



Non-target-like Syntactic Representation: An Investigation of L2 English Article Substitutions by L1 Thai Learners

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This research explored L2 English article substitutions by L1 learners. The participants were two groups of advanced L2 learners from different L1 backgrounds, i.e., French and Thai, the former a language with articles, and the latter an articleless language. The tasks were a perception task, i.e., a grammaticality judgment task, and a production task, i.e., a forced-choice elicitation task. The results confirmed the hypotheses in that correct English article use in the Thai group was significantly lower than that in the French group in both perception and production ($p < .001$). Moreover, while appropriate L2 English article use in both perception and production in the L1 Thai group was rather low, that in the L1 French group was at high rates. The findings confirmed the Failed Functional Features Hypothesis (Hawkins, 2000, 2003) and contradicted the Missing Surface Inflection Hypothesis (White, 2003, 2017) in that, unlike the French learners, as definiteness was not grammaticalized in Thai, the Thai learners' representation was non-target-like and English articles were therefore unattainable.

Keywords: non-target-like syntactic representation, article substitutions, L2 English, L1 Thai learners

Introduction

Variability in second language (L2) functional morphemes, i.e., cases where these morphemes are omitted and/or substituted, has been widely investigated and is well-documented in second language acquisition (SLA) studies (Hawkins, Althobaiti, & Ma, 2014; Ellis, 2015; Lim & Hwang, 2019). Within the framework of Generative Grammar¹, two explanations have been proposed on causes of L2 variability of functional morphology although they are of opposing perspectives: the target-like and the non-target-like syntactic representation notions. Under the first view, L2 variability does not reflect a lack of competence in the learners' mental representation. The problems arise due to inappropriate mapping between syntactic representation and surface morphology (White, 2003, 2017). Based on this argument, the Missing Surface Inflection Hypothesis (MSIH) has been proposed to account for L2 variability. As far as the latter explanation is concerned, the causes of persistent variability are rooted in L2 incompetence, i.e., L2 functional morphemes are inaccessible in the learners' mental representation (Hawkins, 2000, 2003). Under this concept, the Failed Functional Features Hypothesis (FFFH) has been employed to explain the causes of L2 variability.

¹ Generative Grammar refers to "a system of rules that in some explicit and well-defined ways assigns structural descriptions to sentences" (Bagha, 2009, p. 291). Speakers have been claimed to excel in a Generative Grammar that addresses knowledge of their own language.

A functional morpheme type in English which has been shown to be a big obstacle among learners from various L1 backgrounds is articles. L2 learners have been found to omit articles (e.g., *The boy wanted to buy *blue ball*) as well as supply articles in inappropriate nominal contexts (e.g., *There is *the house* over there). Variability of L2 English articles is also a major problem among L1 Thai learners, as Lekawatana, Littell, Palmer, Scovel, and Spenser (1968) claimed that "... the misuse or omission of articles in English is probably more prevalent than any other single grammatical error in the speech of Thai students" (p. 96). Such variability among L1 Thai learners has also been reported from past to recent research (e.g., Alkazwini, 2016; Austin, Pongpairoj, & Trenkic, 2015; Isarankura, 2014; Lekawatana et al., 1968; Oller & Redding, 1971; Pongpairoj, 2015; Srioutai, 2001; Trenkic & Pongpairoj, 2013; Ubol, 1988).

Literature Review

Theoretical Background

Based on the explanation of target-like syntactic representation, L2 acquisition is completely under Universal Grammar (UG) (Chomsky, 1986). L2 learners possess an innate capacity through language faculty to acquire a language, irrespective of whether that language is their first language (L1) or their L2. In the case of SLA, even if particular functional morphemes are non-existent in the learners' native language, their mental representation is presumably intact and the acquisition of those grammatical morphemes can therefore be achieved. Variability in the L2 is therefore a surface problem resulting from inappropriate mapping between syntax in the learners' competence and morphology in their performance (White, 2003, 2017). The mental representation of L2 learners is thus assumed to be native-like. The MSIH, which is based on this explanation, has been used to justify the cause of L2 variability in many studies, for example, Mellati, Ashrafi, and Jeddi (2016), Kelly (2017), Mansbridge and Tamaoka (2018), and Aljadani (2019).

