

SECOND LANGUAGE ACQUISITION OF PARTICLE-VERB CONSTRUCTIONS IN
ENGLISH BY ADULT MANDARIN SPEAKERS

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ABSTRACT

Xue He: Second Language Acquisition of Particle-verb Constructions in English by Adult
Mandarin Speakers

(Under the direction of [Professor Misha Becker])

There have been few research studies on the acquisition of particle-verb constructions (PVCs) in English by Mandarin speakers. The present study investigates the grammaticality judgments of PVCs in English made by Mandarin speakers who have been learning English as a second language (L2). The result of the present study shows that Mandarin speakers have different grammaticality judgments from native English speakers, which could be the reason for the avoidance of PVCs in English by Mandarin speakers shown by Liao and Fukuya (2004). The result also shows that Mandarin speakers are confident in their grammaticality judgments, so being unsure about the grammaticality of PVCs in English is not the cause for Mandarin speakers' avoidance of PVCs. Furthermore, the present study finds that the grammaticality judgments on PVCs by Mandarin speakers show evidence of transfer of the grammaticality of PVCs in Mandarin and evidence of the interlanguage grammar shifting away from the L1 grammar, supporting the Full Transfer Full Access Hypothesis.

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LIST OF ABBREVIATIONS

L1 First language

PVCs Particle-verb constructions

L2 Second language

CHAPTER 1: BACKGROUND

Particle-verb Constructions in English and Mandarin

Particle-verb Constructions in English. Particles in particle-verb constructions (PVCs) are divided into two semantic classes: transparent particles and idiomatic particles (Wurmbrand 2000; Gilkerson 2006). According to Wurmbrand (2000), PVCs containing transparent particles maintain the separate meanings of the verb and the particle in their combined form. Example (1) below shows an example of a PVC containing a transparent particle.

(1) She put on the hat.

put on in (1) is transparent because *the hat* is literally on her. PVCs containing idiomatic particles do not keep a compositional meaning of verb+ particle; instead, they receive a figurative meaning that is not compositional. An example of a PVC containing an idiomatic particle is shown below.

(2) Bill always butters his boss up.

The meaning of the PVC *butter up* in (2) is not a combination of the separate meaning of *butter* and *up*. Instead, *butter up* as a phrase means “to please somebody”.

Particle-verb Constructions in Mandarin. Linguists agree that Mandarin has verb-particles, and the combination of verb + particle forms a verbal-complement compound instead of a verbal phrase (Chao 1968; Teng 1977; Yip 2004). Example (3) below shows an example of a PVC in Mandarin.

(3) chuān-shàng yīfu
wear-ascend clothes
‘put on clothes’

The expression *chuān-shàng* is a verbal compound that consists of *chuān* as the main verb and *shàng* as the particle. Particles in Mandarin are not divided into different semantic classes like transparent particles and idiomatic particles in English because particles in Mandarin rarely take on figurative meanings (Liao & Fukuya 2004). In some circumstances, particles can also be used in figurative senses. Directional particles, a subgroup of particles in PVCs have meanings beyond physical movement. Example (4) below shows a PVC *tí-qǐ nèi-jìàn shì* (“brought up that matter”) that does not keep the compositional meaning of *brought* and *up*. *The matter* is not literally *up*.

- (4) wǒ tí-qǐ nèi-jìàn shì le
I mention-rise that-CL matter CRS
'I brought up that matter.'

(Li &Thompson 1989: 60)

Comparison of Particle-verb Constructions in English and Mandarin. The differences between PVCs in English and those in Mandarin are shown below in Table 1.1.

Table 1.1

Comparison of PVCs in English and PVCs in Mandarin	
English	Mandarin
<p>1. In English, usually particles are prepositions.</p> <p>a. put <u>off</u> (preposition) the meeting</p>	<p>1. In Mandarin, usually particles are verbs. Prepositions cannot be particles.</p> <p>a. dài-<u>shàng</u> màozi wear-<u>ascend</u> hats 'put on hats'</p>
<p>2. In English, particles in PVCs are divided into two semantic classes: transparent particles and idiomatic particles (Wurmbrand 2000; Gilkerson 2006).</p> <p>a. She <u>put on</u> the hat. (transparent)</p> <p>b. Bill always <u>butters</u> his boss <u>up</u>. (idiomatic)</p>	<p>2. In Mandarin, particles in PVCs are not divided into different semantic classes because particles rarely take on figurative meanings (Liao & Fukuya 2004).</p>
<p>3. In English, a PVC forms a verbal phrase.</p>	<p>3. In Mandarin, a PVC forms a verbal-complement compound.</p>
<p>4. In English, if the object of PVCs is a full noun phrase, the object can follow verb+particle, and it can also split the verb and the particle. If the object is a pronoun, the object can only appear between the verb and the particle.</p> <p>e.g.</p> <p>a. turn it off</p> <p>b. *turn off it</p> <p>c. turn the TV off</p> <p>d. turn off the TV</p>	<p>4. In Mandarin, the object cannot be inserted between the main verb and the particle except when the main verb is a displacement verb (e.g. <i>ná</i> ("take")) and the particle involves directional verbs <i>lái</i> ("come") or <i>qù</i> ("go").</p> <p>e.g.</p> <p>a. guān-diào tā shut-fall it 'turn it off'</p> <p>b. *guān tā diào shut-it fall 'turn it off'</p> <p>c. guān-diào diàn-shì shut-fall the TV 'turn off the TV'</p> <p>d. *guān diàn-shì diào shut the TV fall 'turn the TV off'</p> <p>e. ná yǐn-liào lái take the drink come 'bring the drink (toward the speaker)'</p> <p>f. ná-lái yǐn-liào take-come the drink 'bring the drink (toward the speaker)'</p>

Comparing PVCs in English and those in Mandarin, we can find both similarities and differences.

