

UNACCUSATIVE AND UNERGATIVE VERB VARIATION IN OVERPASSIVIZATION ERRORS: EXAMINING SPLIT INTRANSITIVITY HIERARCHY

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ABSTRACT

One of the most well-known errors in second language acquisition is overpassivization of intransitive verbs. Even though many theories have been proposed to explain the nature of second language (L2) acquisition, very few can explain the huge verb variation found in these studies. Sorace's Split Intransitivity Hierarchy was originally proposed to explain native speakers' auxiliary selection across unaccusative and unergative verbs. Verbs in the hierarchy are classified into "Core," "Less Core" and "Periphery" groups. Recently, this theory has been extended to explain L2 learners' acquisition of intransitive verbs. The current study re-examined overpassivization errors among L2 Mandarin learners with three different proficiency levels by looking at whether the error numbers they produced conform to the predictions of Sorace's Split Intransitivity Hierarchy and Perlmutter's Unaccusative Hypothesis. Participants were asked to describe pictures using target intransitive verbs, including both unaccusative and unergative verbs. The results were in support of Sorace's hypothesis. Subjects produced significantly more errors in "Periphery" and "Less Core" categories than in the "Core" category. In addition, the results of the experiment also supported the Unaccusative Hypothesis.

Keywords: Overpassivization, Unaccusative verbs, Unergative verbs, Split Intransitivity Hierarchy

1. INTRODUCTION

1.1 Overpassivization Errors

Establishing the link between morphosyntax and argument structure can be a complex and error-prone process in learning a second language (L2) (Pinker 1989; Sorace 1995). Of all the second language production and comprehension errors, one type has drawn the attention of linguists and second language researchers for decades. These errors include “What is happenend...,” “The rock was fallen...,” “The girl was disappeared...,” or “They wanted to disappear us.” Most of these errors involve overpassivization of intransitive verbs, especially unaccusative ones. Overpassivization errors like these have been well documented in the second language acquisition literature and are found in English learners with different first language backgrounds (e.g., Mandarin, (Ju 2000; Mo 2014; Yip 1995); Japanese, (Hirakawa 2001); Korean (Kim 2014); Spanish, (Montrul 2006); Turkish, (Montrul 2001)). In addition, these errors have also been found in the oral and written production of not only lower and intermediate learners but also advanced learners (Ju 2000; Kim 2014; Kondo 2005; Kong 2017; Su 2008; Yip 1995; Zobl 1989). It seems that despite years of study, advanced learners cannot eradicate this kind of mistake completely.

A closer inspection of these errors reveals several important characteristics concerning syntax and thematic role relationship. First, the verbs that L2 learners used in these sentences are intransitive verbs. Second, unlike agent roles in the sentences, subjects of these sentences are patient roles in the thematic role relationship where the noun phrase is the undergoer of the action or event denoted by the predicate. Third, second language learners seem to apply the argument structure of passive constructions to sentences containing intransitive verbs. Before we discuss overpassivization errors more in depth, we need to first examine the distinction between transitive and intransitive verbs.

1.2 Syntactic Accounts

One of the major differences between transitive verbs and intransitive verbs lies in how many arguments a verb can take. For transitive and ditransitive verbs, they take two arguments and three arguments, respectively, such as “Tom hit his brother” and “Tom gave his brother a ticket.” For intransitive verbs,¹ since they do not take an object, there is only one argument, such as “The student ran.” Intransitive verbs have been further divided into two different categories. For instance, Burzio (1986) and Keyser and Roeper (1984) divided intransitive verbs into ergatives and unergatives. Simple intransitive verbs like “sing” or “eat” are called “unergatives” while others like “fall, happen and break” are called “ergatives.” Perlmutter’s Unaccusative Hypothesis (Perlmutter 1978), however, classified intransitive verbs into unaccusatives and unergatives. According to the Unaccusative Hypothesis, even though both unaccusative verbs and unergative verbs are subcategorized for a single argument, which appears at the subject position, where this argument originates is a major issue. According to the Unaccusative Hypothesis, the argument in unaccusative verbs originates from the object position and then is moved to the subject position via syntactic movement. On the other hand, the single argument of the unergative verbs does not move from the object position. Instead, it is base-generated at the subject position, thus involving no syntactic movement. Examples of unaccusatives include verbs like ‘appear,’ ‘break,’ ‘happen,’ ‘sink,’ ‘vanish,’ etc.” and unergative verbs include ‘dance,’ ‘fly,’ ‘jump,’ ‘laugh,’ ‘speak,’ ‘paint,’ ‘run,’ etc.” Note, however, that a closer inspection of the unaccusative verbs reveals that there are two further categories within them. Some of the unaccusative verbs have transitive counterparts (alternating unaccusatives) while others don’t (non-alternating unaccusatives). For example, “sink” is a verb that can be used either as a transitive verb or an intransitive verb. When used as a transitive verb, “sink” can be used as in “The captain sank the boat.” In this example, the agent “the captain”

¹ Note that even though intransitive verbs do not take an object, there is one exception. When the subject position is occupied by “there” and the object is indefinite, English allows sentences like “There comes a student.”

causes the patient “the boat” to sink. “Sink” can be used as an intransitive verb such as in “The boat sank.” In this example, “the boat” is the theme but is moved to the subject position. Alternating unaccusatives include ‘melt,’ ‘close,’ ‘dry,’ ‘fracture,’ ‘hang,’ ‘move,’ ‘open,’ ‘roll,’ etc. Non-alternating unaccusative verbs include “appear, arise, disappear, emerge, erupt, etc.”

In addition to defining unaccusatives and unergatives from a syntactic perspective, the thematic roles of their single arguments also differ. Consider the following two sentences containing an unergative verb and an unaccusative verb, respectively: “The student ran” and “The student disappeared.” In “The student ran,” the thematic role of “the student” is agent. However, in “The student disappeared,” the thematic role of “the student” is theme. Fillmore (1968) analyzed the unergative verbs as “active” and unaccusatives verbs as “inactive.” Following Fillmore (1968), Holisky (1987) gave a summary of the characteristics of unaccusatives and unergatives. For unaccusatives, their characteristics include “non-agentivity, involuntary participation, no control and passivity.” For unergatives, they include “agentivity, voluntary participation, control and activity.” These characteristics have indicated that “agentivity” can be seen as the crucial notion that distinguishes unergatives from unaccusatives.

The mapping between theta-roles (agent, theme/patient) and grammatical relations (subject, object) in these sentences is not as straightforward as it appears to be. In a sentence containing transitive verbs like “The student hit his brother,” “The student” is the subject whose theta role is agent. “His brother” is the object and its theta role is patient. This “agent-subject” and “theme-object” mapping is a typical and canonical one in many languages, such as English and Mandarin. However, difficulties arise with respect to intransitive verbs. In sentences like “The student ran,” the student is the agent while it is the theme in “The student disappeared.” To sum up, even though “the student” occupies the subject position, its thematic role changes depending on the verb in the sentence: agent (transitives and unergatives) and theme (unaccusatives).

One thing that adds to the already confusing and difficult situation in learning intransitive verbs involves passive constructions. Examine the following errors made by Mandarin L2 learners.

- (1) Errors made by L2 learners
 - a. *The accident was happened yesterday.
 - b. *Most of the senators were arrived.
- (2) English passives
 - a. The accident was reported by the reporter.
 - b. Most of the senators were arrested.

Examples (1) and (2) illustrate L2 learners' overpassivization errors and English passive constructions. These examples show that overpassivization errors bear much syntactic resemblance to English passive constructions. On the surface, both kinds of construction show non-canonical mapping between thematic roles and grammatical relations. That is, neither the logical subject nor the logical object appears in their canonical positions. Nevertheless, note that only transitive verbs in English can be passivized. Given the similar constructions illustrated above, it is possible that L2 learners may treat unaccusative verbs as transitive verbs; this is especially true for unaccusative verbs with transitive counterparts, as Yip (1995) has proposed. For alternating unaccusative verbs like "break," there are two ways to construct a sentence out of this verb:

- (3) a. I broke the window.
 - b. The window broke.

For alternating unaccusative verbs, L2 learners sometimes create sentences like "the window was broken," which, although is not completely ungrammatical, is sometimes a bit unnatural. Overpassivization errors do not just occur in alternating unaccusative verbs. In fact, many overpassivization errors are found in non-alternating unaccusatives as well. Examine the following examples using verbs like "disappear" and "happen."

- (4) a. *The woman disappeared her bag. (Similar to SVO construction)
 - b. *The audition was happened yesterday. (Similar to passive construction)

Example (4a) shows that an object was placed behind the unaccusative verb, making it look like a canonical SVO construction. In Example (4b), the unaccusative verb “happen” was passivized and the construction looks like an English passive construction. These two examples illustrate that L2 learners may also treat non-alternating unaccusative verbs as transitive verbs. When an object is moved to the subject position, L2 learners would mark it with passive morphology.

