Are –ING Psych Adjectives More Difficult to Acquire than –ED Psych Adjectives? Evidence from L1 Thai Learners of L2 English

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Abstract

This study investigated the acquisition of English psych(ological) adjectives by Thai learners. Theoretically, participial adjectives with the –ed and –ing morphemes, which are derived from OE psych verbs, have been treated similarly to SE and OE psych verbs, respectively (Roberts 1989; Nakajima 1993). As the little research done in this area only involved Chinese learners (Chen, 1997), Japanese learners (Sato, 2008; Suzuki et al., 2013; Hirakawa and Suzuki, 2014), French learners (Chen, 1997), and Spanish learners (Hirakawa and Suzuki, 2014), this study aimed to fill in the gap by exploring whether –ing psych adjectives would pose more problems to Thai learners than –ed psych adjectives as witnessed in the previous studies. Fifty-six Thai students from a public university were recruited and divided into three levels of English proficiency before they participated in a Picture Description Task (PDT) and a Sentence Interpretation Task (SIT). The results suggested that all groups of the participants performed significantly better on –ed psych adjectives in the PDT. The elementary and low-intermediate groups also performed significantly better on –ed adjectives in the SIT. It is assumed that the learners had difficulty mapping the Theme onto subjects, thus performing worse on –ing adjectives. It can be argued that the L1 Thai learners were guided by universal principles as more marked structures, like in the case of –ing adjectives, were more problematic for them. Some morphological properties associated with psych adjective formation in their L1 were also observed in this study.

Keywords: Second Language Acquisition, Psych Adjectives, L1 Thai, L2 English

1. Introduction

The acquisition of argument structure alternation in relation to various grammatical items such as unaccusative verbs, causative construction, passive construction, among many others, has received a lot of attention in the literature (see White (2003) for a summary). Such structures pose considerable difficulty to second language (L2) learners since they deviate from canonical argument realization. Take psych(ological) verbs as an example. Theoretically, there are two classes of psych verbs in English: those with a subject noun phrase (NP)

bearing an Experiencer role as in (1) and those with a subject NP bearing a Theme role as in (2) (White et al., 1998):

(1) Somjai fears ghosts.
(2) Ghosts frighten Somjai.

Verbs as in (1) are referred to as "Subject Experiencer (SE)" type and those as in (2) as "Object Experiencer (OE)" type. In the case of the SE type, the hierarchically higher role, the Experiencer, is found in the syntactic subject position, whereas in the case of the OE type, the hierarchically lower role, the Theme, is found in the syntactic subject position. Previous studies have shown that OE verbs are more problematic for L2 learners regardless of L1 backgrounds since they require a non-canonical mapping between syntactic positions and thematic roles.

To further knowledge on the acquisition of psych verbs by L2 English learners, the present study examines how the arguments of psych adjectives, such as "exciting" and "excited", are represented in the L1 Thai learners' interlanguage grammar. Participial adjectives with the *–ed* and *–ing* morphemes, which are derived from OE psych verbs, have been treated similarly to SE and OE psych verbs, respectively (Roberts, 1989; Nakajima, 1993). Previous research has revealed that OE type psych adjectives as in (3) pose more difficulty to L2 learners than SE type psych adjectives as in (4).

(3) The movie was exciting (for Somsri).
(4) Somsri was excited (by the movie).

As the only research done in this area was done with Chinese learners (Chen, 1997), Japanese learners (Sato, 2008; Suzuki et al., 2013; Hirakawa and Suzuki, 2014), French learners (Chen, 1997), and Spanish learners (Hirakawa and Suzuki, 2014), this study aims to fill in the gap by exploring whether *–ing* psych adjectives would pose more problems to Thai learners than *–ed* psych adjectives. The study also observed the effects of L1, some morphological properties of which are associated with psych adjectives, on the acquisition.

2. Literature Review

2.1 Psych predicates in English and Thai

Some principles and concepts related to the argument structures of psych predicates in English and Thai adopted in this study are discussed in (2.1.1) and (2.1.2), respectively.

2.1.1 English psych predicates

Cross-linguistically, it is assumed that there is a principled mapping between argument structure and thematic roles. More specifically, the thematic role Agent typically occupies the syntactic subject position in canonical transitive structures, whereas the thematic role Theme typically occupies the syntactic object position. One formalization of these relationships is given by Baker's (1988:46) Uniformity of Theta Assignment Hypothesis (henceforth UTAH):

(5) Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

The UTAH posits that the Theme is consistently projected as the verb's internal argument at the level of D-structure. However, the same thematic role surfaces at different S-structure positions in the case of certain alternations such as the unaccusative alternative of the verb "break" in (6) and (7):

(6) The glass broke.
(7) He broke the glass.

"The glass" is the Theme in both (6) and (7), but surfaces as a subject in (6) and as an object in (7). In line with the UTAH, the Theme in (6) originates as an object at the level of D-structure and moves to serve as a subject, a higher position, at the level of S-structure.

Relativized versions of the UTAH were later proposed by many linguists, one of whom is Grimshaw (1990) whose Thematic Hierarchy shown in (8) is widely attested.

(8) (Agent (Experiencer (Goal/Source/Location (Theme))))

According to Grimshaw's Thematic Hierarchy, an argument with the Agent is mapped onto a higher position than an argument with the Experiencer, which in turn is higher than arguments with the Goal, the Source, or the Location, which in turn are higher than an argument with the Theme.

However, if it is assumed that there is always a uniform association between thematic roles and syntactic arguments, the mapping of certain verbs' thematic roles and syntactic positions is problematic. The linking problem posed by psych predicates is one obvious example. In English, there are two main classes of psych verbs, which are referred to as the Subject Experiencer (SE) as in (9) and the Object Experiencer (OE) in (10).