Previous Studies on L2 Acquisition of Particle-verb Constructions in English

Many studies on L2 acquisition of PVCs in English examined avoidance or nonavoidance of PVCs either by speakers whose first language does not have particles or by speakers whose first language is similar to English and has particles. Researchers attempted to investigate the role of L1-L2 similarities, L1-L2 differences and the semantic opacity of L2 forms in affecting the avoidance of PVCs by learners of English.

Dagut and Laufer (1985) studied if Hebrew learners of English avoided PVCs (Hebrew does not have PVCs). They found that the Hebrew speakers showed a great tendency to avoid using PVCs in the tests, and within the PVCs, the Hebrew speakers preferred transparent PVCs over idiomatic ones. This result suggests that the avoidance by Hebrew speakers has to do with the semantic difficulty of PVCs in L2 and L1-L2 differences.

Hulstijn & Marchena (1989) found that L1-L2 similarities led to avoidance of PVCs by the Dutch learners of English (Dutch has PVCs). In their study, the Dutch learners did not avoid PVCs categorically, but they avoided idiomatic PVCs that were similar with the Dutch equivalents because they were confused about these similarities. The reason for their confusion might come from the fact that they were surprised that another language would have a structure that they assumed as idiosyncratic to their L1. This suggests that L1-L2 similarities cause learners of English to avoid a structure in L2.

Laufer and Eliasson (1993) found that it was not L1-L2 similarities, but L1-L2 differences that led learners of English avoid PVCs in English. They investigated the avoidance pattern of PVCs in English by advanced Swedish learners of English (Swedish has PVCs). The

result showed that the advanced Swedish learners generally did not avoid PVCs regardless of whether the PVCs were transparent or idiomatic. Moreover, they avoided neither PVCs that were similar to, or different from the Swedish equivalents. Laufer and Eliasson (1993) compared the pattern of avoidance by advanced Swedish learners of English with advanced Hebrew learners of English. They discovered that the Swedish speakers showed a greater tendency to use PVCs than the Hebrew speakers at the same proficiency level, especially idiomatic ones. The overall results suggest that L1-L2 differences play a role in affecting the avoidance of L2 learners.

Liao and Fukuya (2004) investigated the avoidance of English PVCs by Chinese speakers. They found that the semantic opacity of PVCs, proficiency level of the participants and the particular testing method were the most important factors affecting Chinese speakers' avoidance of English PVCs. They also suggested that the role of L1-L2 differences would be less important in affecting learners' avoidance of PVCs as learners reach an advanced proficiency level of English.

The study of Liao and Fukuya (2004) involved three tests, a multiple-choice test, a translation test and a recall test. Fifteen dialogues that consisted of fifteen pairs of PVCs and their equivalent one-word verbs were used in all three tests. In the multiple-choice test, the verb in each dialogue was left blank. The participants were asked to fill in the blank space with one of the four choices shown below each dialogue. The four choices consisted of one PVC, an equivalent one-word verb, and two distractor verbs. The participants were asked to choose only one choice that they thought was the most suitable choice since each dialogue contained two correct answers (the correct PVC and its equivalent one-word verb). The native English speakers first took the multiple-choice test, so that the researchers could know the native speakers' preference of PVCs over the equivalent one-word verbs. Then the advanced learners of English

and the intermediate learners were randomly assigned to the three tests. The translation test used the same 15 dialogues with the English verb missing in each dialogue, but the Chinese translation of the missing verb was given at the end of each dialogue. The participants were asked to translate the missing verb according to the Chinese translation of the PVC or the one-word verb (The Chinese translation of the PVC and the one-word verb is the same). In the recall test, the participants were given the same 15 complete dialogues and were asked to remember the dialogues. After an hour, the dialogues with the verbs missing were given to them, and the participants were asked to fill in the verbs.

The avoidance of PVCs by the L2 learners reflects differences in whether the PVCs are literal or figurative. Both the advanced and intermediate learners used figurative PVCs less than literal PVCs. Liao and Fukuya (2004) argued that L2 learners found it difficult to map the meanings of figurative PVCs to their forms because figurative PVCs often take on idiomatic meanings. On the contrary, it is easier to understand the meaning of literal PVCs because their meanings can be derived by combining the meaning of the verb and the particle. Therefore, the semantic difficulty of figurative PVCs leads to the stronger avoidance tendency by the L2 learners.