Even though Yip’s hypothesis seems to account for L2 learners’ errors, other researchers like Zobl (1989) found that her hypothesis does not seem to explain other types of errors in L2 learners’ production. Consider the following examples from Zobl (1989: 204).

- (5) a. *I was just patient until dried my clothes.
b. *Sometimes comes a good regular wave.

Example (5) cannot be explained by Yip’s hypothesis since the internal argument, instead of moving to the subject position of the sentence, stays in situ. Instead of considering overpassivization errors as a matter of lexical misjudgment, Zobl (1989) tried to look at the errors from a syntactic perspective. Zobl (1989: 217) argued that “...if the lexical ergative (unaccusative) rule and passive morphology both produce the same representation, then there exists another logical possibility - to overgeneralize the lexical ergative (unaccusative) rule.” That is, if L2 learners treat unaccusatives as transitive verbs, it is very likely they will overgeneralize the unaccusative verbs. Zobl searched for instances like “Her nerves frazzled” and “the crops damaged” in the L2 corpus (a corpus with 3,362 L2 learners’ essays) but did not find a single instance of it. Therefore, since L2 learners do not overgeneralize the rule, it suggests that L2 learners do not seem to treat unaccusatives as transitive verbs. Following Perlmutter’s hypothesis, Zobl assumed that the argument of the unaccusative verb originates from behind the verb. L2 learners therefore need to learn the lexical rule of moving the internal argument from the postverbal position to the preverbal position. Since English passive rules are one of the most important rules for L2 learners and they require moving its argument to the subject position, this NP movement lexical rule of unaccusative verbs will be subsumed under the passive construction

rule once L2 learners acquire them. Note that even though Zobl's analysis could explain L2 learners' overpassivization errors, it still does not seem to explain Example (5), where learners fail to move the internal arguments to the subject position if they have subsumed the syntactic rule of unaccusative verbs under that of passive constructions.

Unlike Yip and Zobl, who tried to account for overpassivization errors from syntactic and lexical perspectives, Oshita's (2001) Unaccusative Trap Hypothesis accounts for the developmental progression of unaccusative verbs among L2 English, Japanese and Mandarin learners. Following Levin and Rappaport Havav (1995), Oshita argued that the semantic characteristics of verbs are described in Lexical-Semantic Representation (LSR) and the argument structures are described in Argument Structure Representation (ASR). When mapping the Lexical-Semantic Representation (LSR) and the Argument Structure Representation (ASR), certain linking rules are required. These linking rules include the "Immediate Cause Linking Rule," "Directed Change Linking Rule" and "Existence Linking Rule." These rules map the verb's LSR to its ASR.

According to Oshita's Unaccusative Trap Hypothesis, although L2 learners have not acquired the correct target linking rule in the first stage, they will still produce superficially target-like NP-V orders. The initial correct form of unaccusative production will be followed by errors in the second stage, where L2 learners misanalyze the structures, producing many errors at this stage. Finally, at the third stage, a reorganization of the syntactic components in the interlanguage is finished, leading to the correct production of the unaccusative verbs. In sum, Unaccusative Trap Hypothesis predicts a U-shaped pattern in L2 learners' data. Montrul (2004) tested Oshita's Unaccusative Trap Hypothesis on three groups of Spanish L2 learners of English. The results only partially supported Unaccusative Trap Hypothesis since the lower proficiency group did not distinguish between unaccusatives and unergatives. Sensitivity to different representations of unaccusatives and unergatives starts to emerge at the intermediate level.

In addition to the lexical, syntactic and semantic hypotheses mentioned above, researchers like Ju (2000) analyzed overpassivization errors of unaccusative verbs from the perspective of cognitive factors. Ju

hypothesized that externally caused events are more likely to cause L2 learners to make overpassivization errors than internally caused events, as illustrated by the following examples.

- (6) Alternating unaccusative: Externally caused event
 - a. Heavy trucks put more and more pressure on the bridge.
 - b. It (broke/was broken) gradually.
- (7) Alternating unaccusative: Internally caused event
 - a. The wooden bridge was very old.
 - b. It (broke/was broken) gradually.
- (8) Non-alternating unaccusative: Externally caused event
 - a. The police were called in to remove a strange package.
 - b. The package (disappeared/was disappeared) immediately.
- (9) Non-alternating unaccusative: Internally caused event
 - a. The wooden bridge was very old.
 - b. The package (disappeared/was disappeared) immediately.

Examples (6) to (9) represent alternating and non-alternating unaccusative verbs in Ju's study. In each pair of examples, Mandarin English learners were given either externally caused events (e.g., (6a) and (8a)) or internally caused events (e.g., (7a) and (9a)). Ju hypothesized that if cognitive factors like external events play a role in L2 interlanguage, L2 learners are more likely to produce errors in externally caused events than in internally caused events. Results of forced-choice questions like the above confirmed Ju's hypothesis. More overpassivization errors were elicited in externally caused events than in internally caused events in both alternating and non-alternating unaccusative verbs. Kondo (2005) tried to replicate Ju's study by recruiting typologically different groups of L2 learners: Japanese and Spanish speakers. However, results of Kondo's study did not yield any statistical difference between externally caused events and internally caused events in either Japanese L2 learners or Spanish L2 learners. In other words, externally caused events did not prompt L2 Japanese or Spanish learners to make more errors than internally caused events.

To date, many studies have examined overpassivization errors using typologically different first languages (e.g., Mandarin (Mo 2014, 2020),

Japanese (Kondo 2005), Korean (Kim 2014; Pae et al. 2014), Spanish (Kondo 2005, Montrul 1999, 2004, 2005)), from different theoretical proposals and with different methodologies (self-paced reading, grammaticality judgment, picture description, cloze passage, etc.). Regarding Mandarin studies on unaccusatives, Yuan (1999) and Wong (2020) looked at how English native speakers acquire Mandarin unaccusative verbs in picture-description and grammaticality judgment tasks. Chung (2014), Ju (2000), Mo (2014, 2020), Yip (1995) and Balcom (1997) looked at how Mandarin native speakers learn English unaccusative verbs in tasks such as acceptability judgment and forced-choice questions tasks. However, results of these studies are either sometimes conflicting or sometimes offer an incomplete picture. One thing that deserves researchers' attention is within-class error variation across unaccusative and unergative verbs. A closer examination of the error numbers across these typologically different studies revealed that some verbs consistently prompted L2 learners, across different proficiency levels, to make more overpassivization errors while other verbs induced fewer errors. For example, Ju (2000) tested twelve alternating unaccusative verbs and five non-alternating unaccusative verbs. The results showed that there is huge variation in the number of errors among the verbs used in unaccusatives and unergatives. For alternating unaccusative verbs, L2 learners made more overpassivization errors in verbs like "close, break, freeze, etc." and they made much fewer errors in verbs like "grow, decrease, etc." For non-alternating unaccusative verbs, there were more errors in verbs like "vanish and emerge" and fewer errors in "appear and die." In Kondo's replication of Ju's study, the results also showed much variation among the verbs, across the two subclasses. Other studies that have shown much verb variation in overpassivization errors include Kim (2014) and Pae et al. (2014).

1.3 Semantic Account

The difference in the error number among intransitive verbs cannot be accounted for by the syntactic theories we have discussed so far. However, it is still an important issue since it begs the question of why L2 learners overpassivize some intransitive verbs more than others. To some researchers, the distinction between unaccusatives and unergatives can be accounted for from a semantic point of view (Dowty 1991; Van Valin 1990; Sorace 1993a, 1993b). For example, Sorace's (1993a, 1993b, 1995, 2011) Split Intransitivity Hierarchy divides intransitive verbs into different subclasses based on agentivity and telicity. Sorace examined the unaccusative verbs and unergative verbs in many Western languages, including French, Italian, Dutch and German, and found similar patterns of auxiliary selection across these languages. There seems to be a continuum of gradients or a hierarchy of auxiliary selection for these verbs. Table 1 illustrates Split Intransitivity Hierarchy.

Table 1. Split Intransitivity Hierarchy

Change of location [Directed motion]	(arrive, leave) (rise, ascend, descend, advance)	Core	Unaccusative
Change of state	(wilt, become, bloom, decay, rot)	Less Core	↓ (more variation)
Appearance	(appear, disappear, happen, arise)	Periphery	
Continuation of preexisting condition	(stay, remain, suffer, continue)	Periphery	↑
Existence	(exist, suffice, vanish, be, belong, seem, please)	Periphery	
Uncontrolled process [Emission]	(rattle)		
[Involuntary reaction]	(tremble)	Periphery	
Controlled motional process	(swim, run)	Less Core	
Controlled nonmotional process	(work, thrive, talk)	Core	Unergative

The order of this hierarchy is arranged according to a combination of agentivity and telicity. Agentivity refers to whether the verb requires an agent. Telicity refers to whether there is an inherent endpoint, ranging from strongly telic (e.g., change of location) to stative (e.g., existence). Unergative verbs like “work” and “swim” usually require an agent and are atelic while unaccusative verbs like “arrive” and “disappear” are usually nonagentive and telic. At the two extremes of this hierarchy lie the core verbs of unaccusative verbs and unergative verbs. These core verbs denote “a change of location” in unaccusative verbs and “controlled nonmotional process” in unergative verbs. What lies between the two core verbs are “less core” and “peripheral” verbs. The difference between core verbs and peripheral verbs is that core verbs are invariant with respect to auxiliary selection among native speakers and peripheral verbs are more flexible in their selection of auxiliary. Change-of-location verbs are verbs that express the highest level of dynamicity since they involve a change of

location from one place to another. This category of verbs includes verbs like “arrive, come, depart, etc.” and they tend to go with auxiliary BE but not auxiliary HAVE across Western European languages consistently. The selection of the auxiliary BE is rather stable in the core category. However, the auxiliary selection becomes less stable when it comes to verbs in the middle parts of the hierarchy, such as verbs of continuation of preexisting condition and verbs of existence. For these categories, it is more likely for native speakers, of Italian for example, to select auxiliary HAVE, even though auxiliary BE is still the preferred one most of the time. What needs to be noted is that verbs of existence display the most variation on the hierarchy.