(9) Larry feared frogs.
(10) Frogs frightened Larry.

As aforementioned, psych verbs take two thematic roles: the Experiencer and the Theme. SE verbs involve canonical argument realization; that is, the Experiencer, a hierarchically higher thematic role, occupies the subject position, while the Theme, a hierarchically lower thematic role, occupies the object position as in (9). The mapping rule applied to OE psych verbs is, however, non-canonical; that is, the Theme is syntactically placed higher than the Experiencer as in (10). In short, these two classes differ in the way they map thematic roles into syntactic arguments.

OE psych verbs generally become participial adjectives with either the *–ed* or the *–ing* morphemes. They have been treated similarly to SE and OE psych verbs, respectively. (Roberts 1989; Nakajima 1993). Like psych verbs, psych adjectives participate in an alternation with the Experiencer as the syntactic subject of *–ed* adjectives and as the prepositional object of *–ing* adjectives. These two types of psych adjectives closely correspond to the two types of psych verbs, namely SE type (*–ed* adjectives) and OE type (*–ing* adjectives) as exemplified below:

(11) Jane was amused (with the clown).
(12) The clown was amusing to (Jane).

According to Chen (1997), OE psych verbs and *–ing* adjectives involve a zero causative morpheme, while SE psych verbs and *–ed* adjectives do not[1]. For this reason, she argues that the zero CAUS, which adds a Causer (Theme) argument when it is attached to the root, is invisible in phonology. Therefore, L2 learners might encounter considerable difficulty recognizing its existence. The linking of arguments to syntactic positions in terms of *–ing* adjectives is then assumed to be problematic for L2 learners.

2.1.2 Thai psych predicates

Examples of psych verbs in Thai are given in (13).

(13) (a) sʊda: klua pʰiːˇ
Suda fear ghosts
"Suda fears ghosts."
(b) pʰiːˇ tʰam haî sʊda: klua
Ghosts CAUS Suda fear
"Ghosts frighten Suda."

In Thai, SE psych verbs are expressed mono-morphemically as in (13a), while OE psych verbs are expressed by means of causative constructions with the causative marker "tʰam haî" (equivalent to "make" in English) as in (13b). In (13a), the Experiencer "Suda" occupies the subject position, whereas the Theme "ghosts" takes the object position. In (13b), the Theme "ghosts" occupies the subject position and is followed by the causative marker "tʰam haî", while the Experiencer "Suda" precedes the psych verb "klua".

Given the confines of one psych verb and two arguments, Thai allows only an Experiencer to surface to the subject position as in (13a). If psych verbs are used intransitively, functioning as adjectives however, a Theme can occupy the subject position. Put differently, if adjectives in Thai are classified based on thematic arguments that appear in the sentential subject position, then there are also SE-like and OE-like psych adjectives, similar to those in English, as exemplified in (14).

(14) (a) suda: bɯà (SE)
Suda bore
"Suda is bored."

(b) suda: naː̂ bɯà (OE)
Suda prefix bore
"Suda is boring."

In the SE construction (14a), the verb "bɯà" (bore) is used intransitively as it takes only one Experiencer subject. It is worth noting that there is almost no distinction between adjectives and intransitive verbs in Thai[2]. Thus, psych verbs that take only one subject NP and SE-like psych adjectives in Thai have the same form and function in this case. In the OE construction (14b), the adjective-forming prefix "naː̂" is added to the verb "bɯà" to form the OE-like psych adjective which takes a Theme subject. However, not only psych verbs but also dynamic verbs in Thai can be prefixed with "naː̂" to convey the meaning of "worthy of" or "inducing to" (e.g. "kin" (eat) turned to "naː̂ kin" (appetizing)". When the prefix is added to a verb, be it stative or dynamic, the verb will have a causative meaning.

2.2 Previous Studies

Some experimental studies on the acquisition of L2 English psych verbs are briefly summarized in (2.2.1) and followed by an in-depth review of subsequent studies on the acquisition of L2 English psych adjectives in (2.2.2).

2.2.1 Psych verb studies

The following studies on English psych verbs were conducted within the generative grammar framework and found that OE psych verbs pose greater difficulty to L2 English learners than SE counterparts. Chen (1997) investigated the acquisition of L2 English psych predicates by L1 Chinese and L1 French learners within the Government and Binding Theory. She argued that the recognition of zero causative morphemes as well as the availability of principles like the UTAH and the Thematic Hierarchy plays an important role in the acquisition. She went on to hypothesize that OE verbs, which are made up of the zero CAUS and a root, would be more problematic than SE verbs, which do not involve causative morphemes, for L2 learners. The results confirmed her hypothesis in that the low-level Chinese and French participants had some difficulty with the OE construction.

White et al. (1998) also examined the problems of OE verbs among L1 Malagasy, Japanese, French, and Spanish learners within the generative grammar framework. They predicted that the mapping of psych verbs is not arbitrary and L2 learners will resort to the UTAH and the Thematic Hierarchy. In other words, if errors are found in the acquisition, they will involve the OE verb construction. The results confirmed their hypothesis; whenever problems occurred, nearly all of their participants performed worse on OE verbs than on SE verbs regardless of L1 backgrounds. White et al. also observed that although OE verbs are predominant in English, input frequency played a less prominent role than the UTAH and the Thematic Hierarchy, resulting in the participants' better performance on SE verbs.

Sato (2003) conducted a similar study with L1 Japanese learners and reported the same results as those of Chen (1997) and White et al. (1998). That is, OE verbs were found to be more problematic than SE verbs to the Japanese participants. Sato also tested other related structures, one of which is the periphrastic construction. She also predicted that the Japanese causative morpheme *–(s)ase* would facilitate learners to prefer sentences with periphrastic construction than OE transitive sentences. However, she found that the learners' acceptance of the former was lower than the latter. Sato argued that this was possibly due to the fact that *–(s)ase* is a bound morpheme, but "make" in the periphrastic construction is not.

