *-ed*. Meanwhile, in the results of both written tasks using OE predicates, participants of the Intermediate group performed slightly better in the *-ing* than the *-ed*, whereas the Elementary group performed only slightly less accurate in the *-ing* than the *-ed* in the cloze test. In the sentence translation, the Elementary group performed a little better in the *-ing* than the *-ed*.

The current study's findings contradicted Namtapi's (2018) dedicated research to determine whether *-ing* psych adjectives were more difficult for L1 Thai learners than the *-ed* ones, which found that all groups of participants performed significantly better on the *-ed* in the Picture Description Task while participants in the elementary and low-intermediate groups also performed significantly better in the Sentence Interpretation Task. The study concluded that Thai learners had difficulty mapping the Theme onto subjects, resulting in poorer performance on *-ing* adjectives. Because the present study used different test instruments from Namtapi's research, the results may have differed, and additional research in this area is needed.

It is also worth mentioning that participants in the Intermediate group outperformed those in the Elementary group in all three grammatical constructions of both SE and OE psych predicates. As a result, we assume that the acquisition of English OE psych predicates by L1 Thai learners will improve as they progress through the next level of their language development continuum. In other words, the more students improve their English skills, the better they would be at utilizing this grammatical feature.

### **Research Question II: How does the MSIH account for the variable production of English Object-Experiencer (OE) psych predicates among Thai EFL first-year university students?**

The MSIH posits that L2 morphological features are acquirable for L2 learners, who are assumed to have unconscious knowledge of the functional projections. Variable production of functional morphology is explained by the MSIH as a processing deficit rather than a syntactic impairment. Examples of studies supporting this idea include Haznedar and Schwartz (1997), Prévost and White (2000), and Lardiere (1998).

Mapping problems according to the Thematic Hierarchy (Grimshaw, 1990) were discovered in the current study's results, as participants in both the Intermediate and Elementary groups misplaced the linking of the subject position and the object position, particularly with the OE psych predicates. This suggests that Thai EFL students encountered syntactic difficulties while interpreting thematic roles for OE psych verbs, resulting in faulty mapping of theta roles onto sentential positions. The results are consistent with the phenomena that occurred among L2 learners with different mother tongues.

The explanation about the relationship between the mapping problem and the 'Psych Properties' of the OE predicates has laid a solid foundation for answering the research question II of this study, which is how the MSIH can account for such variable production among Thai EFL first-year university students. Predictions of results from the two examined hypotheses, the MSIH and the FFFH, are provided in the next section. According to the MSIH, variable production is caused by a failure in the mapping process between underlying syntactic representations and surface morphological forms, whereas the FFFH attributes variability to L2 learners' syntactic impairment or grammatical deficiency.

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### ***Predictions from the MSIH***

a.) Participants of both Elementary and Intermediate groups should show variability in the production of English psych predicates, with higher accuracy percentages in the results of the SE than the OE.

b.) If either group's participants have any issues with incorrectly utilizing English psych verbs, the errors will be restricted to the domain of mapping, in which they place Experiencers in the subject position instead of the object position in sentences using OE verbs.

### ***Predictions from the FFFH***

a.) Strong version: Since psych verb is not a grammatical category in Thai, L1 Thai learners should not be able to acquire it.

b.) Because the causative construction, particularly the periphrastic causative sentence, is considered a compatible structure to the English psych verbs, L1 Thai learners should prefer to compose sentences with overt causative morphemes, such as *'tham báy'*, using the pattern *'make+ object + psych adjective'* rather than the *SVO* construction.

The first prediction from the MSIH was supported by the results of this study, which revealed some degree of variability in the production of both the SE and OE psych predicates by L1 Thai learners. The percentage comparison data between the Elementary and Intermediate groups showed that the SE accuracy percentages were higher than that of the OE, indicating that the OE psych predicates are more challenging for the learners than the SE. Meanwhile, when analyzing the errors occurring in the production by participants of both groups, mismatches of the Experiencers to the subject position and the object position were observed, particularly with the OE psych predicates. This suggested that the incorrect usage lay in the mapping problem - a processing deficiency postulated by the MSIH. According to this analysis, the MSIH's second prediction was confirmed.

The results of this study disproved the radical viewpoint of the strong version of FFFH, showing that participants in both groups produced some appropriate usage of both SE and OE psych predicates. According to the FFFH's second prediction, which expected the Thai periphrastic causative construction with overt morpheme *'tham báy'*, to be produced in a high rate due to L1 transfer, Thai EFL students somewhat demonstrated such expectation in the live translation. However, although the difference may seem insignificant (10 by the Intermediate vs. 12 by the Elementary), it is important to keep in mind that only six participants took the oral assignment, making the sample size very small. Participant 3 from the Intermediate group also supplied the periphrastic causatives solely without utilizing the *SVO* structure at all, making it appear that there was a high number of causative phrases in the live translation. According to this, we cannot conclude that the periphrastic causative is regarded as the structure that participants preferred, and the FFFH's second prediction cannot be validated.