On the other end of the hierarchy lies another group of verbs associated with process: verbs of uncontrolled process, of controlled motional process and of controlled nonmotional process. Unlike verbs of transition and states that tend to select auxiliary BE, verbs of processes tend to select auxiliary HAVE. Despite using a different auxiliary, this group of verbs also shows an orderly variation. For example, verbs of controlled nonmotional process show more consistency in choosing HAVE. More variations start to appear with verbs of controlled motional process and the most variations are seen in verbs of uncontrolled process, such as emission and involuntary reaction.

Within-class verb variation in Split Intransitivity Hierarchy can be used to account for first language and second language acquisition of unaccusative verbs and unergative verbs, from the perspective of Split Intransitivity Hierarchy in Spanish and Japanese (Bever and Sanz, 1997; Montrul, 2004; Sorace and Shomura, 2001).

Bever and Sanz (1997) used a probe recognition task to examine L2 learners' online processing of Spanish unaccusative and unergative verbs. One of their goals was to investigate whether Sorace's Split Intransitivity Hierarchy can be used to predict L2 processing of these intransitive verbs. The rationale is that if the hierarchy is real, L2 learners' processing of unaccusative verbs for “core” verbs will be faster or shorter than for “less core” or “peripheral” verbs. The results of Bever and Sanz were mixed, however. It showed that sequence-sensitive subjects, those whose performance was facilitated by unaccusative trace, spent significantly less time on unaccusative verbs than on unergative verbs. However, for

sequence-insensitive subjects, the results showed the opposite pattern: they spent less time on unergative verbs than on unaccusative verbs. Montrul (2004) tried to replicate Bever and Sanz's study and her results showed that "both L1 and L2 learners "showed shorter reaction times for core unaccusatives than core unergatives and either the same pattern, the opposite pattern or no difference among verbs for the less core and peripheral classes. Therefore, the prediction for the core versus the noncore classes of unaccusative and unergative verbs was borne out by the data" (p. 261). One important aspect that was raised in Montrul's study was that although the native and nonnative speakers processed core unaccusatives faster than noncore verbs, the periphery verbs were processed more like core verbs. In conclusion, Montrul cited Sorace's response by stating that not all languages treat the subclasses in the hierarchy the same. Some of the subclasses might merge and thus form a special distinction within individual classes.

In another study, Montrul (2005) examined native and nonnative Spanish speakers' grammaticality judgment in Spanish passive unaccusatives and passive unergatives, which are both ungrammatical constructions. The nonnative speakers in this study included low, intermediate and advanced learners. Both native and nonnative speakers used a Likert Scale to indicate whether the sentence stimuli were grammatical or not. The results revealed that advanced learners behaved much like native speakers, rejecting most of the sentences, regardless of the semantic subclasses in the hierarchy. Low and intermediate learners' performances were similar. For core unaccusative and unergative verbs, intermediate learners assigned lower ratings, meaning the sentences were ungrammatical. However, for less core and periphery verbs, their ratings went up quite a lot, suggesting that intermediate learners were more likely to accept the passivization of less core and periphery verbs. This pattern is also observed in unergative less core and periphery verbs. For low learners, they assigned high ratings to most of the verbs, across different semantic subclasses.

Montrul's follow-up study (2006) used a grammaticality judgment task and online visual probe recognition task to test Spanish and English native and bilingual heritage speakers' processing of both English and Spanish unaccusative and unergative verbs. In the Spanish grammaticality

judgment task of passivized unaccusatives and unergatives, the bilingual speakers were found to rate less core and peripheral unaccusatives and peripheral unergatives more acceptable than native speakers. Similar patterns can be found in the English grammaticality judgment task. Spanish-English bilinguals rated periphery unaccusatives, less core and periphery unergatives more acceptable than core unaccusative and unergative verbs. In the Spanish probe recognition task, native and bilingual speakers showed faster reaction times to core and periphery unaccusative verbs than less core ones. The results seemed to differ in the English recognition task, where there was a linear decay of reaction times from core verbs to periphery verbs.

Finally, Sorace and Shomura (2001) examined Japanese native speakers, post-beginning and intermediate English learners' sensitivity of Japanese unaccusative-unergative distinction based on the Split Intransitivity Hierarchy. In Japanese, there are six kinds of diagnostics to judge whether an intransitive verb is an unaccusative verb or an unergative verb. Sorace and Shomura examined whether native and nonnative speakers of Japanese accept quantifier floating to go with unergative and unaccusative verbs in Japanese. Their results showed that both L1 and L2 speakers' results in unergative verbs conform to Split Intransitivity Hierarchy predictions. Their participants' results in unaccusative verbs, however, did not conform to the hierarchy's prediction, which, according to Sorace and Shomura, might be due to the syntactic optionality of unaccusative verbs. Since their existence is optional, it may pose difficulty to learners.

So far, studies on Western European languages have found that native speakers are sensitive to the selection of auxiliary, which conforms to Split Intransitivity Hierarchy. This difference in the gradient of hierarchy of intransitive verbs does not reflect only on the auxiliary selection or on first language acquisition. It is also manifested in languages involving no auxiliary selection, such as Spanish, and in nonnative speakers as well. Nevertheless, the results of nonnative speakers were not as clear cut. In Montrul's study (2006), both L1 and L2 speakers showed faster reaction times to Spanish core and periphery unaccusatives than less core verbs (experiment 3). However, reverse patterns seem to be observed in English, where faster reaction times seemed to occur in periphery verbs than in core

and less core verbs (experiment 4). Besides, even though Sorace and Shomura's study did not find support for unaccusative verbs, their results in unergative verbs can be used to support Split Intransitivity Hierarchy. Two important points can therefore be concluded from these different studies. First, verbs within unaccusative and unergative categories are not uniform. Second, participants' different performances within each type of intransitive cannot be accounted for by syntactic accounts such as Perlmutter's Unaccusative Hypothesis since the NP either moves from behind the verb as in unaccusatives or is base-generated as in unergatives. Even though results from the previous L2 studies were in general in support of the Split Intransitivity Hierarchy, there are still many missing pieces in understanding the puzzle of unaccusative and unergative verbs. For example, the Split Intransitivity Hierarchy states that the closer a verb is to the core, the stronger the link between its single argument and the position of internal or external argument, and the more determinate its syntactic status as either unaccusative or unergative. If this is true, why did less core verbs behave differently than core and periphery verbs in Montrul's study (2006)? The current study attempted to re-examine both the Split Intransitivity Hierarchy and Unaccusative Hypothesis by looking at the overpassivization errors among Mandarin L2 learners. If Sorace's theory can be used to predict Mandarin L2 learners' number of errors, it can be used to explain the verb variation in previous studies (e.g., Kondo (2005) versus Ju (2000)).

1.4 Research Questions

The research questions that the current study aimed to investigate include: First, are there more overpassivization errors in unaccusative verbs than in unergative verbs? Did Mandarin L2 learners of English with different proficiency levels produce different amounts of errors? Previous studies (e.g., Bever and Sanz (1997) and Montrul (2004)) have looked at processing difficulties among L2 learners but their results were mixed and inconclusive. So far, Perlmutter's Unaccusative Hypothesis and Sorace's Split Intransitivity Hierarchy can be used to distinguish between unaccusatives and unergatives. The Unaccusative Hypothesis analyzed them from a syntactic movement perspective and Split Intransitivity

Hierarchy from an agentivity perspective. According to Perlmutter's Unaccusative Hypothesis, the difference between unaccusatives and unergatives lies in where the single argument originates. For unaccusative verbs, their single argument comes from the position behind the verb while for unergative verbs, their single arguments are derived in situ. Thus, if Perlmutter's Unaccusative Hypothesis is correct, we can predict that there will be more errors in acquiring unaccusative verbs than in unergative verbs. According to Sorace's Split Intransitivity Hierarchy, only unergatives require an agent while unaccusatives do not. If L2 learners assume that an agent should occur at the subject position, we should observe more errors in acquiring unaccusatives than unergatives. Moreover, if there are different numbers of errors between unaccusatives and unergatives, we would like to examine the numbers of errors across different proficiency levels.