The proficiency level of the L2 learners affects their avoidance of PVCs. Generally, the native speakers, the advanced learners and the intermediate learners showed the pattern of using literal PVCs more often than figurative PVCs. However, the intermediate learners showed greater avoidance tendency with figurative PVCs than the other two groups, while there was no difference between the advanced learners and the native speakers in using figurative PVCs less frequently than literal ones. Thus, this indicates that L2 learners show less tendency to avoid PVCs as they reach higher level of English proficiency.

The particular testing method also affects learners' performance of avoiding using PVCs. Among the translation test, the multiple-choice test and the recall test, only in the translation test was the advanced and the intermediate learners' usage of literal PVCs significantly more frequent than figurative PVCs. In the multiple-choice test and the recall test, the L2 learners did not show a significant difference in producing literal PVCs more frequently than figurative PVCs.

The Relevant L2 Acquisition Theory: the Full Transfer Full Access Hypothesis and the Full Transfer without Transfer Hypothesis

Beyond investigating the reasons for Mandarin speakers' avoidance of PVCs in English shown by Liao and Fukuya (2004), the present study also intends to provide evidence for some theories of L2 acquisition. One topic in L2 acquisition that linguists have been debating on is the initial state in L2 acquisition. Generally, there are two viewpoints. One influential viewpoint argues that the initial state in L2 acquisition is the L1 grammar. The representative of this viewpoint is the Full Transfer Full Access Hypothesis, proposed by Schwartz and Sprouse (1994, 1996). Schwartz and Sprouse propose that the entire L1 grammar is the initial state in L2 acquisition, but the initial state will change. Gradually the interlanguage grammar will undergo restructuring when L2 learners receive L2 input that cannot be accommodated by the L1 grammar in the substitute L2 acquisition. The other viewpoint maintains that the initial state in L2 acquisition is not the L1 grammar, but Universal Grammar. The representative of this viewpoint is the Full Access without Transfer Hypothesis proposed by Epstein et al. (1996, 1998). Epstein et al. argue that the initial state in L2 acquisition is the same as the initial state in L1 acquisition, which indicates that the L2 learners will show patterns of acquisition similar to those showed by L1 learners.

The present study could support which viewpoint is true based on the grammaticality judgments on PVCs in English by L1 Mandarin speakers and native English speakers. If the Full Transfer Full Access Hypothesis is true in terms of the initial state in L2 acquisition, I predict that the grammaticality judgments by the L1 Mandarin speakers in the present study will be different from those by the native English speakers on the types of English PVCs that have the opposite grammaticality from PVCs in Mandarin, and their judgments will show influence from the grammaticality of PVCs in Mandarin. For example, the L1 Mandarin speakers might give lower grammaticality score to a type of PVCs that is grammatical in English but ungrammatical in Mandarin. If the Full Access without Transfer Hypothesis is true in terms of the initial state in L2 acquisition, I predict that the grammaticality judgments by the L1 Mandarin speakers will be similar with those by the native English speakers. The strongest evidence would come from the result that the L1 Mandarin speakers give similar judgments with the native English speakers on types of English PVCs that have opposite grammaticality from PVCs in Mandarin.

CHAPTER 2: RESEARCH QUESTIONS AND THE CONTRIBUTION OF THE PRESENT STUDY

The present study investigates whether the avoidance of PVCs in English shown by Liao and Fukuya (2004) is caused by the possibility that Mandarin speakers are not sure about whether PVCs in English are grammatical or not or by the possibility that Mandarin speakers have different grammaticality judgments on PVCs from native English speakers. The present study is also interested in examining whether length of L2 exposure affects Mandarin speakers' grammaticality judgments on PVCs in English.

From the perspective of theory of L2 acquisition, by investigating the grammaticality judgments on a syntactic construction that works differently in learners' L1 and L2, I want to examine whether the initial state in L2 acquisition is L1 grammar or not. If so, the question of whether interlanguage grammar undergoes shift toward L2 grammar during the L2 acquisition would be investigated.

Although Mandarin has the structure of PVCs, PVCs in Mandarin are very different from those in English. There has been little research on the L2 acquisition of PVCs by speakers whose L1 has PVCs but whose PVCs work differently. Liao and Fukuya (2004) showed the pattern of avoidance of PVCs by Mandarin speakers, and they found that the semantic difficulty of PVCs, the proficiency level of the Mandarin learners of English and the particular testing method were the reasons for the avoidance by Mandarin speakers. However, Liao and Fukuya (2004) did not consider whether Mandarin speakers might have different grammaticality judgments from native English speakers on PVCs in English, or whether Mandarin speakers are unsure about their

judgments. The present study investigates if these reasons could cause the avoidance of PVCs by Mandarin speakers.