## **Conclusions**

The present study investigated variable production of English OE psych predicates among 80 Thai EFL university students in their first year. The participants were divided into two groups: the Elementary and the Intermediate groups. The study included six OE verbs: *annoy, excite, frighten, interest, shock, and surprise*, as well as adjectives derived from these verbs including the present participle (*-ing*), and the past participle (*-ed*) construction. Results of the OE production were compared to the SE production in three grammatical structures examined. The SE psych verbs evaluated in the study included *like, know fear, hate*, the *-ing* adjectives were *missing, loving, trusting, supporting*, and the *-ed* adjectives were *forgotten, hated, needed, and respected*.



Based on the evidence in the present study, the MSIH is a more valid theory than the FFFH to account for the sources of variable production of the OE psych predicates. It focuses on processing problems rather than impairments and the relationship of related features in one's language faculty that complement one another, which explains that L2 learners who produce variability in the L2 functional morphology would also exhibit sufficient production of relevant syntactic categories. MSIH also considers factors that can cause variable production, such as extra-syntactic or phonological rules as found during the live translation when participants struggled with the -ed sound while forming correct *verbs to be* required in OE sentences.

There were several limitations when conducting the current study. Firstly, all the tasks employed in this study were designed to be brief and acceptable for the workload due to the time constraint. Because of this, there is not enough data from the live translation to generalize the findings, as there should have been a larger number of participants. Secondly, the placement test, research tests, and live translation were taken exclusively online during the pandemic lockdown while the ideal approach is still thought to be administering the exams in classrooms and being present in person with the participants to oversee their test sessions.

The present study aims to explore variable production, which will help Thai students and Thai EFL teachers understand why English psych predicates often cause learning difficulties. It will, hopefully, shape a better teaching of English OE psych predicates to L1 Thai learners.

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## Appendix A

### Written Examination Used with the Study Groups

(Instructions)

There are two parts in this test:

#### Part I – Cloze test (Questions 1-30)

You are presented with a number of sentences. Each sentence provides a verb in the bracket. Please read each sentence carefully and fill in the blank(s) with the correct form of the given verbs.

#### Part II – Sentence translation (Questions 31-60)

You are presented with sentences in Thai. Each sentence provides an English verb in the bracket. Please read each sentence carefully and write your best translation of the sentence in English in the provided space using the correct form of the given verbs.

#### Examples of Examination in Part I: Cloze test (Questions 1-30)

1. It really (annoy)\_\_\_\_\_ me when I see people dropping litter.
2. His playing is technically brilliant, but it doesn't (excite) \_\_\_\_\_ me.
3. He drives at a speed which (frighten) \_\_\_\_\_ Lara to death.
4. It's always best to choose the subject that (interest) \_\_\_\_\_ you, not the one your parents want you to do.
5. The hatred in her voice (shock) \_\_\_\_\_ him.

#### Examples of Examination in Part II: Sentence translation (Questions 31-60)

32. หนังสือใหม่เล่มนั้นสร้างความตื่นเต้นให้เด็กๆ ในห้องเรียนเพียงไม่กี่คน (excite)

EN: \_\_\_\_\_

33. คอมพิวเตอร์เคยทำให้ฉันรู้สึกกลัว แต่ตอนนี้หายกลัวแล้ว (frighten)

EN: \_\_\_\_\_

34. สิ่งที่ทำให้ฉันรู้สึกสนใจคือประวัติศาสตร์ทั้งหมดที่เกี่ยวกับสถานที่เหล่านี้ (interest)

EN: \_\_\_\_\_

51. ฉันไม่กลัวความตาย (fear)

EN: \_\_\_\_\_

53. พ่อแม่ของลิลลี่โทรแจ้งตำรวจเพื่อแจ้งว่าเธอหายตัวไป (miss)

EN: \_\_\_\_\_

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**Appendix B****Oral Examination for Randomized Members of the Study Groups**

(Instructions)

This test consists of Live Translation Test (Questions 61-78). Only those who are told by the teacher will do this test. You are presented with sentences in Thai, each with an English verb in the bracket. Please translate the sentences into English orally using the correct form of the given verbs. The translation will be recorded by the researcher.

**Examples of Examination in the Live Translation (Questions 61-78)**

61. ข่าวนี้อาจทำให้คุณสนใจ (interest)

EN: \_\_\_\_\_

65. ห้างที่รกๆ ทำให้ฉันรู้สึกรำคาญ (annoy)

EN: \_\_\_\_\_

67. คริสต์มาสเป็นช่วงเวลาที่น่าตื่นเต้นเสมอสำหรับเด็กๆ (excite)

EN: \_\_\_\_\_

71. สุนัขตัวใหญ่ทำให้ฉันกลัว (frighten)

EN: \_\_\_\_\_

76. วันนี้มีการประกาศข่าวที่น่าตกใจ (shock)

EN: \_\_\_\_\_