Second, for unaccusative verbs, are there more errors in alternating unaccusatives than non-alternating ones? This research question was designed to examine unaccusative verbs only. Even though previous studies have looked at overpassivization errors using both alternating and non-alternating unaccusative verbs, they did not aim to examine their differences (e.g., Ju (2000)) and therefore the number of verbs between unaccusatives and unergatives were imbalanced (Ju, 2000; Kondo, 2005). For example, in Ju's study, there were thirteen verbs for alternating unaccusative verbs but only five non-alternating ones. Yip (1995) argued that L2 learners potentially treat unaccusatives as transitive verbs and therefore, after they learn the rules for forming passive constructions, they tend to overpassivize unaccusative verbs. If this is true, alternating unaccusative verbs will induce more overpassivization errors among L2 learners than non-alternating unaccusative verbs.

Third, are there significant differences in overpassivization errors across different subclasses, "Core," "Less Core" and "Periphery," of unaccusative and unergative verbs? Do these errors conform to the gradient predicted by the hierarchy? In addition, do L2 learners with different proficiency levels produce overpassivization errors according to the gradient of the hierarchy? If the hierarchy can be used to predict L2 learners' error numbers, we should be able to observe more errors produced in the "Periphery" category than in the "Less Core" and "Core"

categories. In addition, we would be able to observe more errors in intermediate L2 learners than in advanced learners.

2. METHODOLOGY

Unlike most of the previous studies that used the grammaticality judgment task to examine overpassivization errors, the current study employed a language production task to examine this issue. The reasons are twofold. First, in the grammaticality judgment tasks, participants are given either a transitive verb or a passivized counterpart to select from, as shown in Examples (6) to (9). Since only these two possibilities are available to participants, it is likely that participants, especially advanced learners, will finally realize the intention of the experiment and pay attention to grammar, thus biasing their real performance. Second, according to Clark and Hecht (1983), comprehension and production abilities do not match and they tap into different linguistic capacities. A language production task asking subjects to generate utterances will be more difficult than asking subjects to judge whether a sentence is grammatical or not since it does not give subjects options to choose from and therefore allows us to examine participants' immediate performances. In this study, participants were asked to produce utterances containing intransitive and transitive verbs.

2.1 Participants

Sixty college students, whose native language was Mandarin, were recruited from a public university in Taipei to participate in the study. None of these students use English as their first language. These sixty subjects belonged to three groups according to their proficiency levels: intermediate group (9 males and 11 females; average age for males: 19.3; average age for females: 20.2), higher intermediate group (13 males and 7 females; average age for males: 19.5; average age for females: 21.4) and advanced group (8 males and 12 females; average age for males: 23.1; average age for females: 22.8). Each group contained twenty participants. No beginning level L2 learners were recruited because in the pilot study,

students whose proficiency was lower than intermediate level had a lot of difficulty producing English sentences, especially under time pressure. Most of the utterances were full of interruptions or fillers like “uh” or “um.” Most of the time, it was hard to know whether one noun phrase belonged to an object, or a subject, which started a new utterance. Subjects who were placed in the intermediate group had either an Intermediate Level Certificate of the General English Proficiency Test (GEPT), an IELTS score between 4 and 5.5 or a TOEIC score between 550-750. Subjects who were placed in the higher intermediate group had either a High-Intermediate Level Certificate of the General English Proficiency Test (GEPT), an IELTS score between 5.5 and 7 or a TOEIC score between 750-880. Subjects who were placed in the advanced group had either an Advanced Level Certificate of the General English Proficiency Test (GEPT), an IELTS score above 8 or a TOEIC score above 950.

2.2 Procedures

Subjects sat in front of a computer where they were asked to look at a series of pictures and to use English to describe them. To ensure that subjects produced the target word, each picture, as shown in Figure 1, also contained the target word so that subjects did not have problems producing them.



Figure 1: Example picture of the verb stimuli

Each picture appeared on the screen for only 45 seconds. Participants were informed that they needed to describe the picture using the target word in the picture. Since they were time pressed, participants were also asked to respond as fast as they could. The reason for asking subjects to produce utterances under time pressure was because it could prevent them from generating complicated sentence structures, which were not of interest in the current experiment. Besides, subjects would not have much time to polish the grammar before producing them. To ensure that other materials would not interfere with participants' production of the target words, care was taken to make sure that the noun phrases used in the study were all common noun phrases that would not pose difficulty for our L2 participants. Subjects' production was recorded for further analysis after the experiment. In addition, before the experiment started, a list containing all the words in the experiment was given to subjects to make sure they knew all the words. Since all of the target words were rather easy, none of the subjects reported that the words were beyond their understanding.

2.3 Materials

All the verbs in the Split Intransitivity Hierarchy were classified into “Core,” “Less Core” and “Periphery” subclasses, according to Sorace and Shomura (2001), Montrul (2004) and Baker (2020). Each category in unaccusative and unergative verbs contained six verbs and all together there were thirty-six verbs across unaccusatives and unergatives. Since unaccusative verbs involve both alternating and non-alternating ones, each category in unaccusatives contained three alternating ones and three non-alternating ones. Table 2 lists all the verb stimuli.

Table 2. Verbs used in the current study

Unaccusative verbs		
Change of location & directed motion	(fall, rise, arrive, drop, roll, bounce)	Core
Change of state & appearance	(disappear, happen, rot, dry, melt, freeze)	Less Core
Continuation of preexisting condition & existence	(exist, vanish, belong, lack, survive, suffer)	Periphery
Unergative Verbs		
Uncontrolled process	(rattle, shine, flash, tremble, yawn, sweat)	Periphery
Controlled motional process	(swim, run, jump, fly, hop, climb)	Less Core
Controlled nonmotional process	(work, thrive, talk, wait, speak, shout)	Core

In addition, another twenty-four transitive words were used in the experiment. Care was taken so that they did not contain any intransitive counterparts. Again, all these transitive verbs were also matched with pictures describing them. Each picture also contained the transitive verb that subjects needed to use. A complete list of all the stimuli verbs with their pictures can be found in Appendix I.

2.4 Scoring Procedure

After the experiment, all subjects' production was transcribed and analyzed. In this experiment, subjects produced many different kinds of errors, including tense errors, agreement errors and syntactic errors. Some of the utterances were complete and some of the utterances were incomplete. For the purpose of this experiment, only overpassivization errors were the focus. One token is counted for every utterance that included a passive construction like "NP + is/are/was/were/has been/have been + Ved (or V)." All the tokens were then totaled for later statistical analyses.

3. RESULTS

3.1 Model Selection

Table 3: Summary of Number of Overpassivization Errors

Intransitives	Subclass	Proficiency Level			Total
		Intermediate	High-Intermediate	Advanced	
Unaccusative	Core	20	17	2	39
Unaccusative	Less Core	35	33	3	71
Unaccusative	Periphery	44	38	4	86
Unergative	Core	9	6	2	17
Unergative	Less Core	7	4	3	14
Unergative	Periphery	15	10	2	27
	Total	130	108	16	

Table 3 presents a summary of the number of overpassivization errors across different variables. Overpassivization errors were analyzed using the generalized linear model in SAS software. Since the errors belonged to count data, these data were modeled with Poisson distribution in the generalized linear model. The dependent variable was the token of the overpassivization errors. The independent variables include verb type (unaccusatives vs unergatives), subclass (Core vs Less Core vs Periphery) and proficiency (Advanced vs High-intermediate vs Intermediate). Model comparisons were done by entering independent variables one by one and then comparing AIC, AICC and BIC to find an appropriate model. In the beginning, only verb type was entered in the model. The indexes of this model were $AIC = 216.6493$, $BIC = 218.4301$. In the next model, verb type and gradient were entered into the model and the indexes were $AIC = 201.1825$, $BIC = 206.5247$. Finally, in the third model, verb type, gradient and proficiency were entered into the model, and the indexes were $AIC = 107.995$, $BIC = 123.9817$. When all the independent variables of interest were entered into the model, the model's AIC and BIC decreased substantially and therefore, it seemed to be the best model to account for the data.

3.2 Statistical Analysis

Statistical results showed that there were main effects for verb type ($Wald \chi^2(1) = 28.063$, $p < .001$), subclass ($Wald \chi^2(2) = 6.552$, $p = .043$) and proficiency ($Wald \chi^2(2) = 54.47$, $p < .001$). Except for reliable differences among proficiency x verb type ($Wald \chi^2(2) = 6.295$, $p = .043$), all the other interactions were not significant (verb type x subclass: ($Wald \chi^2(1) = 2.072$, $p > .05$), and subclass x proficiency ($Wald \chi^2(1) = 1.106$, $p > .05$), and verb type x subclass x proficiency: ($Wald \chi^2(1) = 1.299$, $p > .05$).