Liao and Fukuya (2004) only used two types of PVCs (verb+ transparent particle+ full NP, verb+ idiomatic particle+ full NP) in their tests. However, the present study involves a grammaticality judgment test that involves eight types of PVCs and eight sentences containing a verb paired with a preposition (as opposed to a particle) plus an object, with the preposition occurring either before (grammatical) or after (ungrammatical) that object. The participants were asked to rate the grammaticality of English sentences along one Likert scale and how confident they were in making the grammaticality judgments along another Likert scale. The grammaticality Likert scale would allow us to see whether the Mandarin speakers have different grammaticality judgments on PVCs from native English speakers. The confidence Likert scale would allow us to see whether the Mandarin speakers are sure about the grammaticality judgments they make. This scale is helpful because if a participant gives a medium rating for the grammaticality, we would want to know whether the participant actually thinks it is neither ungrammatical nor grammatical, or if his or her medium rating reflects lack of confidence.

I also want to examine whether length of exposure to the L2 environment might affect the grammaticality judgments made by Mandarin speakers. Liao and Fukuya (2004) speculated that the exposure to the L2 environment might be an important factor in the learners' avoidance or nonavoidance of PVCs because they thought that PVCs appear more often in spoken English than in written English, but they did not have evidence for their speculation as they did not compare the performance of the Mandarin learners who have short exposure to English with those who have long exposure. My study involves both advanced learners and intermediate

learners. Within the advanced learners, they were divided into participants who had long exposure to the L2 environment and those who had short exposure to the L2 environment.

CHAPTER 3: METHOD

Participants

There are four groups of participants for this study. Group 1 consists of the L1 Mandarin-L2 English speakers who have intermediate proficiency level of English and have stayed in an English-speaking country for short time (less than two years). Group 2 consists of the L1 Mandarin-L2 English speakers who have advanced proficiency level of English and have stayed in an English-speaking country for short time (less than two years). Group 3 consists of the L1 Mandarin-L2 English speakers who have advanced proficiency level of English and have stayed in an English-speaking country for long time (more than four years). Group 4 consists of the native English speakers. Forty-one people participated my study: ten in each group plus an extra participant in Group 3.

The proficiency level of English was determined by the score of Test of English as a Foreign Language (TOEFL) or the score of International English Language Testing System (IELTS). Participants who scored equivalent to or over 95 (Internet-Based Test) / 587 (Paper-Based Test) on TOEFL or scored equivalent to or over 7 on IELTS were considered to be advanced learners of English. Participants who scored between 80-94(Internet-Based Test)/ 550-587 (Paper-Based Test) or scored equivalent to 6.5 were considered to be intermediate learners of English. Hakuta, Butler and Witt (2000) collected data from ESL students who were in Grades 1-6 in two California districts. They concluded that it took 3-5 years to develop oral proficiency of English, and it took 4-7 years to develop academic English proficiency for ESL students. Therefore, for my study, the criterion for long exposure to the L2 environment is that learners

have to stay in an English-speaking country for at least four years. Having considered that ESL children might have an advantage of learning English, the fact that adult L2 learners have stayed in an English-speaking country for around four years does not necessarily mean that they are advanced learners of English. Thus, I preferred to recruit L2 learners who have stayed in an English-speaking country as long as possible as advanced learners of English who have long exposure for my study. The criterion for short exposure to the L2 environment is that learners have to stay in an English-speaking country for less than 2 years. Table 3.1 below shows the specific requirements for L1 Mandarin-L2 English speakers.

Table 3.1

		Requirements for L1 Mandarin-L2 English speakers
Intermediate Proficiency Level		1. TOEFL 80-94/550-587 or IELTS = 6.5. 2. Have stayed in an English-speaking country for less than 2 years.
Advanced Proficiency Level	Long exposure	1. TOEFL ≥ 95 / ≥ 587 or IELTS ≥ 7 . 2. Have stayed in an English-speaking country for at least 4 years.
	Short exposure	1. TOEFL ≥ 95 / ≥ 587 or IELTS ≥ 7 . 2. Have stayed in an English-speaking country for less than 2 years.

In Group 1, eight participants did not take TOEFL or IELTS. They only met the short exposure requirement for my study. Due to the limited resources I had in terms of recruiting participants, I mainly recruited the participants at the University of North Carolina at Chapel Hill (UNC-CH). The native Mandarin speakers speaking English as a second language whom I reached out to are either Chinese students or visiting scholars coming from China. The Mandarin-speaking students generally have very high TOEFL/IELTS scores (qualify as advanced English speakers), and the Mandarin-speaking visiting scholars from UNC generally have not taken TOEFL/IELTS before. This is the reason why I had difficulty finding participants who have intermediate proficiency level of English based on the test score requirement I set up.

Thus, I had to recruit people who had not taken TOEFL/IELTS and had stayed in an English-speaking country for short time as the participants for Group 1. In Group 3, one participant did not take TOEFL or IELTS. She is a native Mandarin speaker who has stayed in the U.S. for 15 years. She received education in the U.S. since she came to the U.S., so I assumed that she had advanced proficiency level of English. Thus, nine participants for my study did not meet the test requirement. I still recruited these people due to my limited ability to recruit eligible participants. Appendix A shows the standardized English test score and residence years in an English-speaking country of each L1 Mandarin speaker. Table 3.2 below shows the average standardized English test scores and residence years in an English-speaking country of each group of the L1 Mandarin speakers.