Witoon and Singhapreecha (2012) also examined the same problem among L1 Thai learners of L2 English. They hypothesized that Thai learners would have more difficulty acquiring OE verbs than SE verbs, which are commonly used in Thai, as Thai lacks the OE construction but uses the periphrastic (CAUS) construction instead. The participants were found to perform better on SE verbs and CAUS than OE verbs. Witoon and Singhapreecha suggested that their participants relied on the Thematic Hierarchy, thereby having difficulty raising the Theme to the sentential subject

position. Moreover, they assumed that the participants' knowledge of argument realization was not instantiated in the OE but was in its periphrastic counterpart.

To sum up, acquisition problems caused by psych verbs investigated in the previous studies are accounted for in terms of the mapping problem and the failure to recognize the zero causative morpheme of OE verbs.

2.2.2 Psych adjective studies

Early studies on the acquisition of psych verbs serve as a baseline for subsequent studies on the acquisition of psych adjectives (Sato, 2008; Suzuki et al., 2013; Hirakawa and Suzuki, 2014). Only a few empirically examined the problem of OE psych verbs along with OE-like psych adjectives (Chen, 1997; Sato, 2003). For instance, Chen (1997) investigated the acquisition of SE-like and OE-like psych adjectives, which are derived from OE verbs, by L1 Chinese and L1 French learners of L2 English. The Chinese participants were divided into three proficiency levels (low, intermediate, high), while the French participants were grouped into two proficiency levels (low and intermediate). A multiple-choice task and a grammaticality judgment task were administered to the participants to test their knowledge of psych adjectives derived from six OE verbs (amuse, annoy, fascinate, frustrate, please, and terrify). Results of the former task showed that both groups were highly accurate and that only the intermediate Chinese participants performed better on *–ed* adjectives than on *–ing* adjectives. Results of the latter task revealed that *–ed* adjectives were not problematic, but *–ing* adjectives were for both groups. On the whole, Chen argued that the learners relied on the Thematic Hierarchy, failing to place the Theme higher than the Experiencer, and that they failed to recognize the zero CAUS, resulting in their worse performance on *–ing* adjectives than on *–ed* adjectives.

Sato (2003) examined the problem of psych predicates including *–ed* and *–ing* adjectives. A sentence completion task and a grammaticality judgment task were employed to test Japanese participants who were classified into five proficiency levels. Among various test sentence types, *-ed* adjectives were the easiest to recognize as grammatical, while *–ing* adjectives were the most difficult to judge as grammatical. Sato (2008) also conducted a subsequent study focusing only on the acquisition of psych adjectives by Japanese learners. The participants were divided into four proficiency levels ranging from intermediate to advanced. They were given two tests: a pretest that sought to know whether they knew the difference between meanings denoted by *–ed* and *–ing* adjectives and a forced-choice task that tested the knowledge of psych adjectives in predicative and attributive use. It was found that the participants performed worse on *–ing* adjectives than on *–ed* adjectives in the case of predicative use, but not attributive use. Sato argued that the learners' poor performance on *–ing* adjectives could be accounted for in two ways. First, since the expression *te-i-ru* can denote action in

progress as well as mental states in Japanese, learners might have mistaken sentences like "Mary is surprising" for "Mary is surprised". In addition to L1 influence, she assumed that the participants might have thought a sentence like "John was irritating" lacked an object and was the wrong choice, so they opted for "John was irritated" to the given context "John always talk about himself for hours at a party".

Suzuki et al. (2013) also observed the effect of Japanese morphological properties on the acquisition of English psych adjectives. Their Japanese participants were divided into two proficiency levels: low-intermediate and high-intermediate. Five pairs (*–ed* and *–ing*) of psych adjectives based on five OE verbs (disappoint, frighten, interest, puzzle, and satisfy) were used in three tasks: a production task, a picture matching task, and an acceptability judgment task. Across the three tasks, both groups of participants were generally more accurate on *–ed* adjectives than on *–ing* adjectives. Some of the high-intermediate participants also appeared to have acquired the properties of the two types of psych adjectives tested in the picture matching task and the acceptability judgment task. However, no evidence of L1 transfer was found in the study.

Hirakawa and Suzuki (2014) examined the effect of L1 morphological properties that might play a role in the acquisition of English psych adjectives by Japanese and Spanish learners. That is, Spanish psych adjectives, which are marked with different bound morphemes, behave similarly to English psych adjectives, while there are no morphological markers distinguishing the two types of adjectives in Japanese. In this study, the Japanese participants were classified into low and high-intermediate groups, whereas the Spanish participants were divided into high-intermediate and advanced groups. A picture matching task and an acceptability judgment task were administered to the four participant groups. Results from the picture matching task revealed that, except for the Spanish advanced group, the participants had problems with *–ing* adjectives. The Japanese participants did not seem to have more problems with English psych verbs than the Spanish participants, which was against the study's hypothesis. However, Hirakawa and Suzuki argued that relatively low accuracy rates of the Japanese low-level group could mean that universal principles and L1 morphological effects were both at play in the acquisition.

Overall, it can be concluded that universal properties play a more prominent role than L1 transfer in the acquisition of psych adjectives as empirically examined in most of the previous studies. Regardless of L1 backgrounds, L2 English learners encounter considerable difficulty processing non-canonical structures like OE-like psych adjectives and exhibit the same developmental pattern. That is, they appear to perform worse on *–ing* adjectives than on *–ed* adjectives, suggesting a universal tendency to place the Experiencer higher than the Theme. The present study aims to add to this body of knowledge

by exploring whether L1 Thai learners would also encounter the same difficulty as witnessed in the aforementioned studies.