3.3 Results

A graphical result of the current study is shown in Figure 2. The results of the analysis confirmed that there were reliable differences in overpassivization errors between unaccusative verbs and unergative verbs. Mandarin L2 learners of English, across different proficiency levels and

different subcategories of verbs, produced more overpassivization errors in unaccusatives than in unergatives. Compared with the number of errors in unaccusative verbs, the error number in unergative verbs was fewer than 15 tokens. In addition, for unaccusative verbs, Intermediate and High-Intermediate learners produced more overpassivization errors across all “Core,” “Less Core” and “Periphery” subclasses. Advanced Mandarin L2 learners, however, seemed to produce similar numbers of errors across two types of intransitive verbs and their subclasses. To further examine this issue, a separate analysis was performed for Advanced Mandarin L2 learners to see whether there was any difference in the errors they produced between unaccusatives and unergatives. Statistical analysis revealed that there was no significant difference in intransitive verb type (Unaccusatives vs Unergatives: *Wald* $\chi^2(1) = 0.618, p > .05$) or subclass of verbs (*Wald* $\chi^2(1) = 0.781, p > .05$). Figure 2 shows that across the six categories, Advanced L2 learners produced essentially the same amount of errors.

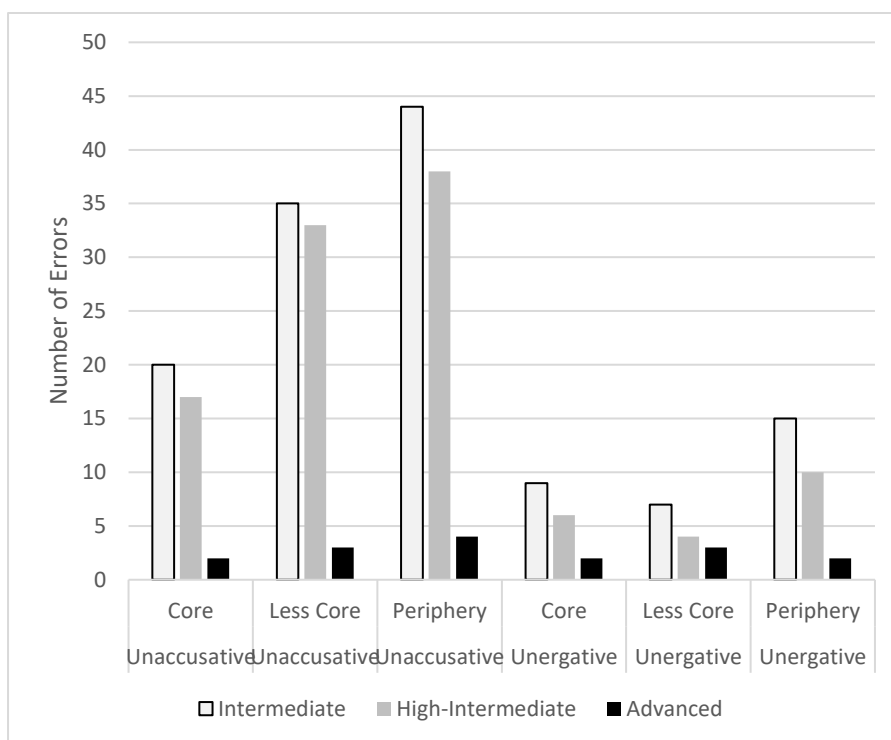


Figure 2. Overpassivization errors in unaccusative and unergative verbs

In terms of proficiency level, Mandarin L2 learners with different levels of proficiency did produce different amounts of overpassivization errors. Multiple comparison analyses, adjusted for Bonferroni correction, revealed that there were reliable differences between the Advanced and High-Intermediate group ($z = -7.13, p < .01$) and between the Advanced and Intermediate group ($z = -7.91, p < .01$). However, there was no difference between the High-Intermediate and Intermediate group ($z = -1.42, p > .05$). Given that Mandarin L2 learners seem to perform very differently between unaccusative and unergative verbs, separate analyses were further performed. For unaccusative verbs, there were also significant differences in proficiency ($Wald \chi^2(2) = 47.44, p < .001$). Again, multiple comparison analyses with Bonferroni adjustment also revealed that there were reliable differences between the Advanced and High-

Intermediate group ($z = -6.52, p < .01$) and between the Advanced and Intermediate group ($z = -6.89, p < .01$). However, there was no difference between the High-Intermediate and Intermediate group ($z = -0.8, p > .05$). For unergative verbs, there were also significant differences in proficiency ($Wald \chi^2(2) = 12.65, p < .001$). Multiple comparison tests with Bonferroni adjustment revealed similar results as those in the unaccusative tests, namely: reliable differences between the Advanced and High-Intermediate group ($z = -2.39, p = 0.05$) and between the Advanced and Intermediate group ($z = -3.56, p < .001$) but no difference between the High-Intermediate and Intermediate group ($z = -1.53, p > .05$). Overall, these statistical analyses suggest that High-Intermediate L2 learners seem to behave more like Intermediate L2 learners. Advanced L2 learners, on the contrary, produced the least amount of overpassivization errors.

Figure 3 presents overpassivization error differences in alternating and non-alternating unaccusative verbs.

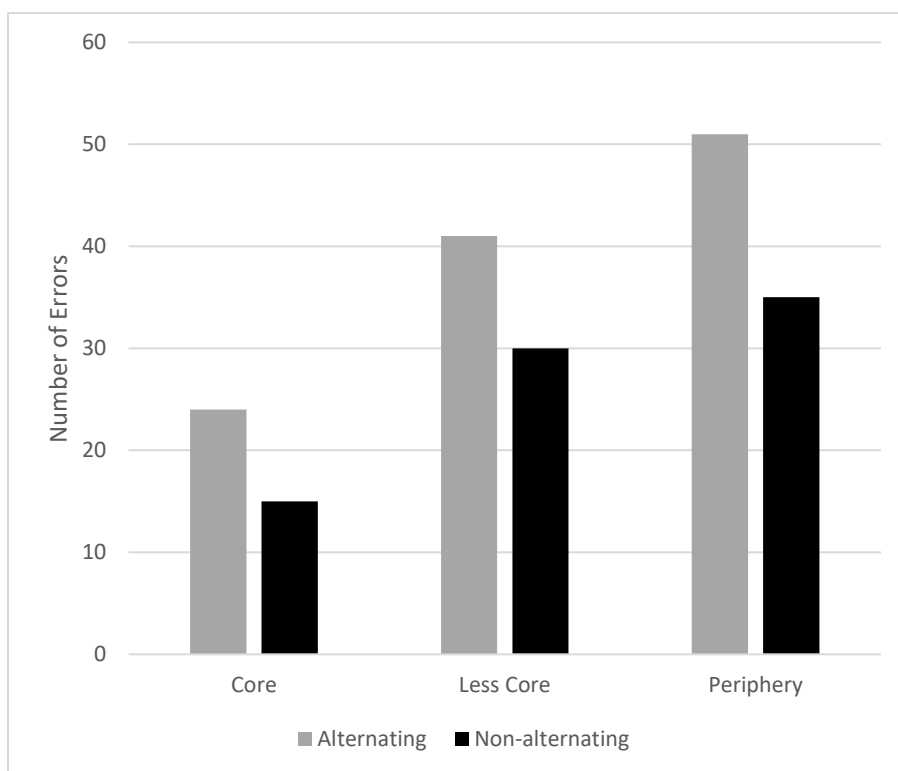


Figure 3. Overpassivization errors in alternating and non-alternating unaccusatives

As can be observed in Figure 3, Mandarin L2 learners produced more overpassivization errors in the alternating unaccusatives, and this is true across three subclasses. It seems that unaccusative verbs like “drop, roll and bounce” prompted L2 learners to overpassivize the sentence more often than verbs like “arrive, rise, fall.” For both “Less Core” and “Periphery” categories, L2 learners produced more than forty tokens of errors in the “With Transitive” counterpart category (Less Core: 20.9% and Periphery: 26%) but the number was fewer than forty in the “Without Transitive” category (Less Core: 15.3% and Periphery: 17.8%).

To further illustrate whether L2 learners with different proficiency levels also produced more errors in alternating unaccusatives than in non-

alternating unaccusatives, Figure 4 presents overpassivization errors among three subclasses across three proficiency levels. For each proficiency group in each subclass, the figure shows that there were more overpassivization errors in alternating unaccusative verbs than those non-alternating ones.