Table 3.2

Average Standardized English Test Scores and Residence Years of Each Group of the L1 Mandarin Speakers			
Group	Numbers of Subjects	Average Test Scores	Average Years/Months in an English-speaking Country
L2 Intermediate	5	Not applicable	9 months
L2 Advanced-Short	8	TOEFL 102	11 months
L2 Advanced-Long	7	TOEFL 104	7 years

Materials

The present study involves a grammaticality judgment test. There are 40 test sentences and 40 fillers in the test. The test sentences contain eight types of PVCs and two types of sentences containing a verb plus a prepositional phrase. The test sentences containing PVCs either have transparent particles or idiomatic particles. Table 3.3 below shows the structures of the 40 test sentences that my study uses with an example sentence for each type of structures. Each participant was given four different sentences of each of the 10 structures.

Table 3.3

40 Test Sentences	
Structures	Numbers of Sentences
1. verb + transparent particle + full NP e.g. She is going to <u>put on the hat.</u>	4
2. verb + idiomatic particle + full NP e.g. Please <u>turn off the TV.</u>	4
3. verb + full NP + transparent particle e.g. She is going to <u>put the hat on.</u>	4
4. verb + full NP + idiomatic particle e.g. Please <u>turn the TV off.</u>	4
5. *verb + transparent particle + pronoun e.g. *She told Bill to <u>put down it.</u>	4
6. *verb + idiomatic particle + pronoun e.g. *Susan <u>made up it.</u>	4
7. verb + pronoun + transparent particle e.g. She told Bill to <u>put it down.</u>	4
8. verb + pronoun + idiomatic particle e.g. Susan <u>made it up.</u>	4
9. verb + preposition + object e.g. She <u>ran off the stage.</u>	4
10. *verb + object + preposition e.g. *She <u>ran the stage off.</u>	4

The 40 fillers consist of 20 ungrammatical sentences and the corresponding 20 grammatical sentences. Four types of grammatical errors are involved in the ungrammatical sentences. Each type of grammatical error appears in five sentences. Table 3.4 below shows the four types of grammatical errors and an example sentence of each type.

Table 3.4

Grammatical Errors in the Fillers		
Grammatical Errors	Examples (grammatical)	Examples (ungrammatical)
1. Incorrect Prepositions	With your help, I can complete this project successfully.	*About your help, I can complete this project successfully.
2. Incorrect Verb-Object Order	Bill says that he wants to drink water.	*Bill says that he wants to water drink.
3. Incorrect Anaphors	Bill invited himself to his own party.	*Bill invited herself to his own party.
4. Wh-questions Errors	Which parks has Bill been to in North Carolina?	*Which has Bill been to parks in North Carolina?

The 40 test sentences are presented in Appendix B. The 40 fillers are presented in Appendix C.

Research Experiment Design

The participants first needed to sign a consent form agreeing to participate in this research study for adult participants. Next, they read a brief explanation of how to provide grammaticality judgments. The short explanation for the L1 Mandarin-L2 English speakers shows five ungrammatical sentences and the corresponding grammatical sentences in Mandarin. It also shows them five ungrammatical sentences and the corresponding grammatical sentences in English. The native English speakers only read the same five ungrammatical and the corresponding grammatical sentences in English. The explanation of how to provide grammaticality judgments is presented in Appendix D.

After reading the grammaticality training material, each of the participants was given a paper questionnaire. They needed to state how long they had stayed in an English-speaking country, their TOEFL/ IELTS score and when they took TOEFL/IELTS. Then, the participants were asked to judge the grammaticality of 80 English sentences along a scale from 1 (ungrammatical) to 5 (grammatical). They also needed to rate their degree of confidence in each judgment they made along another scale from 1 (unconfident) to 5 (confident). The 40 test

sentences and the 40 fillers appear randomly in the paper questionnaire, but the order of these sentences is the same for each participant. It took about fifteen to twenty minutes to do the experiment. After the participants finishing the experiment, each of them received five dollars as compensation. No participants quit during the experiment.

CHAPTER 4: DATA ANALYSES

Forty-one participants were recruited for the present study. Of these, 12 participants' data was thrown out based on their grammaticality judgments on the fillers. The data coming from any participants who gave more than five ratings of 3 (neither ungrammatical nor grammatical) on the fillers or more than two judgments that were completely opposite of the correct grammaticality (e.g. the correct grammaticality is 5, and the person gave 1) on the fillers was thrown out. The data was thrown out because these participants either did not understand the instruction or just randomly gave their answers since the fillers either contain obvious grammatical errors or are clearly grammatical.

In total 29 participants' data was analyzed. Specifically, the 29 participants whose data was analyzed were from five participants in the group of L2 intermediate speakers (Group 1), eight participants in the group of L2 advanced speakers with short exposure (Group 2), seven participants in the group of L2 advanced speakers with long exposure (Group 3) and nine participants in the group of native English speakers (Group 4).

An alpha level of .05 was used for the statistical test performed on the data. For the purpose of the analysis of variance (ANOVA), the mean scores of the grammaticality judgments and the confidence ratings were calculated and compared. The 40 test sentences contain 10 item types. Within each item type, there are 4 different sentences, and the 4 different sentences do not make a difference for the statistical test. The mean of both the grammaticality judgments and the confidence on the 4 different sentences belonging to the same item type was calculated as the mean on the item type.