As explained in (2.1.1) and (2.1.2), English has both SE and OE verbs, while Thai lacks the latter, which cannot be expressed mono-morphemically as those in English. This leads to the prediction that *–ing* psych adjectives, which correspond to OE psych verbs, will be more difficult to acquire than *–ed* psych adjectives, which are treated similarly to SE psych verbs[3]. The hypothesis of the present study is formulated as follows:

1. L1 Thai learners have more problems with *–ing* adjectives than *–ed* adjectives both in predicative and attributive use, based on the UTAH and the Thematic Hierarchy.

3. Methodology

3.1 Participants

A sample of 150 undergraduate students from the Faculty of Education, Valaya Alongkorn Rajabhat University under the Royal Patronage participated in the experiment. They were further divided into three groups based on their scores on the Oxford Quick Placement Test. The participants whose scores were between 21 and 30 were labeled as elementary, between 31 and 40 as low-intermediate, and between 41 and 50 as high-intermediate. Those who scored lower than 7 in the pretest were excluded from the study. The participants were homogenous in that none of them had been abroad, had had significant exposure to spoken English outside the classroom environment, or had studied in bilingual schools. Their age ranged between 19 and 22. Five native English speakers were also recruited as control participants.

3.2 Research Instruments

3.2.1 The Tasks

3.2.1.1 English Placement Test

The Oxford Quick Placement Test (OQPT), Version 2 (2001), was utilized to place the students in the different proficiency groups. Those who scored between 21 and 30 were categorized as elementary, between 31 and 40 as low-intermediate, and between 41 and 50 as high-intermediate. With these criteria, 20 participants were labeled as elementary, 19 participants as low-intermediate, and 17 participants as high-intermediate.

3.2.1.2 Pretest

A forced-choice pretest comprising ten items was conducted to test whether the participants could successfully choose, with non-psych *–ed* and *–ing* adjectives, the correct form of participial adjectives followed by a noun. Without this test, it could not be determined whether they had a special problem

with psych adjectives in particular or had a general problem with other non-psych adjectives. Ten participial adjectives derived from ten transitive verbs were included in this test. Five items required the present participle form while the other five required the past participle form as illustrated below:

Table 1: Sample Test Sentences from the Pretest

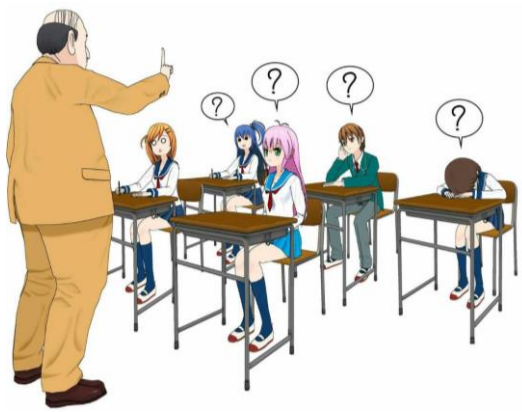
No.	Test sentence	Choice
1	As it was sunny yesterday, my mother did the laundry and hung the _____ clothes to dry in the backyard.	a. washed b. washing
2	When I went deer hunting with my grandfather many years ago, I found it difficult to shoot a _____ animal.	a. moved b. moving

The correct choice to (1) is "washed" as it has a passive meaning, whereas the correct choice to (2) is "moving" as it has an active meaning. If the participants got less than seven points, they were excluded from the experiment.

3.2.1.3 Picture Identification Task (PIT)

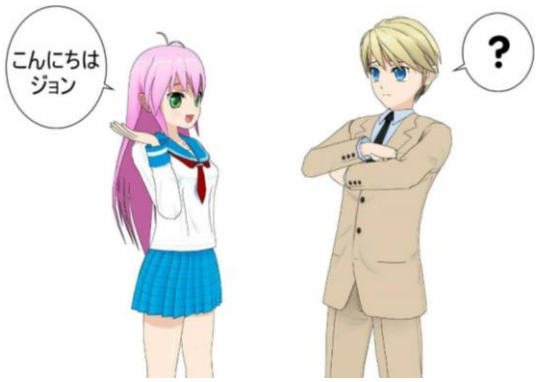
In the PIT which tested the learners' knowledge of the mapping of arguments of SE-like and OE-like psych adjectives onto sentential subjects, the participants were presented with two choices below each picture and asked to identify the better form (either the *–ing* form or the *–ed* form). Psych adjectives derived from ten OE verbs (amuse, annoy, bore, confuse, disappoint, embarrass, excite, frighten, please, and surprise) were used for this task. All of the test items were in predicative use and the sentential subjects were animate[4]. In addition to the 20 test items, there were also ten distractors testing the participants' knowledge of active and passive constructions. They were required to choose the correct sentence form (either the passive form or the active form) given next to each picture. Finally, all 30 stimuli in this task were presented randomly. Below are sample test items:

Figure 1



(a) The students are confused.
(b) The students are confusing.

Figure 2



Miki **John**

(a) Miki is confused.
(b) Miki is confusing.

The correct answer in Figure 1 is (a) as they are confused by what their teacher is talking about (hinted by the question marks), whereas in Figure 2 the correct answer is (b) since Miki is confusing in that John does not understand what she was saying (hinted by the question mark).