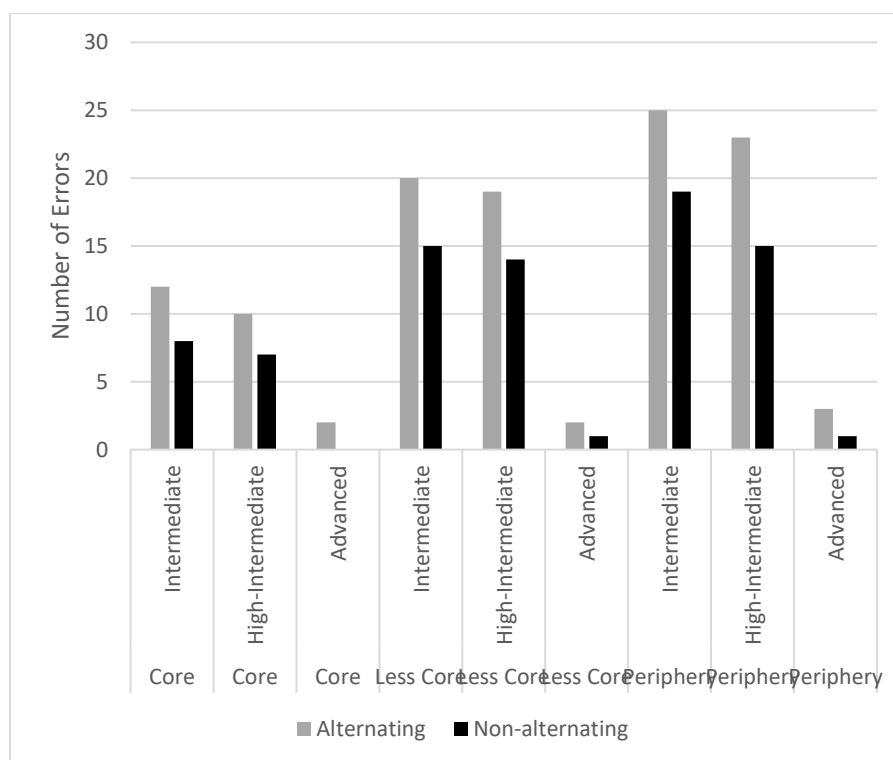


Figure 4. Alternating and non-alternating unaccusatives across three proficiency and subclass groups

Finally, in terms of the research questions, “Are there reliable differences in overpassivization errors among different subclasses, “Core,” “Less Core” and “Periphery,” of unaccusative and unergative verbs?” and “Do these errors conform to the gradient predicted by the hierarchy?” Figure 5 illustrates the overpassivization errors in different subclasses between unaccusatives and unergatives. Since there was a main effect of

subclass, further multiple comparison tests, adjusted by Bonferroni correction, were then performed. There were reliable differences between “Core” and “Less Core” ($z = -2.42, p < 0.05$) and between “Core” and “Periphery” ($z = -4.3, p < .01$). However, there was no reliable difference between “Less Core” and “Periphery” ($z = -1.98, p > .05$). Overall, Mandarin L2 learners produced more overpassivization errors in both the “Less Core” and “Periphery” categories than in the “Core” category, which had the least amount of errors.

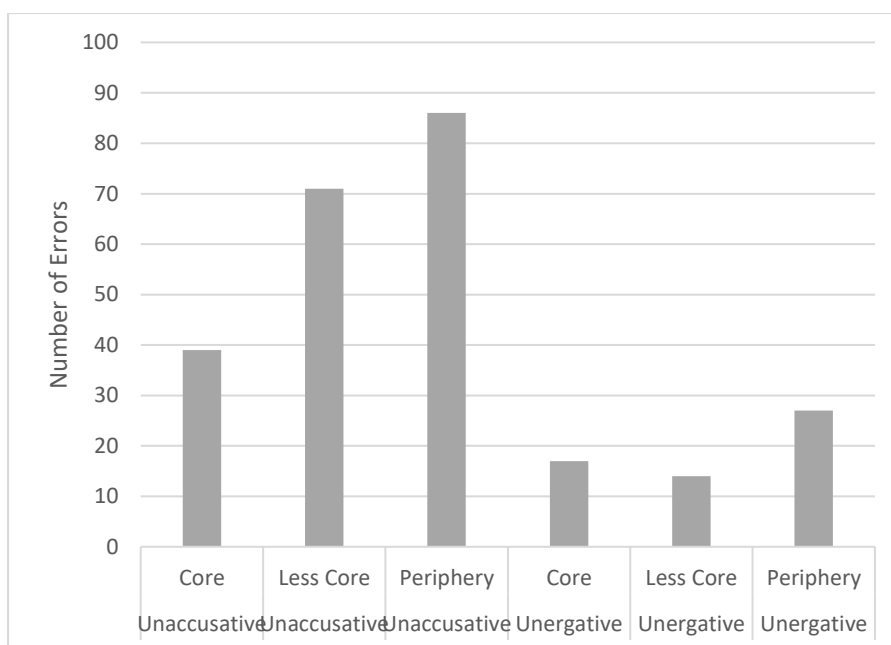


Figure 5: Overpassivization errors across unaccusative and unergative subclasses

In Figure 5, it is clear that Mandarin L2 learners performed very differently between unaccusatives and unergatives. The errors on unaccusative verbs show an increasing linear trend while the errors on unergative verbs did not seem to. Therefore, to further investigate the gradient of acquisition in unaccusative and unergative verbs, separate analyses of the subclasses of unaccusatives and unergatives were

performed as well. For unaccusative verbs, there was a main effect of subclass ($Wald \chi^2(2) = 16.78, p < .01$). Multiple comparison tests with Bonferroni correction revealed that there were significant differences between “Core” and “Less Core” ($z = -3.01, p < .01$) and between “Core” and “Periphery” ($z = -4.10, p < .01$). However, the difference between “Less Core” and “Periphery” did not reach significance ($p > .05$). For unergative verbs, the difference did not reach significance ($p > .05$).

4. DISCUSSION AND CONCLUSIONS

Although Sorace’s Split Intransitivity Hierarchy was proposed to explain auxiliary selection such as *ne-* cliticization and modal verbs among native speakers, other researchers have tried to extend this theory to include other linguistic aspects like preverbal and postverbal subjects in Spanish (Montrul 2004) and Japanese learners (Sorace and Shomura 2001). For example, according to Sorace and Shomura (2001), “The Split Intransitivity Hierarchy has been found to account for systematic variation, both in synchronic and in developmental terms, within the syntactic classes of unaccusative and unergative verbs in a range of Western European languages. This study was in part exploratory because there was no previous evidence that the Split Intransitivity Hierarchy is valid outside these languages. ...[I]t seemed legitimate to hypothesize that a different language like Japanese might conform to a similar developmental pattern” (p. 279). Following their logic and rationale, the present study extended Sorace and Shomura’s findings to account for L2 learners’ overpassivization errors of unaccusative and unergative verbs. The results of this study bore out the predictions of the Split Intransitivity Hierarchy. Let us now turn to our research questions first.

First, are there more overpassivization errors in unaccusative verbs than in unergative verbs? Did Mandarin L2 learners of English with different proficiency levels produce different amounts of errors? The results of the current study confirmed this research question. Figure 2 clearly shows that Mandarin L2 learners produced significantly more errors in unaccusative verbs than in unergative verbs. As stated in the literature section, Perlmutter’s Unaccusative Hypothesis and Sorace’s

Split Intransitivity Hierarchy can both be used to account for the difference between unaccusatives and unergatives, one from a syntactic movement perspective and one from a semantic agentivity perspective. Since at this point the current data cannot be used to favor one hypothesis over the other, the results of the current study therefore supported both hypotheses. From a movement point of view, the fact that unaccusatives involve moving a theme to the subject position seems to create more difficulty for L2 learners. From a semantic agentivity point of view, when the noun phrases at the subject position are not agents, L2 learners tend to overpassivize them.

Even though there are overall significantly more errors in unaccusative verbs among L2 Mandarin learners, the difference manifested only in Intermediate and High-Intermediate learners. For Advanced Mandarin learners, a statistical analysis revealed that the difference did not reach significance. Note that there seems to be a sudden drop in the amount of overpassivization errors from High-Intermediate L2 learners to Advanced L2 learners. After a close inspection of the participants' backgrounds, the sharp drop in the production errors may be because there was a wide gap between the proficiency of the Advanced group and that of the High-Intermediate group. In other words, High-Intermediate participants' scores ranged much wider than Advanced participants. The lower end of High-Intermediate participants might perform more like Intermediate participants. In addition, take IELTS for example: students with scores between 7 and 8 were not included in the study. If they were included in the experiment, the drop from the High-Intermediate group to Advanced group would not be as sharp as the current one. All of these reasons might contribute to explaining why there was a sharp drop in the overpassivization errors.

Second, for unaccusative verbs, are there more errors in alternating unaccusatives than non-alternating unaccusatives? Statistical analysis showed that Mandarin L2 learners did produce more overpassivization errors when the unaccusative verbs had transitive counterparts. The differences were significant across three subclasses of unaccusative verbs. Furthermore, each proficiency group's performance in each subclass of unaccusative verbs also showed more overpassivization errors for the alternating unaccusatives. This result can be used to support Yip's

hypothesis that L2 learners tend to treat unaccusative verbs as transitive verbs. It seems that when unaccusative verbs have transitive counterparts and when the internal arguments appear in the subject position of the sentence, L2 learners are even more likely to treat unaccusatives as transitives and overpassivize them.