As far as the account of non-target-like syntactic representation is concerned, UG is postulated to play a partial role in SLA. L2 grammatical features existent in the learners' L1 can be acquired just like in the case of L1 acquisition. However, any functional category that does not exist in the learners' L1 will be unacquirable. In such a case, it is assumed that UG does not have any influence on acquisition, and the mental representation of the L2 learners is therefore impaired (Hawkins, 2000, 2003). The FFFH, which supports this concept, has been employed in a number of studies, such as Ghilzai (2017), Kunanupatham and Pongpairoj (2018), Peirce (2018), and Adejare (2019).

Definiteness

Definiteness, a universal linguistic category, exists in languages with and without articles. Definiteness can be categorized into grammatical and conceptual definiteness. According to Hawkins (1991), the definite article in languages with articles shows that "a referent exists and is unique in a pragmatically delimited set (or a P-set) in the universe of discourse mutually manifest to the speaker and the hearer on-line" (p. 414). That is, articles are employed as a syntactic category to express definiteness. This is referred to as grammatical definiteness and exists in languages with articles. In articleless languages, definiteness also exists in definite referents, but through context, not the syntactic category determiner (Lyons, 1994). This is referred to as conceptual definiteness and exists in languages without article systems.

English and French are inflectional languages (Ahn & Jang, 2019). Identifiability of nominal referents is syntactically encoded via articles. In contrast, Thai, an articleless language, is an isolating language. Nominals in Thai are usually bare nominals. Identifiability of nominal referents as definite or indefinite is context-dependent (Higbie & Thinsan, 2008; Iwasaki & Ingkaphirom, 2005). While English and French represent languages with grammatical definiteness, Thai is a language with conceptual definiteness.

Previous Research on L2 English Article Substitutions

A must-cited study on English article substitutions is Huebner’s (1983) classic research that has had great influence on later work on L2 English article substitutions. Based on Bickerton (1981), Huebner proposed the assignment of two binary semantic features for article use: [+HK], i.e., ‘assumed known to the hearer’ and [±SR], i.e., ‘specific referent’. The four semantic functions from the two binary features give rise to four nominal contexts which determine English article use, as shown in (1):

- (1) a. [-SR][+HK] (generics): *the, a(n)*; Ø (plural)
 - b. [+SR][+HK] (referential definites, i.e., unique referents and previous mentions): *the*
 - c. [+SR][-HK] (referential indefinites – first mentions): *a(n)* (singular); Ø (plural or non-count nouns)
 - d. [-SR][-HK] (non-referentials): *a(n)* (singular); Ø (plural or non-count nouns)
- (Huebner, 1983, p. 287)

Huebner conducted a longitudinal study to investigate an L1 Laotian speaker’s English article production. It was reported that, during the development of L2 acquisition, the definite article tended to be associated with [+HK] contexts.

A number of studies have adopted Huebner’s proposal of nominal semantic assignment of the binary features and English article use. For example, overgeneralization of the definite article with the [+HK] semantic features was reported in Master (1990), Chaudrin and Parker (1990), Young (1990), Geng (2010), as well as Hassan and Eng (2018). Contradictory findings, however, were obtained in that the [+SR] contexts tended to determine the use of *the*, such as in Thomas (1989) and Butler (2002). A study that found both directions of substitutions was Isarankura (2014), where high proficiency Thai learners tended to use *the* in [+HK] contexts and low proficiency ones employed *a(n)* in [+SR] environments. Although the findings in these studies showed some inconsistencies, what is noteworthy is that different semantic nominal features are assumed to account for L2 English article substitutions.

Later studies on L2 English article mis-suppliances explained non-native-like associations of article use with particular nominal features and concepts.

Trenkic (2002) explored English article substitutions by L1 learners of Serbian, an articleless language. The learners were reported to assign *the* to concrete and countable indefinite NPs, e.g., ‘computer’, and not to abstract countable, mass and plural definite nominal referents, e.g., ‘happiness’, ‘water’ and ‘trees’, respectively. Trenkic took this as evidence for an association between ‘identifiability’ and ‘imaginality’ with ‘definiteness.’ According to Trenkic (2002), to L2 learners, ‘discrete’ referents or referents precise in form were considered ‘identifiable’, and thus definite.

A study on L2 English article substitutions based on semantic features is Ionin, Ko and Wexler (2004). The research explored English article substitutions with L2 learners from two articleless languages, i.e., Korean and Russian. Based on UG, Ionin et al. proposed the Article Choice Parameter (ACP) with two cross-linguistic article semantic features; ‘definiteness’ and ‘specificity’. That is, in languages with two articles, the Definiteness setting or the Specificity setting is encoded, such as in English and Samoan, as shown in Table 1.