3.2.1.4 Sentence Interpretation Task (SIT)

The SIT tested the participants' knowledge of OE-like and SE-like psych adjectives by presenting them with two choices that described a situation for each test item. The two choices differed in that one had an SE-like psych adjective, while the other had an OE-like psych adjective. The participants were asked to choose the sentence or phrase that better described each test item. Target items in this task were also derived from the ten OE verbs used in the PIT. They were also presented in both predicative and attributive use. As is the case in the PIT, all of the sentential subjects were animate. Other than the 40 test items, there were also 20 distractors testing the participants' knowledge of active and passive constructions. They were required to choose the better construction. Finally, all 60 stimuli were randomly distributed in this task. Below are sample test items:

Table 2: Sample Test Items from the SIT

No.	Test item	Choice
1	Mark wore a ghost mask and woke up his daughter. Then she opened her eyes and started to cry out loud. Mark was …	(a) frightened. (b) frightening.
2	Mark wore a ghost mask and woke up his daughter. Then she opened her eyes and started to cry out loud. His daughter was …	(a) frightened. (b) frightening.
3	Mark wore a ghost mask and woke up his daughter. Then she opened her eyes and started to cry out loud.	(a) His frightened daughter did not like him. (b) His frightening daughter did not like him.
4	Mark wore a ghost mask and woke up his daughter. Then she opened her eyes and started to cry out loud. Mark was …	(a) a frightened father. (b) a frightening father.

There are four types of sentence structures tested in the SIT as can be seen in Table 2: sentences with SE-like psych adjectives in predicative use (1), sentences with OE-like psych adjectives in predicative use (2), sentences with SE-like psych adjectives in attributive use (3), and sentences with OE-like psych adjectives in attributive use (4).

Although limited time made it impractical to administer a vocabulary test to ensure the students' knowledge of the psych predicates presented in the main tasks, they were allowed to ask the meaning of the words they didn't know in each experimental task. In order to make sure they would not simply guess the meaning of each psych verb, the researcher briefly told the participants what each of them meant. It is also worth noting that even though the students knew the meaning of each psych verb, it did not mean that they could give a correct answer as they had probably not mastered the distinction between present and past participles yet.

3.2.2 Validity Test

The content validity was assessed by a panel of three experts before both tasks were administered to the participants. The Index of Item-Objective Congruence (IOC) developed by Rovinelli and Hableton (1976) was used to judge the test items and the objectives on which they were based. The experts assigned one point to items they considered congruent with the objectives, zero points if they were not sure whether they were congruent with the objectives, or

minus one point if they felt they were incongruent with the objectives. In total, the content validity of the Pretest, PIT, and SIT was 0.967, 0.918, and 0.959, respectively.

3.3 Data Collection

The three tasks including the OQPT were distributed in the participants' classrooms. The researcher supervised each session and carefully explained how each task was done. The participants were given one hour for the OQPT, ten minutes for the pretest, 20 minutes for the PIT, and 30 minutes for the SIT. They were given a short break after completing the OQPT. Each session took approximately two hours and ten minutes. At the end of each session, they were rewarded with drinks and snacks.

3.4 Data Analysis

In order to verify the hypothesis, SPSS Version 16 (SPSS Inc., Chicago, IL, USA) was used to perform paired-samples *t*-tests to see whether there was a significant difference between sentences with SE-like psych adjectives and OE-like psych adjectives, and between sentences with psych adjectives in predicative use and sentences with psych adjectives in attributive use.

4. Results

4.1 Picture Identification Task (PIT)

Results from the PIT are reported in Table 3, which shows the number of participants in the four groups, including the native controls who matched the correct description with each picture.

Table 3: Percentage accuracy scores for each adjective type by the experimental and control groups

Group	*-ed* (n=10)	*-ing* (n=10)	overall
Elementary (n=20)	70.5%	53%	61.75%
Low-intermediate (n=19)	90.53%	77.89%	84.21%
High-intermediate (n=17)	95.29%	84.12%	90.59%
Native control (n=5)	98%	100%	99%

As can be seen in Table 3, all the three experimental groups performed better on *–ed* adjectives than on *–ing* adjectives. A paired-samples *t*-test showed a significant difference between the two types of psych adjectives as identified by the three experimental groups ($p<.01$). The elementary group was significantly more accurate on *–ed* adjectives (70.5%, SE = 0.373) than on*–ing* adjectives (53%, SE = 0.385, $t(19) = 4.937$, $p = .000$). The low-intermediate group was also more accurate on *–ed* adjectives (90.53%, SE = 0.235) than on –

ing adjectives (77.89%, SE = 0.321, $t(18) = 5.016$, $p = .000$). Although the high-intermediate group performed well on the two types of psych adjectives as their scores were all above 84%, they were significantly more accurate on *–ed* adjectives (95.29%, SE = 0.174) than on *–ing* adjectives (84.12%, SE = 0.310, $t(16) = 4.937$, $p = .001$). With regard to the relationship between the participants' proficiency and performance, it can be said that as their proficiency increased, they tended to be more accurate in recognizing both types of psych adjectives.

In order to see whether the individual results corresponded to the group results presented in Table 3, individual analyses were conducted on each participant's performance on the two types of psych adjectives. The performance of each participant was divided into the following four acquisition patterns: (A) if the learner scored above 80% on both *–ed* and *–ing* adjectives, (B) if the learner scored above 80% on *–ed* adjectives, but below 80% on *–ing* adjectives, (C) if the learner scored above 80% on *–ing* adjectives, but below 80% on *–ed* adjectives, and (D) if the learner scored below 80% on both *–ed* and *–ing* adjectives.

Table 4: Performance of each participant in the three experimental groups.

Group	Acquisition pattern			
	(A)	**(B)**	**(C)**	**(D)**
Elementary (n=20)	2 (10%)	6 (30%)	0 (%)	12 (60%)
Low-intermediate (n=19)	11 (58%)	7 (37%)	1 (5%)	0 (0%)
High-intermediate (n=17)	13 (76%)	4 (24%)	0 (0%)	0 (0%)

Table 4 shows that the individual analysis was consistent with the group analysis presented in Table 3. That is, the number of subjects who acquired both *–ed* and *–ing* adjectives becomes greater with increasing proficiency. In addition, there was only one participant from the low-intermediate group who scored better on *–ing* than on *–ed* adjectives, whereas the others who acquired either structure had more difficulty recognizing *–ing* adjectives.