CHAPTER 5: RESULTS

Table 5.1 presents the means of the grammaticality judgments on the 10 item types of all four groups of participants: L2 intermediate speakers with short exposure (Group 1), L2 advanced speakers with short exposure (Group 2), L2 advanced speakers with long exposure (Group 3) and native English speakers (Group 4).

Table 5.1

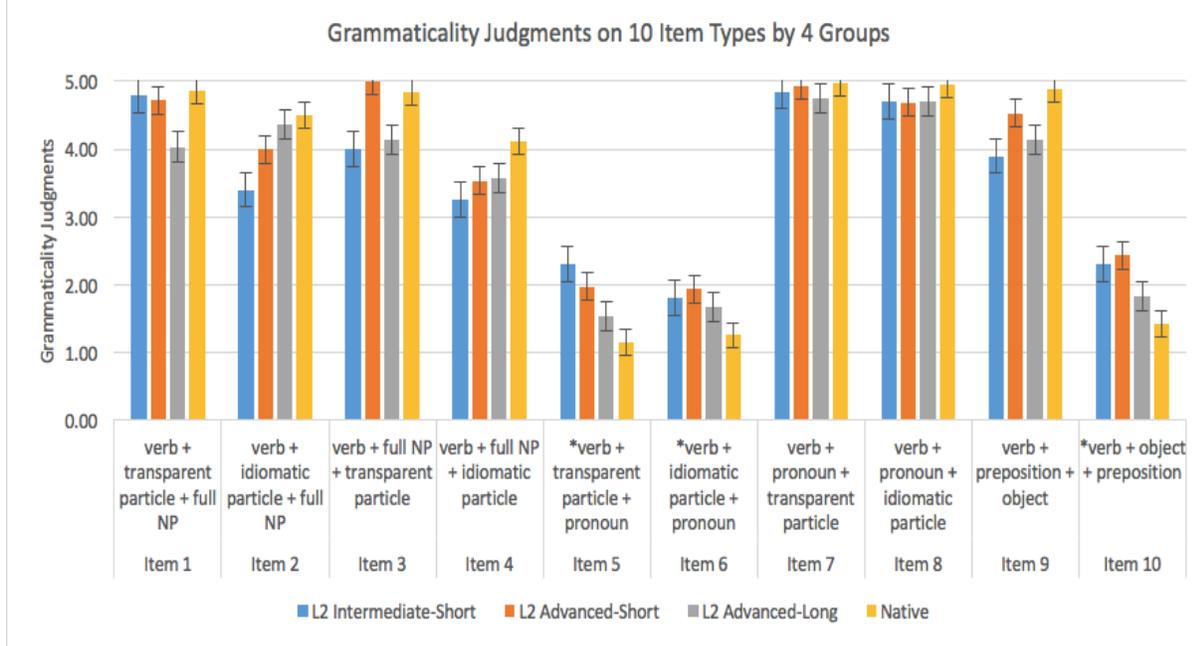
Means of the Grammaticality Judgments				
Item Types	L2 Intermediate- Short	L2 Advanced- Short	L2 Advanced- Long	Native
1.verb + transparent particle + full NP	4.80	4.72	4.04	4.86
2.verb + idiomatic particle + full NP	3.40	4.00	4.36	4.50
3.verb + full NP + transparent particle	4.00	5.00	4.14	4.83
4.verb + full NP + idiomatic particle	3.25	3.53	3.57	4.11
5.*verb + transparent particle + pronoun	2.30	1.97	1.54	1.14
6.*verb + idiomatic particle + pronoun	1.80	1.94	1.68	1.25
7.verb + pronoun + transparent particle	4.85	4.94	4.75	4.97
8.verb + pronoun + idiomatic particle	4.70	4.69	4.71	4.94
9.verb + preposition + object	3.90	4.53	4.14	4.89
10.*verb + object + preposition	2.30	2.44	1.82	1.42

From Table 5.1, we can see that among the four groups, the native English speakers showed the grammaticality judgments on all of the 10 test items that were closest to the correct grammaticality scores except on Item Type 3. The L2 Advanced learners with short exposure

showed the grammaticality judgment that was closest to the correct grammaticality score on Item Type 3.

Figure 5.1 presents a chart with error bars showing the grammaticality judgments on 10 item types by all of the four groups.

Figure 5.1



A two-way (4×10) mixed effects ANOVA with fixed effects for group, item types and the group by item types interaction and random effect for the subjects was conducted to investigate the grammaticality judgments between groups on each item type and the grammaticality judgments within group differences on each item type.

Table 5.2 is presented below to show the differences of grammaticality judgments that were statistically significant between the four groups on each item type.