TABLE 1
Cross-linguistic Article Semantic Features ‘Definiteness’ & ‘Specificity’

[+def] cutting across [+spec] in languages encoding [+def]			[±spec] cutting across [±def] in language encoding [±def]		
	+def	-dec		+def	-dec
+spec	<i>the</i>	<i>a(n)</i>	+spec	<i>le</i>	<i>le</i>
-spec	<i>the</i>	<i>a(n)</i>	-spec	<i>se</i>	<i>se</i>

Ionin et al. (2004) assume that this cross-cutting nature of the two nominal features could give rise to misinterpretations and, thus, misuse of articles. For example, L2 learners from articleless languages could possibly relate English article use with ‘specificity’ and Samoan articles with ‘definiteness.’

Ionin et al. (2004) employed a forced-choice elicitation task (FET) where L2 learners from articleless languages, i.e., Russian and Korean, had to select articles they considered appropriate to contexts with combinations of the features ‘definiteness’ and ‘specificity’ in given dialogues. The findings showed that the learners tended to use an article based on specificity, rather than definiteness, i.e., overuse of *the* in [+spec] and *a(n)* in [-spec] contexts.

Some studies were based on Ionin et al. (2004). Xu and Snape (2016) employed a FET to explore English article choice by speakers of L1 Chinese. Consistent with the results of Ionin et al. (2004), article substitutions were also found possibly to be due to the learners’ associations between English articles and definiteness or specificity. Abudaljuh (2016) investigated English article substitutions by L1 Arabic learners of different English proficiencies. Article choices presumably based on definiteness and specificity were found among low proficiency learners, but not among the intermediate and the advanced groups. Chan (2019) explored English article errors among L1 Cantonese learners. The L2 learners tended to use the definite article for indefinite referents probably due to their confusion between specificity and definiteness.

In a similar vein, some studies accounted for L2 English article substitutions by interpreting the problems among L2 learners in light of L1 transfer effects, i.e., different encodings of (in)definiteness in the L1s and L2 English, for example, L1 speakers of Arab in Thyab (2016), L1 Persian learners in Momenzade and Youhanaee (2016), L1 Korean learners in Cho (2017), L1 Arab learners in Al-Qadi (2017) and L1 Chinese learners in Feng (2019).

Later data on L2 English article substitutions have been reported in corpus research. Crosthwaite and his colleagues conducted a series of corpus studies on English article substitutions. Crosthwaite (2016a) looked into English article use among L1 learners of different English proficiency levels from Mandarin, Korean, and Thai. The data were obtained from written essays from the International Corpus Network of Asian Learners of English or ICNALE (Ishikawa, 2001, 2013). The learners of all the L1 backgrounds and proficiencies were found to overuse *a(n)* and *the* in generic contexts, e.g., *‘the students need part time jobs’ (p. 94). Crosthwaite and Choy (2016) also employed data from the same corpus to explore English definite article use by speakers of L1 Tagalog, an articleless language. The results were in line with the aforementioned research. Investigating data from this corpus, Crosthwaite (2016b) also found that native Mandarin and Korean speakers had difficulty selecting English articles. Additionally, Leroux and Kendall (2018) investigated English article use by L1 Chinese learners via a corpus of Asian college EFL students and one of Chinese professionals in the US. The corpora showed overgeneralizations of articles in incorrect contexts.

The problems of L2 English article substitutions by L1 Thai learners have also been examined. Article substitutions were included as a problematic category in some research, for instance, Ubol (1988), Srioutai (2001), Pongpairoj (2002), and Isarankura (2014). To the best of my knowledge, there have never been any studies specifically exploring the problems of L2 English article substitutions by learners of L1 Thai, an articleless language, in relation to their syntactic representation, and making comparisons with L2 learners from a language with an article system. Based on the FFFH, this study will therefore fill this gap by investigating this variability problem with learners of L1 Thai and L1 French, an articleless language and a language with an article system, respectively.

Hypotheses

Based on the FFFH, English article substitutions are evidenced in both production and perception among L1 Thai learners due to non-target-like syntactic representation, but not among the L1 French speakers due to target-like syntactic representation. It is therefore hypothesized that:

- a. Correct English article use in the Thai group is significantly lower than in the French group in both perception and production.
- b. While appropriate L2 English article use in both perception and production in the L1 Thai group is at low rates, that in the L1 French is at high rates.