4.2 Sentence Interpretation Task (SIT)

Results from the SIT are presented in Table 5. It shows the number of participants in the four groups, including the native controls who correctly chose the sentence or phrase that better described each test item.

Table 5: Percentage accuracy scores for each adjective type in predicative and attributive use by the experimental and control groups

Group	Predicative use		Attributive use		Overall
	-ed **(n=10)**	***-ing*** **(n=10)**	***-ed*** **(n=10)**	***-ing*** **(n=10)**	
Elementary (n=20)	60%	38%	56.5%	40%	52.92%
Low-intermediate (n=19)	75.26%	50.53%	72.11%	43.68%	68.42%
High-intermediate (n=17)	93.53%	82.94%	88.24%	73.53%	85.57%
Native control (n=5)	100%	96%	98%	96%	97.5%

As can be seen in Table 5, all the three experimental groups were similar in terms of their performance on the two types of psych adjectives. That is, they had more difficulty recognizing *–ing* adjectives than *–ed* adjectives, as is the case for the PIT. A paired-samples *t*-test showed a significant difference between the two types of psych adjectives both in predicative and attributive use as identified by the three experimental groups ($p<.05$). The elementary group was significantly more accurate on *–ed* adjectives both in predicative use (60%, SE = 0.290) and in attributive use (56.5%, SE = 0.302) than on –ing adjectives both in predicative use (38%, SE = 0.247, $t(19) = -9.787$, $p = .000$) and in attributive use (40%, SE = 0.332, $t(19) = -4.204$, $p = .000$), respectively. The low-intermediate group was also more accurate on *–ed* adjectives both in predicative use (75.26%, SE = 0.407) and in attributive use (72.11%, SE = 0.330) than on *–ing* adjectives both in predicative use (50.53%, SE = 0.408, $t(18) = -5.776$, $p = .000$) and in attributive use (43.68%, SE = 0.232, $t(18) = -6.349$, $p = .000$), respectively. Similarly, the high-intermediate group was also more accurate on *–ed* adjectives both in predicative use (93.53%%, SE = 0.191) and in attributive use (88.24%, SE = 0.312) than on *–ing* adjectives both in predicative use (82.94%, SE = 0.268, $t(16) = -3.646$, $p = .002$) and in attributive use (73.53%, SE = 0.549, $t(16) = -2.498$, $p = .024$), respectively.

With respect to adjective positions, a paired-samples *t*-test bore no statistical difference between each type of adjective in predicative or in attributive use as identified by all three experimental groups ($p>.05$). The elementary group was not significantly more accurate on *–ed* adjectives in predicative use (60%, SE = 0.290) than on *–ed* adjectives in attributive use (56.5%, SE = 0.302, $t(19) = 0.892$, $p = .384$) or on *–ing* adjectives in attributive use (40%, SE = 0.332) than on *–ing* adjectives in predicative use (38%, SE = 0.247, $t(19) = -0.525$, $p = .606$). Similarly, the low-intermediate group did not perform better on *–ed* adjectives in predicative use (75.26%, SE = 0.407) than on *–ed* adjectives in attributive use (72.11%, SE = 0.310, $t(18) = 0.697$, $p =$

.494) or on *–ing* adjectives in predicative use (50.53%, SE = 0.408) than on *–ing* adjectives in attributive use (43.68%, SE = 0.232, $t(18) = 1.632$, $p = .120$). The high-intermediate group also showed no preference over either position. They were not significantly more accurate on *–ed* adjectives in predicative use (93.53%, SE = 0.191) than on *–ed* adjectives in attributive use (88.24%, SE = 0.312, $t(16) = 1.492$, $p = .155$) or on *–ing* adjectives in predicative use (82.94%, SE = 0.268) than on *–ing* adjectives in attributive use (73.53%, SE = 0.549, , $t(16) = 1.957$, $p = .068$).

As is the case in the PIT, the higher the learners' proficiency level was, the more they became accurate in recognizing psych adjectives both in predicative and in attributive use. However, no significant difference was observed between each type of adjective in predicative or in attributive as identified by the three experimental groups.

Individual analyses were conducted again on each participant's performance on the SIT in order to see whether the individual results corresponded to the group results presented in Table 5. The performance of each participant was divided into the following four acquisition patterns: (A) if the learner scored above 80% on both *–ed* and *–ing* adjectives, (B) if the learner scored above 80% on *–ed* adjectives, but below 80% on *–ing* adjectives, (C) if the learner scored above 80% on *–ing* adjectives, but below 80% on *–ed* adjectives, and (D) if the learner scored below 80% on both *–ed* and *–ing* adjectives. The analyses for psych adjectives in predicative use and attributive use are reported in Table 6 and Table 7, respectively.

Table 6: Performance on predicative psych adjectives of each participant in the three experimental groups

Group	Acquisition pattern			
	(A)	**(B)**	**(C)**	**(D)**
Elementary (n=20)	0 (0%)	3 (15%)	0 (0%)	17 (85%)
Low-intermediate (n=19)	2 (11%)	8 (42%)	0 (0%)	9 (47%)
High-intermediate (n=17)	13 (77%)	4 (23%)	0 (0%)	0 (0%)

Table 7: Performance on attributive psych adjectives of each participant in the three experimental groups

Group	Acquisition pattern			
	(A)	**(B)**	**(C)**	**(D)**
Elementary (n=20)	0 (0%)	2 (10%)	0 (0%)	18 (80%)
Low-intermediate (n=19)	0 (0%)	8 (42%)	0 (0%)	11 (58%)
High-intermediate (n=17)	9 (53%)	5 (29%)	1 (6%)	2 (12%)

Tables 6 and 7 suggest that the individual analyses were consistent with the group analysis in Table 5. As their proficiency increased, the participants acquired both predicative and attributive psych adjectives. It is worth noting that there was only one high intermediate participant who scored better on *–ing* than on *–ed* adjectives in attributive use, whereas the others who acquired either structure, be it predicative or attributive, had more difficulty recognizing *–ing* adjectives.