Table 5.2

Group Differences on Each Item Type that Were Statistically Significant		
Label	Estimate	Pr > t
Item 1: Group 1 vs. Group 3	0.7643	0.0230
Item 1: Group 2 vs. Group 3	0.6830	0.0215
Item 1: Group 3 vs. Group 4	-0.8254	0.0043
Item 2: Group 1 vs. Group 3	-0.9571	0.0044
Item 2: Group 1 vs. Group 4	-1.1000	0.0006
Item 3: Group 1 vs. Group 4	-0.8333	0.0093
Item 3: Group 2 vs. Group 3	0.8571	0.0039
Item 3: Group 3 vs. Group 4	-0.6905	0.0170
Item 4: Group 1 vs. Group 4	-0.8611	0.0072
Item 4: Group 2 vs. Group 4	-0.5799	0.0376
Item 5: Group 1 vs. Group 3	0.7643	0.0230
Item 5: Group 1 vs. Group 4	1.1611	0.0003
Item 5: Group 2 vs. Group 4	0.8299	0.0028
Item 6: Group 2 vs. Group 4	0.6875	0.0137
Item 9: Group 1 vs. Group 4	-0.9889	0.0020
Item 9: Group 3 vs. Group 4	-0.7460	0.0099
Item 10: Group 1 vs. Group 4	0.8833	0.0058
Item 10: Group 2 vs. Group 3	0.6161	0.0380
Item 10: Group 2 vs. Group 4	1.0208	0.0003

From Table 5.2 we can see that the mean of grammaticality judgments of the native English speakers (Group 4) was significantly different from the mean of grammaticality judgments of at least one of the L2 learners' groups (Groups 1-3) on all of the 10 item types except Item Types 7 and 8. The native English speakers did not differ from the other groups because all groups were uniformly at ceiling in their ratings of Item Types 7 and 8.

Within the three L2 learners' groups, generally the L2 speakers with higher proficiency and longer exposure gave closer grammaticality judgments to the correct ratings. Specifically,

the L2 intermediate speakers (Group1) showed the judgments that were the most different to the correct ratings among the three L2 learners' groups on five item types: Item Types 2, 3, 4, 5 and 9. The L2 advanced speakers with short exposure (Group 2) showed the judgments that were the most different to the correct ratings among the three groups on two item types: Item Types 6 and 10.

However, on a few item types the L2 speakers with lower proficiency or shorter exposure showed judgments that were closer to the correct ratings than those with higher proficiency or longer exposure. For example, the L2 advanced speakers with long exposure (Group 3) showed the judgments that were the most different to the correct ratings among the three groups on one item type: Item Type 1. The L2 intermediate speakers showed closer grammaticality judgments to the correct rating than the L2 advanced speakers with long exposure on Item Type 1. Similarly, the L2 advanced speakers with short exposure showed closer grammaticality judgments to the correct ratings than the L2 advanced speakers with long exposure on Item Types 1 and 3.

Besides investigating the grammaticality judgments by Mandarin speakers, I am also interested in knowing the confidence of Mandarin speakers when they made each grammaticality judgment, so that I can know if they were sure about the judgments they made. Table 5.3 presents the mean confidence scores on the 10 item types by all four groups of participants.

Table 5.3

Means of the Confidence Scores				
Item Types	L2 Intermediate-Short	L2 Advanced-Short	L2 Advanced-Long	Native
1.verb + transparent particle + full NP	4.50	4.66	4.61	4.83
2.verb + idiomatic particle + full NP	4.60	4.34	4.54	4.44
3.verb + full NP + transparent particle	4.60	4.94	4.71	4.69
4.verb + full NP + idiomatic particle	4.70	4.28	4.68	4.44
5.*verb + transparent particle + pronoun	4.90	4.59	4.93	4.97
6.*verb + idiomatic particle + pronoun	4.70	4.66	4.86	4.92
7.verb + pronoun + transparent particle	4.60	5.00	4.96	4.86
8.verb + pronoun + idiomatic particle	4.70	4.84	4.79	4.81
9.verb + preposition + object	4.35	4.50	4.39	4.61
10.*verb + object + preposition	4.65	4.69	4.54	4.67

From Table 5.3 above, we can see that all of the participants in the four groups were highly confident in making the grammaticality judgments on each item type. The native English speakers were not the most confident among the four groups on every item type. For example, the L2 advanced speakers with short exposure were the most confident in their judgments among the four groups on Item Types 3, 7, 8 and 10. The L2 intermediate speakers were the most confident on Item Types 2 and 4.

Table 5.4 is presented below to show the differences of confidence that were statistically significant between the four groups on each item type. The result shows fewer group differences of confidence that were statistically significant than group differences of grammaticality.

Table 5.4

Group Differences on Each Item Type that Were Statistically Significant		
Label	Estimate	Pr > t
Item 4: Group 1 vs. Group 2	0.4187	0.0392
Item 4: Group 2 vs. Group 3	-0.3973	0.0311
Item 5: Group 2 vs. Group 4	-0.3785	0.0288
Item 7: Group 1 vs. Group 2	-0.4000	0.0488