Methodology

The participants consisted of 2 groups: an L1 Thai and an L1 French group, with 30 participants each. They were either undergraduate or graduate students from several faculties at Chulalongkorn University in Thailand² and were classified into the advanced English proficiency level based on the Quick Oxford Placement Test (QOPT) (Syndicate, 2001). The participants were recruited through posters on “Call for Research Participants” on campus. They ranged in age from 18 to 22. The starting age for learning English was approximately 4-6. None had lived in an English-speaking country for more than 3 months.

Since the study focused on both L2 perception and production of English articles, the tasks employed were two elicitation tasks, i.e., a grammaticality judgment task (GJT) and a forced-choice elicitation task (FET).

The objective of the GJT was to look into the L2 learners’ linguistic competence. The GJT was considered appropriate for investigating the L2 learners’ mental representation of English articles as, according to Sorace (1985), “the learner’s interlanguage representations cannot be accessed directly, but only through her intuitions of grammaticality” (p. 240). Ellis (1990) also pointed out that data from the GJT could be employed for looking into L2 learners’ underlying syntactic representation. The GJT comprised 30 items which contained 12 test sentences and 18 distractors arranged in random order. Out of the 12 test items, 4 sentences were designed for each nominal context, i.e., definite & specific, indefinite & specific, or indefinite & non-specific. For each context, 2 items were on correct article use while the other two were on article misuse. Examples of items in the GJT are shown in 2a and 2b.

- (2) a. ___ I’ve got the computer in my bedroom. I always do my assignments on it.
- b. ___ When the man started his car, he found out that the battery did not work.

While the article was incorrectly used in (2a) as the indefinite article *a* had to be used for the [-def] [+spec] noun ‘computer’, the underlined definite article in (2b) was appropriately used for the [+def] [+spec] nominal ‘battery.’

The misjudgment items were assessed relative to the total number of nominal contexts for article use. The incorrect misjudgments were classified into misjudgment of both correct and incorrect article use based on the nominal contexts.

While the objective of the GJT was to access the learners’ syntactic representation of English articles, the FET was employed to look into the learners’ English article production. Consistent with the GJT, the FET was a discrete-item test, consisting of the same nominal context types. In each item, a short dialogue was designed for a particular nominal context. The learners read each dialogue and decided on *a(n)* or *the*. There were 12 items, with four items for each context type. Items consisting of each of the three contexts were arranged in random order. Examples of the test items from the FET are shown in 3a and 3b.

- (3) a. Laura: I bought ___ book on Artificial Intelligence last week.
John: How did you find it?
Laura: Very informative and thought-provoking. I’ve read 3 chapters already.

² Some French students were studying in an international program whereas others were exchange students for one or two semesters.

b. At a soccer match

Charles: Yeah! We won!

Henry: Every team member did a very good job, especially ___ goalkeeper.

In (3a), as the nominal context was [-def] [+spec], the indefinite article *a* had to be employed. In (3b), the context was [+def] [+spec] and therefore *the* was the correct article.

In both the GJT and FET, all the variables of the target noun phrases were kept constant in that they were singular and concrete.

The two tasks were verified for validity through the Index of Item-Objective Congruence (IOC), which was proposed and developed by Rovinelli and Hambleton (1976). The IOC was employed to assess task items with respect to appropriate and adequate knowledge measurement. The rating was executed by three experts. The criteria were as follows:

- (4) 1 point - The task item was considered compatible with the task objectives.
- 0 point - The task item was considered compatible or incompatible with the task objectives.
- 1 point - The task item was considered incompatible with the task objectives.

The scores were calculated according to the following formula:

$$(5) \text{ IOC} = \frac{\text{ER}}{\text{N}}$$

'ER' stands for the sum of the experts' scores and 'N' represents the number of experts. The scores from the three experts were added up and divided by the number of experts. The score for each task item had to be higher than 0.5 in order to be considered congruous with the objectives of the task. From the validity test, all the administered task items passed the IOC. That is, on average, the GJT scored 0.928, and the FET scored 0.936.

The original plan called for data collection to be administered to the participants individually and in person. However, due to the COVID-19 crisis, the university was closed and people were encouraged to comply with government guidelines to stay home for the country's safety and their own health, and therefore, the methodology plan was adjusted. Data were collected online from the individual participants by means of an E-Conference through Zoom Cloud Meetings. The QOPT was executed first to obtain 30 advanced Thai and 30 advanced French speakers of L2 English. Then, the researcher made an appointment with each individual learner to do the two tests.