5. Discussion

To summarize the results of the two main tasks, all three experimental groups typically performed better on SE-like psych adjectives than on OE-like counterparts, confirming the study's hypothesis. The high-intermediate learners seemed to have little or no difficulty recognizing psych adjectives presented in either task, whereas the lower-proficiency groups were less consistent in their performance, often showing a preference for *–ed* adjectives over *–ing* counterparts. Such tendency can probably be accounted for by the Thematic Hierarchy; that is, whenever there was a hesitation between the two adjective types, they would likely choose the SE-like one that requires the more prominent thematic role, the Experiencer, rather than the hierarchically lower role, the Theme, as a sentential subject. Put differently, they occasionally overgeneralized *–ing* adjectives for *–ed* adjectives. The results borne out in the present study were also in line with those of previous studies in which participants were from various L1 backgrounds such as Chinese (Chen, 1997), Japanese (Sato, 2003, 2008; Suzuki et al., 2011; Hirakawa and Suzuki, 2014), French (Chen, 1997), and Spanish (Hirakawa and Suzuki, 2014).

Another possible explanation for the lower-proficiency learners' better performance on *–ed* adjectives than on *–ing* adjectives is that they relied on animacy as a cue to work out the argument structure of psych adjectives. Recall that the animacy variable was controlled in this study. That is, every sentential subject in the test items was animate. It is assumed that the learners often associated *–ed* adjectives with animate entities and *–ing* adjectives with inanimate entities. When the sentential subject was animate, they tended to prefer an *–ed* adjective to an *–ing* counterpart. This strategic decision might result from the fact that elementary or low-intermediate English textbooks often show examples of *–ed* adjectives with animate subjects and *–ing* adjectives with inanimate subjects (e.g. Craven, 2016).

As far as adjective position was concerned, predicative *–ing* and *–ed* adjectives were not more difficult than their attributive counterparts as witnessed among the three experimental groups. What was found in the present study went against Sato's (2008) results where L1 Japanese learners of L2 English had more difficulty recognizing predicative *–ing* adjectives than their attributive counterparts. Sato (2008) hypothesized that the Japanese participants might have thought that sentences like "John was irritating." needed an object, whereas the

form "*be* + *–ing*" did not appear in attributive use as in "a surprising guest". This is why her participants found it more difficult to accept predicative *–ing* adjectives. Such tendency, however, was not borne out in the current study.

Task effects were also observed in the present study. It is quite apparent from the results that all experimental groups performed more consistently and better in the PIT than in the SIT, albeit to a different extent. There were 12 out of 20 elementary participants who scored lower than 80% on both *–ed* and *–ing* adjectives in the PIT, but 17 and 18 of them scored below 80% on the predicative and attributive psych adjectives, respectively, in the SIT. An even greater discrepancy was witnessed among the lower-intermediate group; that is, all of them scored above 80% on both *–ed* and *–ing* adjectives in the PIT, but surprisingly 9 and 11 of them scored below 80% on the predicative and attributive psych adjectives, respectively, in the SIT. The high-intermediate group's performance was the most consistent since all of them scored above 80% on both *–ed* and *–ing* adjectives in the PIT and on the predicative psych adjectives in the SIT, whereas there were only two participants who scored below 80% on the attributive psych adjectives in the SIT. Recall that in the former task the learners were presented with a set of pictures and were asked to choose the better description for each picture, while in the latter task they had to interpret a set of sentences that described a situation before making a choice. Sentence length as well as vocabulary difficulty is assumed to have contributed to the poorer performance in the SIT than in the PIT. In addition, the picture stimuli presented in the PIT were more straightforward and less tricky than the written stimuli in the SIT. There were also a larger number of test items in the SIT than in the PIT. All these variables might have contributed to the stark difference in the elementary and low-intermediate learners' performance on the two tasks. By virtue of their higher proficiency level, the high-intermediate participants might have had more linguistic knowledge than the other two experimental groups, which resulted in their consistent performance in approaching both tasks.

Although psych adjectives posed a problem to the two lower-proficiency groups, the high-intermediate group, who represented endstate learners, seemed to acquire this L2 feature as they barely had any difficulty mapping the thematic arguments onto syntactic positions[5]. Following Chen's (1997) analysis, if L2 learners can recognize the causative meaning and the existence of the zero CAUS, they will truly acquire psych predicates in English. And in order to acquire the zero CAUS, the properties of OE predicates such as T/SM restriction and backwards binding should be investigated along with psych adjectives. If the learners have no difficulty recognizing *–ed* or *–ing* adjectives, but cannot notice the errors on the two structural properties of OE predicates, it suggests that they merely realize the causative meaning without understanding the bimorphemic nature of OE predicates, as argued by Chen (1997). Because the two properties of the zero CAUS were not investigated in the present study, a

question arises as to whether the participants acquired both the causative meaning and the zero CAUS or they merely employed a one-to-one morphological mapping strategy comparing the way *–ing* adjectives are formed in English to that in Thai to recognize their causative meaning.

6. Conclusion

To conclude, the L1 Thai learners in this study tended to place the Experiencer higher than the Theme, resulting in their preference for *–ed* adjectives over *–ing* adjectives. This suggests that they were somehow guided by universal principles (the Thematic Hierarchy and the UTAH). However, whether the fact that the high-intermediate participants seemingly acquired both types of psych adjectives can be accounted for by the acquisition of the zero CAUS or the one-to-one morphological mapping strategy is open to discussion.