Furthermore, as one of the reviewers has pointed out, the differences in the overpassivization errors between unaccusatives and unergatives and between alternating unaccusatives and non-alternating unaccusatives can also be explained by the number of argument structures in unaccusatives and unergatives. For unaccusative verbs, L2 learners need to further distinguish whether they belong to alternating or non-alternating ones. For unergative verbs, since there is only one type, L2 learners don't have to further distinguish them. Shapiro et al. (1989: 223) have found that "all of a verb's possible argument structures are momentarily and exhaustively activated in the vicinity of the verb, even in sentences that are structurally biased toward one particular argument structure." Therefore, for nonnative learners, the fact that they will have to further distinguish two kinds of argument structures in unaccusatives may create more difficulties for L2 learners, thus resulting in more overpassivization errors. While it is more difficult for L2 learners to learn a verb with multiple argument structures, whether this difficulty will lead to more overpassivization errors is still subject to further empirical examination.

Third, are there reliable differences in overpassivization errors among different subclasses, "Core," "Less Core" and "Periphery," of unaccusative and unergative verbs? Do these errors conform to the gradient predicted by the hierarchy? In addition, do L2 learners with different proficiency levels produce errors that also conform to the gradient of the hierarchy? Overall, there were significant differences across "Core," "Less Core" and "Periphery" subclasses, indicating that there was a gradient of overpassivization errors among Mandarin L2 learners. They made the fewest number of errors in the "Core" category and the errors were the most in the "Periphery" group. The overall results of the current study can be used to lend further support to Sorace's Split Intransitivity Hierarchy. Recall that for native speakers, verbs in the "Core" of the hierarchy display less variable syntactic behavior than verbs in the "Less Core" and "Periphery" categories. It seems that for nonnative

Mandarin learners, less variability of core verbs seems to pose less difficulty during acquisition, resulting in fewer errors. This result is in line with Montrul's results where she found that nonnative L2 learners reacted faster to verbs in the "Core" category.

Note, however, that the gradient of errors was not the same between two types of intransitive verbs. When we look closely at the error typology of unaccusative verbs and unergatives, it is clear that overpassivization errors conform to the predictions of Sorace's Split Intransitivity Hierarchy more in the unaccusative verbs than in the unergative verbs. Furthermore, it is clear that the number of errors in the "Core" category was more reliably different from the other two categories. However, the difference between "Less Core" and "Periphery" was not that clear. Even though there were more error tokens in the "Periphery" category than in the "Less Core" category, the difference did not reach significance. For unergative verbs, the results were even less clear. In general, Mandarin L2 learners' performances on unaccusatives and unergatives prompted us to reflect on Sorace's statement that L2 learners might not treat all subclasses the same. Some of the categories might merge while other categories remain distinct. In this regard, it is possible that intermediate Mandarin learners tend to treat "Less Core" and "Periphery" unaccusative verbs as the same group while "Core" verbs belong to another group. For unergative verbs, Mandarin L2 learners consider that all of them belong to the same category initially. Later on, when their proficiency increases, they gradually learn to distinguish their differences.

Finally, I would like to address Oshita's Unaccusative Trap Hypothesis, which proposed that there should be a U-shaped line in acquiring unaccusative verbs. At the beginning of the learning stage (Stage 1), L2 learners are able to produce correct forms. However, during Stage 2, the errors start to emerge when L2 learners gradually pick up the difference between unaccusative verbs and transitive verbs. It is not until the final stage (Stage 3) that L2 learners are able to produce correct forms, thus making fewer overpassivization errors. Unlike Montrul's (2005) study, which found only partial support for Oshita's Unaccusative Trap Hypothesis, the results of the current study did not have enough evidence to either support or refute Oshita's U-shape hypothesis for two reasons. First, since this study required participants to produce sentences in the

experiments and the verbs used in the experiments were quite difficult, the experiment did not include beginning L2 learners. The lack of beginning learners made it hard to fully evaluate Oshita's hypothesis. Second, while Oshita examined NP-V construction, the current study examined L2 learners' overpassivization errors. Whether learners' overpassivization errors can be used to represent their acquisition mechanism of unaccusatives is still a question that deserves further investigation.

In sum, this study is the first study to try to examine the huge error variation across different categories in unaccusative and unergative verbs. The current study has provided explanations for the huge variation that can be seen in previous studies, e.g., Ju's study (2000) and Kondo (2005). In addition, extending Sorace and Shomura's (2001) and Montrul's (2004) major findings, results of the current study showed that not only are all intransitive verbs not the same, but also verbs within the unaccusative and unergative hierarchy are not the same either. The verbs' semantic content can pose different degrees of difficulty to second language learners as well.

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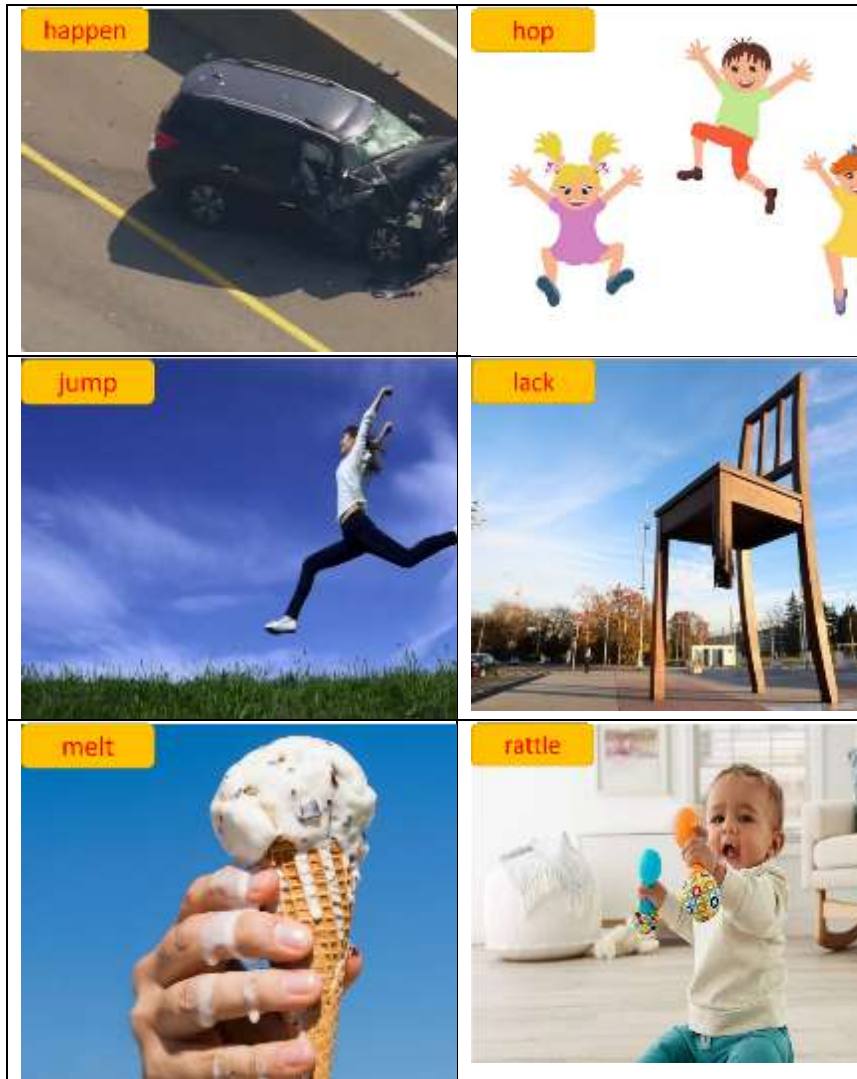
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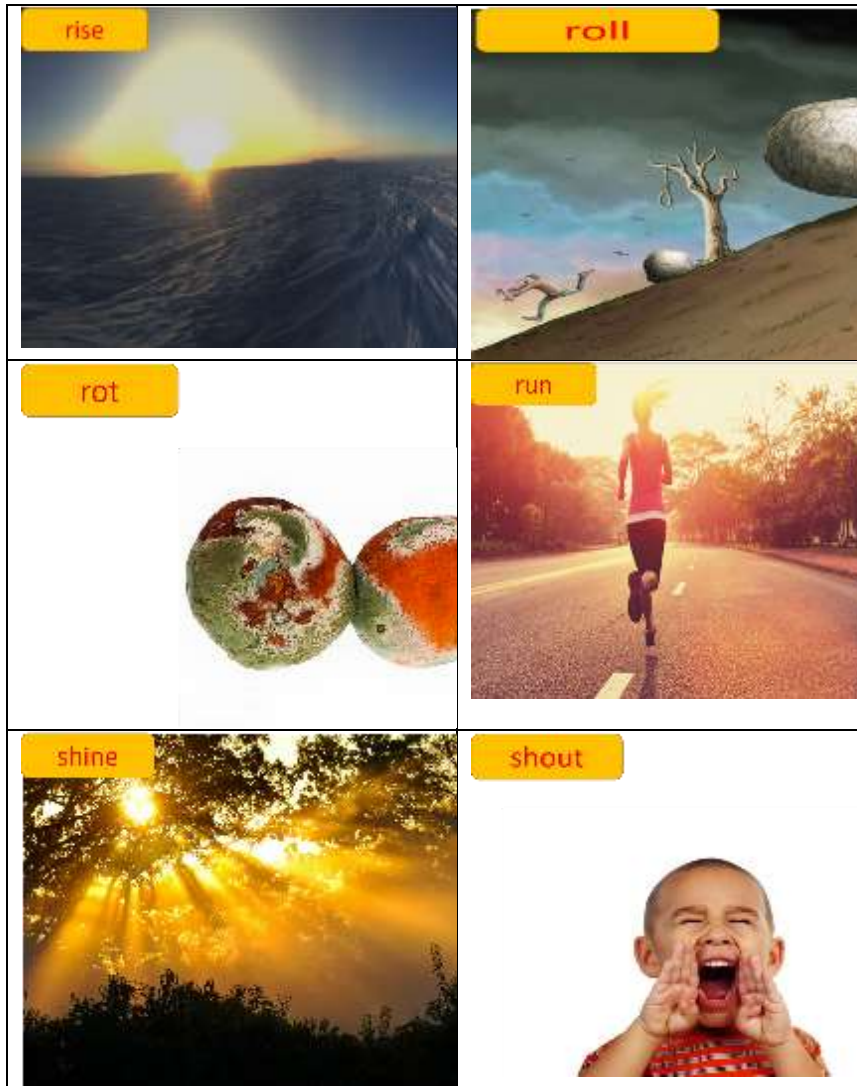
Appendix I