The data were collected in a counterbalanced manner³. Half of the participants in each group were asked to do the GJT first, followed by the FET, and the order was reversed for the other half. The reason for this was to prevent a case of task effect. Such counterbalancing should provide a fair share between the two tasks and eliminate the claim that one task had more influence on the learners' article use than the other.

The researcher could see each participant online while s/he was doing each task. The researcher shared the task file on the computer screen so that the participants could see the test items. Then, the participants gave the researcher the answer to each test item orally⁴.

The data analyses were conducted in R (R Core Team 2019). The statistical approaches were an independent-samples t-test and an analysis of variance (ANOVA). An independent-samples t-test was conducted to determine (1) the (non-)significance of L2 English article perception between L1 Thai

³ A study with a counterbalanced research design systematically varies "either the order in which conditions are presented in the experiment or the assignment of stimulus materials to conditions" (Zeelenberg & Pecher, 2015). Counterbalancing is said to prevent the impact of nuisance variables in the research design, which optimizes the study's internal validity.

⁴ The methodology was approved by the Office of the Research Ethics Review Committee for Research Involving Human Subjects: the Second Allied Academic Group in Social Sciences, Humanities and Fine and Applied Arts, Chulalongkorn University.

learners and L1 French learners, as well as that of L2 English article production between the two learner groups, and (2) the (non-)significance of each L2 learner group's perception and production of English article use. As interesting data emerged later on different rates of article substitutions in the three nominal contexts (See 7), an analysis of variance (ANOVA) was conducted to compare article substitutions in the three nominal contexts in both the GJT and FET.

Results and Discussion

The proportions of scores (out of 360) and percentages showed that, for the L1 Thai group, both the appropriate judgment and usage of English articles were very low and at similar rates, i.e., 103 or 28.61% on the GJT and 104 or 28.89% on the FET⁵. In contrast, the L1 French speakers rarely substituted English articles in both the perception and production tasks, i.e., 355 or 98.61% on the GJT and 357 or 99.17% on the FET.

An independent-samples t-test was conducted in R (R Core Team 2019) to compare correct rates of English article usage on the GJT and the FET between the two participant groups, as shown in Table 2.

TABLE 2

Differences in Correct English Article Usage on the GJT and FET between Participants (Thai ~ French) via t-test

Task	df	SE	Effect size (Cohen's <i>d</i>)	t
GJT (Thai) ~ GJT (French)	35.740	0.213	10.174	39.406***
FET (Thai) ~ FET (French)	31.543	0.272	8.018	31.053***

Results from an independent-samples t-test showed that there were significant differences in both the GJT scores of the Thai group ($M = 3.43$, $SD = 1.104$) and the French group ($M = 11.833$, $SD = 0.379$); $t = 39.406$, $p < .001$, $d = 10.174$, and also the FET scores of the Thai group ($M = 3.467$, $SD = 1.456$) and the French group ($M = 11.9$, $SD = 0.305$); $t = 31.053$, $p < .001$, $d = 8.018$. The data therefore showed asymmetries in English article substitutions between the two L2 groups, i.e. correct choices of English articles on the Thai group were significantly lower than for the French group in both the GJT and FET. As English article substitutions were highly evidenced in both production and perception among the L1 Thai learners but not among the L1 French speakers, the results confirmed Hypothesis 1.

Appropriate English article substitution rates compared between tasks, i.e., perception from the GJT and production from the FET in each L2 group are shown in Table 3.

TABLE 3

Comparison of Appropriate English Article Perception and Production between Tasks (GJT ~ FET) in Each L2 Group via t-test

Task	df	SE	Effect size (Cohen's <i>d</i>)	t
GJT (Thai) ~ GJT (French)	54.072	0.334	0.026	0.01
FET (Thai) ~ FET (French)	55.469	0.0888	0.194	0.46

There was no statistically significant difference between the GJT and FET scores in the Thai group ($t = 0.01$, $p > .05$) nor in the French group ($t = 0.46$, $p > .05$) as determined by T-test. As correct L2 English article perception and production rates by the L1 Thai learners were low at non-significant levels and those by the L1 French learners were high at non-significant levels, Hypothesis 2 was supported.