This study also highlights several implications for the teaching materials on English psych adjectives. First, as L2 learners probably associate *–ed* adjectives with animate items and *–ing* adjectives with inanimate items, drills should be designed to emphasize the fact that *–ing* adjectives can also modify animate entities. In a similar vein, textbook writers should also be more careful in balancing the number of tokens regarding the total *–ed* and *–ing* adjectives that modify animate NPs. By virtue of this approach, misconceptions about selective modification can hopefully be reduced or eliminated. In addition, similarities and differences between the argument structures of Thai and English psych predicates, including verbs and adjectives, should be clearly pointed out to the L1 Thai learners, as this should allow them to better understand the semantic and syntactic features of psych predicates in both languages.

Since the number of participants in this study was rather limited, future research might need to require more subjects in order to generalize its findings. Also, different types of tasks such as listening comprehension could be used to obtain real-time data. Last but not least, in order to gain insight into how L1 Thai learners acquire psych adjectives, future studies should be done to investigate the syntactic properties related to OE psych predicates. These could possibly answer the question as to whether the learners truly understand the bimorphemic nature of OE predicates or not.

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Notes

1. Chen (1997) proposes that the zero CAUS changes the syntactic structure of the root to which it is affixed by means of adding the thematic role Causer (Theme) and that the zero CAUS is responsible for such unique syntactic properties of psych OE verbs as the T/SM restriction (*The movie is disappointing to John about his performance.) and backwards binding (The movie about himself is disappointing to John.). See Chen (1997) for further discussion.

2. According to Prasithrathsint (2000), verbs and adjectives in Thai belong to the same word class as they behave in the same way in many syntactic environments. Both are used as predicates, are modified for intensification and comparison, can occur in negative and imperative sentences, to mention but a few. She concludes that adjectives are virtually a sub-class of verbs in Thai, a language that lacks morphological marking.

3. Although in Thai there is an adjective-forming prefix attached to a verb to make an OE-like psych adjective, Thai is still characterized as a language that lacks the zero CAUS for the reasons mentioned in (2.1.2). Thus, the present study formulates the UG-based hypothesis predicting that –ing adjectives will be more problematic than –ed adjectives.

4. The animacy of sentential subjects in the test sentences was controlled in this study as it might be a variable affecting the results. For example, Chen (1997) found that –ing adjectives with animate subjects were significantly more difficult than –ing adjectives with inanimate subjects for her L1 Chinese subjects acquiring L2 English.

5. Although there were significant differences between their performance on –ed and –ing adjectives, their scores on both tasks surpassed 80%, a commonly accepted cut-off point for second language acquisition (Tarone, Gass, and Cohen, 1994).

Works Cited

Baker, M. (1988). Incorporation: a theory of grammatical function changing. Chicago: Chicago University Press.

Chen, D. (1997). L2 Acquisition of Psych Predicates by Native Speakers of Chinese and French. Doctoral Dissertation. McGill University.

Craven, M. (2016). Breakthrough plus level 2 student's book pack. London: Macmillan Education.

Hirakawa, M. and Suzuki, K. (2014). Is the dog 'frightened' or 'frightening'?: psych adjectives in L2 English by speakers of Japanese and Spanish. In R.T. Miller et al. (eds.) Selected Proceedings of the 2012 Second Language Research Forum. Somerville, MA: Cascadilla Proceedings Project.

Nakajima, H. (1995). Linking and Suppress-α. In Nakajima, H. & Otsu, Y. (eds.), Argument structure: its syntax and acquisition. Kaitakusha: Special Publications of the English Linguistic Society of Japan. 103-121.

Prasithrathsint, A. (2000). Adjectives as verbs in Thai. Linguistic Typology, 4(2), 251-272.

Roberts, I. (1989). Compound psych-adjectives and the ergative hypothesis. Proceedings of the 19th Annual Meeting of the North Eastern Linguistic Society. Amherst, MA: University of Massachusetts. 358−374.

Rovinelli, R.J. & Hambleton, R.K. (1976). On the use of content specialists in the assessment of criterion-referenced test item validity. Dutch Journal of Educational Research, 2, 49-60.

Sato, Y. (2003). Japanese learners linking problems with English psych verbs. Reading Working Papers in Linguistics, 7, 125-144.

Sato, Y. (2008). The effect of L1 in L2 acquisition of argument structure: with special reference to psych adjectives. 追手門学院大学国際教養学部紀要, 2, 43-60.

SPSS Inc. (2007). SPSS for Windows (Version 16.0). Chicago: SPSS Inc.

Suzuki, K., Kunikane, T., Yotsuya, A. and Hirakawa, M. (2013). Second language acquisition of English psychological adjectives by Japanese learners. 文教大学言語と文化, 25, 46-69.

Tarone, E. E., Gass, S. M., & Cohen, A. D. (1994). Research methodology in second language acquisition. Hillsdale, NJ: Lawrence Erlbaum.

UCLES. (2001). Quick placement test (version 2). Oxford, UK: Oxford University Press.

White, L. (2003). Second language acquisition and universal grammar. Cambridge: Cambridge University Press.

White, L., C. Brown, J. Bruhn de Garavito, D. Chen, M. Hirakawa and S. Montrul (1998). Psych verbs in second language acquisition. In Klein, E. and G. Martohardjono (eds.) The Development of Second Language

Grammars: A Generative Approach. Amsterdam and Philadelphia, PA: John Benjamins. 171-196.
Witoon, S. and Singhapreecha, P. (2012). Psych vs. causative: a view from Thai EFL learners. The First LITU International Graduate Conference Proceedings.161-167.