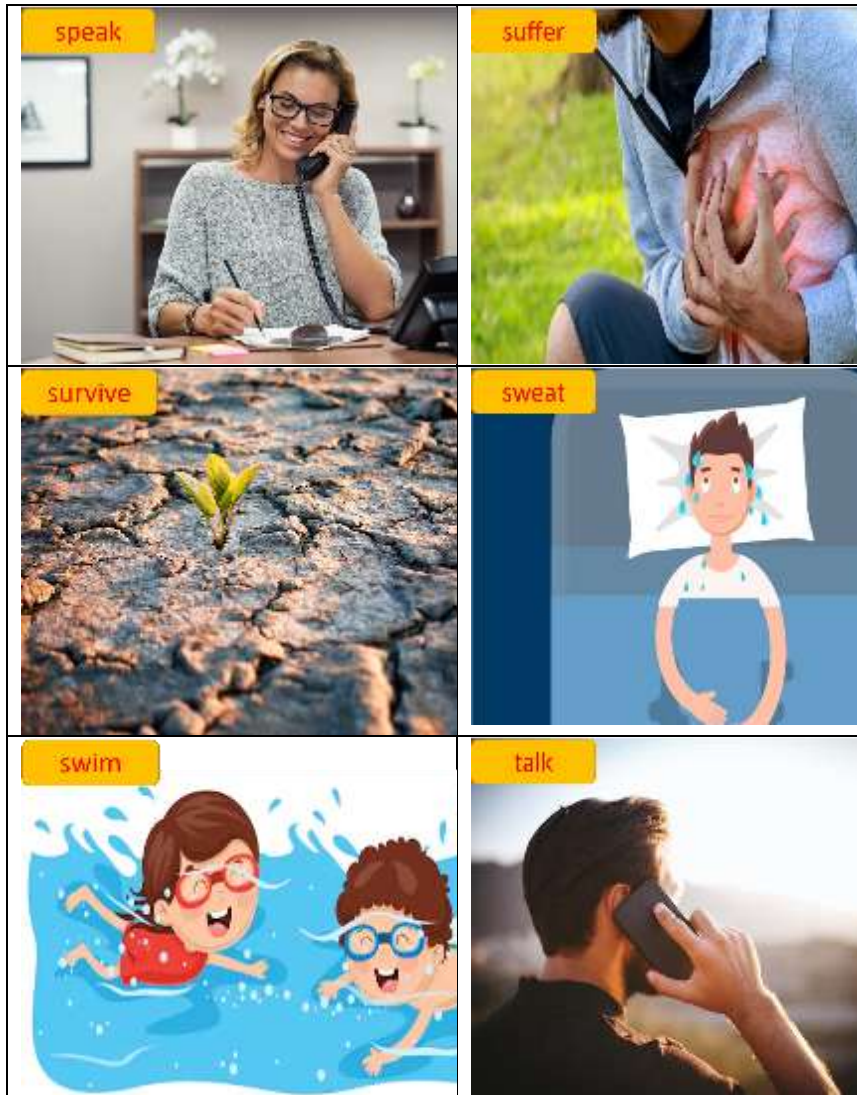


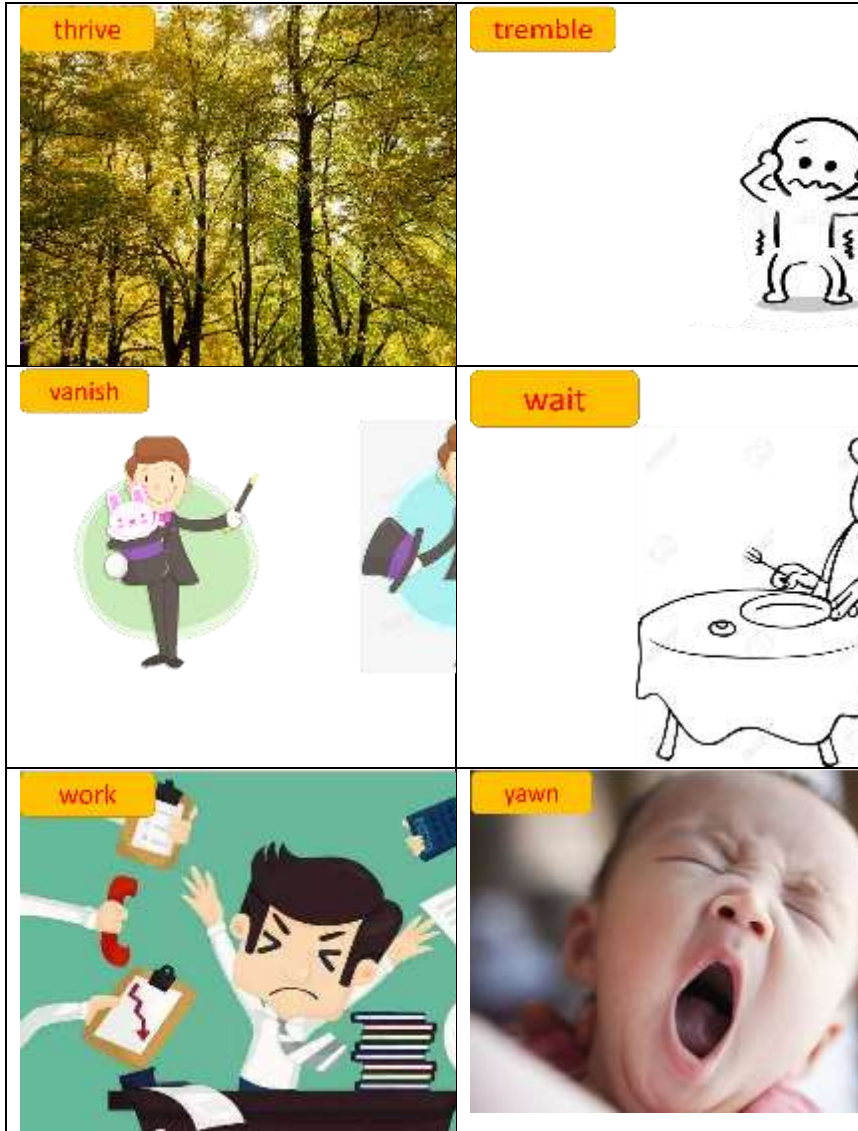
Overpassivization Errors in Split Intransitivity Hierarchy





Overpassivization Errors in Split Intransitivity Hierarchy





非賓格動詞與非作格動詞在過度被動化錯誤中的變異：
檢視分裂不及物動詞階層理論

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二語習得中最著名的錯誤之一為不及物動詞的過度被動化。雖然很多理論提出不同的見解解釋二語學習者為何會犯下這些錯誤，但是非常少研究發現二語學習者犯的錯誤在不同的不及物動詞間有非常大的差異。Sorace 的分裂不及物動詞階層理論將不及物動詞加以分為「核心」、「次核心」及「邊陲」三個階層。近來，這個理論已被用來應用在二語學習者在不及物動詞上的習得狀況。本研究應用此理論來重新檢視中文母語者在學習英文上的過度被動化現象。實驗要求受試者用英文描述含有不及物動詞的圖片。結果發現受試者在「次核心」及「邊陲」兩個階層所犯的過度被動化錯誤遠多於「核心」。此外，研究結果也支持非賓格理論。

關鍵詞：非賓格、非作格、過度被動化、分裂不及物動詞階層理論