In Thai, the category determiner is non-existent as the language does not possess an article system. Identifiability of referents, i.e., definiteness, is expressed in the language via context. In contrast, French

⁵ There were 12 test items (4 nominal contexts each) and 30 participants in each L1 group. The proportion of scores was therefore out of 360 for each task and each learner group.

is a language with formal markers of definiteness although the article system is different from the English system. Simply put, the language syntactically encodes a representation of definiteness through articles (see Section 3). However, such grammatical representation is non-existent in Thai as the category definiteness is conceptually signaled. Based on the theoretical notion of the FFFH, the L1 French learners were assumed to possess and were thus primed with target-like syntactic representation of definiteness, resulting in their appropriate judgment as well as selection of English articles in their perception (the GJT) and production (the FET), respectively. English articles, in other words, are syntactically-governed and thus acquirable for them. On the contrary, as definiteness is not encoded syntactically in Thai, the L1 Thai learners' grammatical representation of definiteness was assumed to be impaired, leading to their non-target-like mental representation of English articles. The learners' English article choices were assumed not to be motivated by syntax.

Summarizing so far, the findings demonstrated asymmetries in English article substitutions between the two L2 groups of different L1 backgrounds, i.e., significantly lower rates of correct English article use for the L1 Thai group than those for the L1 French group in both perception and production. In addition, it was also found that, while appropriate article usage rates for the Thai group were non-significantly low, those for the French group were insignificantly high. The results borne out by the data therefore seem to lend support to the FFFH, consistent with claims in the literature that L2 learners specifically from articleless languages usually face difficulties in the acquisition of English articles (e.g., Austin et al., 2015; Chan, 2019; Trenkic & Pongpaiboj, 2013).

The MSIH seems unable to account for the data. Based on the MSIH, mental representations of L2 learners, irrespective of whether their L1 backgrounds possess an article system or not, are target-like, and, in this case, they would be able to achieve native-like English article perception and production.

The findings contradict the theoretical concepts of the MSIH due to two reasons. Firstly, the MSIH cannot explain the asymmetric patterns of correct English article usage between groups, i.e., why the accuracy rates of English article perception and production for the L1 Thai group were quite low whereas those for the L1 French group were very high. The different rates of correct article usage between the two learner groups were found to be highly significant at $p < .001$ in perception as well as in production. If L2 learners of whatever L1 background possess target-like syntactic representation of definiteness according to the MSIH, such asymmetries of correct English article usage between groups should not have been evidenced. The second point contradicting the MSIH concerned rates of correct article use between perception and production in the Thai group and the French groups, which were non-significantly low and high, respectively ($p > .05$). As well, if L1 backgrounds were postulated not to be of no concern in SLA according to the MSIH, correct English article usage should have been at high rates in both perception and production in both participant groups, not just the French group. The findings therefore seem to suggest non-target-like syntax of the English articles among the L1 Thais, but target-like syntax among the L1 French.

Interesting data emerged on rates of correct perception and production with respect to the three nominal contexts, i.e., definite & specific, indefinite & non-specific, and indefinite & specific contexts.

There were 12 test items (4 nominal contexts each) and 30 participants in each L1 group. Therefore, the score for each nominal context was 120. For the Thai group, the results from both tasks showed that English article substitutions seemed to be evidenced in all three nominal contexts. Correct rates of article choice tended to be at the lowest rates in the [-def, +spec] contexts (20 % in the GJT and 16.68% in the FET). Correct rates of article usages in the other two contexts were quite low and seemed to be at consistent levels (35.83% on the GJT and 38.33% on the FET for the [+def, +spec] context, and 30% on the GJT and 31.68% on the FET for the [-def, -spec] context). For the French group, article usage was highly appropriate, and notably, article substitutions rarely occurred in all nominal contexts, i.e., 98.33 % in the [+def, +spec] and [-def, +spec] contexts, and 99.18% in the [-def, -spec] context on the GJT, and 99.18% in all the contexts on the FET, as shown in Table 4.

TABLE 4

Results on English Article Substitutions in the Three Nominal Contexts from the GJT and the FET by the L1 Thai and the L1 French Groups

Task	Score						
	Native Thai (N = 30)			Native French (N = 30)			
	Mean (raw)	Mean (ratio)	SD	Mean (raw)	Mean (ratio)	SD	
GJT	<i>the</i> [+def, +spec]	1.433	35.83%	1.073	3.933	98.33%	0.254
	<i>a</i> [-def, -spec]	1.200	30.00%	0.714	3.967	99.18%	0.183
	<i>a</i> [-def, +spec]	0.800	20.00%	0.714	3.933	98.33%	0.254
	Total	3.433	28.60%	1.104	11.833	98.61%	0.379
FET	<i>the</i> [+def, +spec]	1.533	38.33%	0.819	3.967	99.18%	0.183
	<i>a</i> [-def, -spec]	1.267	31.68%	1.015	3.967	99.18%	0.183
	<i>a</i> [-def, +spec]	0.667	16.68%	0.606	3.967	99.18%	0.183
	Total	3.467	28.89%	1.456	11.900	99.17%	0.305

An analysis of variance (ANOVA) was conducted in R (R Core Team 2019) on differences between the nominal context types and article use in the two L2 learner groups, as shown in Table 5.

TABLE 5

Differences in English Article Use among the Three Nominal Contexts in the Two L2 Learner Groups via ANOVA

Task	df	SE	Effect size (r^2)	F-statistics
GJT (Thai)	2,87	0.851	0.089	4.253*
GJT (French)	2,87	0.232	0.005	0.257
FET (Thai)	2,87	0.831	0.165	8.571***
FET (French)	2,87	0.183	< .001	< .001

* $p < .05$, ** $p < .01$, *** $p < .001$

An analysis of variance (ANOVA) on GJT scores of the L1 Thai participants yielded significant variation among the conditions: $F(2, 87) = 4.253$, $p < .05$, $r^2 = 0.089$. Meanwhile, there were no statistically significant differences among the French participants: $F(2, 87) = 0.257$, $p > .05$. As far as the FET is concerned, an analysis of variance (ANOVA) on scores of the Thai participants yielded significant variation among the conditions: $F(2, 87) = 8.571$, $p < .001$, $r^2 = 0.165$. There were no statistically significant differences among the French participants: $F(2, 87)$, $p > .05$.

As the analyses demonstrated significant variation among the three nominal contexts for the Thai group on both the GJT and FET, but not for the French group, a post hoc Tukey test was conducted on the GJT and FET scores for the Thai group, as shown in Tables 6 and 7, respectively.

TABLE 6

Post Hoc Tukey Test on GJT Scores in the Thai Group

	Mean difference between two groups	95 % Confidence interval	
		Lower bound	Upper bound
[-def, -spec] ~ [+def, +spec]	-0.233	-0.757	0.290
[-def, +spec] ~ [+def, +spec]	-0.633*	-1.157	-0.110
[-def, +spec] ~ [-def, -spec]	-0.400	-0.924	0.124

* $p < .05$, ** $p < .01$, *** $p < .001$

TABLE 7

Post Hoc Tukey Test on FET Scores in the Thai Group

	Mean difference between two groups	95 % Confidence interval	
		Lower bound	Upper bound
[-def, -spec] ~ [+def, +spec]	-0.267	-0.778	0.245
[-def, +spec] ~ [+def, +spec]	-0.867***	-1.378	-0.355
[-def, +spec] ~ [-def, -spec]	-0.600*	-1.111	-0.089

* $p < .05$, ** $p < .01$, *** $p < .001$

In Table 6, a post hoc Tukey test showed that the GJT scores in [-def, +spec] ($M = 0.8$, $SD = 0.714$) differed significantly from [+def, +spec] ($M = 1.433$, $SD = 1.073$) at $p < .05$. Table 7 demonstrates that the FET scores in [-def, +spec] ($M = 0.667$, $SD = 0.606$) differed significantly from [+def, +spec] ($M = 1.533$, $SD = 0.819$) at $p < .001$ and [-def, -spec] ($M = 1.267$, $SD = 1.015$) at $p < .05$.

The results therefore show that, in both perception and production, the L1 Thai learners made the highest rates of article substitution in the [-def] & [+spec] context while rates of article substitution in the other two contexts were at approximate levels.

It is worth exploring further why the different nominal contexts caused different rates of article substitution among the Thai learners. Based on the FFFH, such asymmetric patterns of article substitution in the three nominal contexts in both perception and production for the Thai group reflected the learners' deficit syntax. If the L1 Thai learners' grammatical representation were not impaired, irrespective of the particular context, they should have been able to judge and supply the appropriate indefinite and definite articles according to the contexts.

As mentioned, Thai does not have a functional equivalent of articles like in English. Due to the non-target-like syntactic representation of definiteness, L2 learners from languages without articles are assumed to have difficulties distinguishing and interpreting the features 'definiteness' and 'specificity'. They may resort to certain strategies in article choice: associating [+spec] environments with *the* (Butler, 2002) and [-spec] with *a(n)*. When a referent is considered specific, they may consider that the intention of the speaker to refer to "exactly one individual" and thus use the definite article (Ko, Ionin, & Wexler, 2010, p. 219). Along the same lines, when a referent is rendered non-specific, the speaker is assumed not to refer to any particular individual and, thus, the indefinite article is employed. Consider the following examples, (6a) from the GJT and (6b) from the FET:

- (6) a. It's windy today and so Jane's wearing a scarf to work.
 b. In a convenient store
 Shop assistant: Can I help you?
 Customer: I'm looking for (an, the) umbrella. It's raining heavily outside.
 Shop assistant: At the section on your left.

In (6a), the nominal 'scarf' is [-def] & [+spec]. There was a tendency for the L1 Thai learners to misjudge the use of the indefinite article. They possibly interpreted the speaker as referring to an individual and particular scarf and so chose to use the definite article. In a reversal, in (6b), the nominal 'umbrella' is [-def] & [-spec]. Many L1 Thai learners substituted *the* for *an*. It is assumed they considered the customer in the dialogue as referring to an individual and particular umbrella.

As mentioned in (3), the definite article is used to syntactically mark the existence and uniqueness of a nominal referent "in a pragmatically delimited set (or a P-set) in the universe of discourse mutually manifest to the speaker and the hearer on-line" (Hawkins, 1991, p. 414) (see also Ko et al., 2010; Trenkic, 2008). In other words, the definite and indefinite articles are used to syntactically encode identifiable and unidentifiable nominal referents, respectively. Rather than the connections between English articles with the feature 'definiteness', the L1 Thai learners possibly made a non-target-like association of 'specificity' with *the* and 'non-specificity' with *a(n)*. As Trenkic (2004) claimed, L2 learners from articleless languages tend to use *the* with a specificity of salient referents instead of identifiability of referents. Therefore, there is a tendency for specific indefinite nominals to be used with *the*, as confirmed by the lowest rates of correct English article use in this context in both perception and production by the Thai group.

The findings also seem to support the Article Choice Parameter (ACP) (Ionin et al., 2004), in which L2 English article substitutions by L2 learners from articleless languages associate English article use with 'specificity', leading to misinterpretations of *the* as 'specific' and, in a reversal, *a* as 'non-specific' rather than 'definite' and 'indefinite', respectively (See Section 4). Moreover, the use of *the* in indefinite & specific contexts seemed to be in line with results from previous studies in that the feature 'specificity',

rather than ‘definiteness’, tended to determine definite article use (e.g., Butler, 2002; Chan, 2019; Geng, 2010; Isarankura, 2014; Thomas, 1989; Trenkic, 2004).

The MSIH seems unable to account for such asymmetries of article substitutions by the Thai group. According to the MSIH, L2 learners, no matter whether their L1 possesses an article system or not, should be able to use correct articles according to different nominal contexts due to their target-like syntactic representation of definiteness. If the L1 Thai learners possessed correct grammar of definiteness, asymmetric rates of English articles in the three nominal contexts should not have occurred and English article choices should have been made according to the different nominal contexts as occurred among the L2 French group.

Conclusions

The findings demonstrate that, as definiteness in Thai is conceptual, the L1 Thai learners’ syntactic representation of English definiteness was possibly impaired, resulting in English article substitutions. In contrast, the L1 French learners’ grammar of English articles was assumed to be target-like due to grammatical definiteness in both French and English. The FFFH, not the MSIH, was therefore supported. The findings contribute to an existing debate in SLA on the causes of L2 variability of functional morphemes.

As far as pedagogical implications are concerned, teachers should be aware of such non-target-like syntactic representation due to the non-existence of L2 features in the L1. Emphasis could be made on students’ high exposure to authentic English article use to raise their awareness of associations between articles and (in)definiteness. As Chan (2016) puts it, (L2) learners should be alerted to differences in references as to different articles.

Some limitations of the study should be pointed out. Firstly, future research could be conducted on a larger scale in order to make conclusive claims. In addition, the tasks employed were both off-line tasks. Future research could compare and contrast L2 learners’ English article substitutions from similar tasks conducted online. Lastly, besides the production and perception tasks, interviews could also be employed to examine the learners’ concepts of English article use, which would supplement the implications in the study.

Acknowledgements

This research was supported by the Research Division of the Faculty of Arts, Chulalongkorn University, for which I am grateful. My sincere appreciation goes to some of my colleagues for their constructive comments of the manuscript. I also sincerely thank my research assistants, Supakit Thiamtawan, Sathaporn Kongkaew and Suthamas Wangdee for their great assistance.

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(Received May 27, 2020; Revised August 30, 2020; Accepted September 12, 2020)