CHAPTER 6: DISCUSSION

The Reason for Mandarin Speakers' Avoidance of PVCs in English

One of the research questions for the present study is whether the avoidance of PVCs in English shown by Liao and Fukuya (2004) is caused by the possibility that Mandarin speakers have different grammaticality judgments from native English speakers on PVCs in English. Since Liao and Fukuya (2004) only tested two structures of PVCs in English, which were Item Type 1 (verb+ transparent particle+ full NP) and Item Type 2 (verb+ idiomatic particle+ full NP) for the present study, I will first look at the grammaticality judgments on these two item types. The statistical test for the present study showed that the grammaticality judgment of the native English speakers was significantly different from that of the L2 advanced speakers with long exposure on Item Type 1 (verb+ transparent particle+ full NP), and that of the L2 intermediate speakers on Item Type 2 (verb+ idiomatic particle+ full NP) (see Table 5.2). The mean of the grammaticality judgment of the native English speakers on Item Type 1 was 4.86, which was close to 5 (5 represents the sentence is grammatical), but the mean of the L2 advanced speakers with long exposure was 4.04, which was close to 4 (4 represents that the sentence is less than fully grammatical). The mean of the grammaticality judgment of the native English speakers on Item Type 2 was 4.5, but the mean of the L2 intermediate speakers was 3.4. The significant differences show that the two groups of L1 Mandarin speakers gave the two grammatical structures of PVCs lower grammaticality ratings than the native English speakers. Therefore, the avoidance of PVCs by Mandarin speakers shown by Liao and Fukuya (2004) might be caused by the fact that the Mandarin speakers judged the PVCs as less than fully grammatical, so they

avoided using these PVCs.¹ Liao and Fukuya (2004) did not consider the different grammaticality judgments of Mandarin speakers than native English speakers as a factor that leads to Mandarin speakers' avoidance of PVCs in English.

The other research question for the present study is whether the avoidance of PVCs in English shown by Liao and Fukuya (2004) is caused by Mandarin speakers' being unsure about the grammaticality of PVCs in English. There is no significant difference between the mean of the confidence score on Item Type 1 and Item Type 2 that Liao and Fukuya (2004) used by the three L2 speakers' groups and the native English speakers' group. Among all of the 10 item types for the present study, we can only see a significant difference of confidence on Item Type 5 (*verb+ transparent particle+ pronoun) between the L2 advanced speakers with short exposure and the native English speakers (see Table 5.4). There is no significant difference of the confidence score on the other nine item types between the native English speakers and the other three L2 speakers' groups. Thus, I speculate that being unsure about the grammaticality of PVCs in English is not the cause for Mandarin speakers' avoidance of PVCs in English shown by Liao and Fukuya (2004).

Support for the Full Transfer Full Access Hypothesis

Liao and Fukuya (2004) only used two structures of PVCs in their tests, but the present study also tested the grammaticality judgments on the other eight types of PVC structures and two types of sentences containing a verb plus a prepositional phrase to investigate L1 Mandarin speakers' grammaticality judgments. In addition to the two item types that showed the significant

¹ There is an alternative explanation to the different grammaticality judgments given by the Mandarin speakers. Since particles in Mandarin are verbs instead of prepositions, it is possible that the Mandarin speakers failed to lexicalize what a particle is in the present study, so they might not recognize particles.

differences of the grammaticality judgments between the L1 Mandarin speakers and the native English speakers, the statistical test also showed that the grammaticality judgments of the native English speakers were significantly different from the three L2 English speakers' groups on six item types (see Table 5.2). After analyzing all of these grammaticality judgments by the L1 Mandarin speakers, I propose that the grammaticality judgments by the Mandarin speakers support the Full Transfer Full Access Hypothesis in L2 acquisition, and contradicts the Full Access without Transfer Hypothesis in terms of the initial state in L2 acquisition.

According to White (2003), the evidence serving to support the initial state in L2 acquisition maintained by the Full Transfer Full Access Hypothesis should be evidence of L1 properties in the interlanguage grammar. If this evidence were found, it would also contradict the initial state in L2 acquisition proposed by the Full Access without Transfer Hypothesis. The present study supports the Full Transfer Full Access Hypothesis and contradicts the Full Access without Transfer Hypothesis by showing that the grammaticality judgments on PVCs in English by the L1 Mandarin speakers reflect the L1 influence. Specifically, the L1 Mandarin speakers' judgments on PVCs in English are influenced by the grammaticality of the corresponding PVCs in Mandarin.

Table 5.2 shows that the grammaticality judgment of the native English speakers was significantly different from the judgments of the L2 intermediate speakers and the L2 advanced speakers with long exposure on Item Type 3 (verb+ full NP+ transparent particle). Similarly, a significant difference was also found on Item Type 4 (verb+ full NP+ idiomatic particle) between the judgment of the native English speakers and the judgments of the L2 intermediate speakers and the L2 advanced speakers with short exposure. In English a full noun phrase can be inserted between a main verb and a particle, but such structure is ungrammatical in Mandarin.

Generally, the L2 speakers gave lower grammaticality judgments on Item Type 3 and Item Type 4 than the native English speakers, which shows that the grammaticality judgments of L2 speakers are influenced by the grammaticality of the corresponding structures in Mandarin. Since we can see evidence of L1 influence in the interlanguage grammar of the L1 Mandarin speakers, this indicates that the initial state in L2 acquisition is the L1 grammar.

Having supported the claim that the initial state in L2 acquisition is the L1 grammar, I admit the important role of L1 in the L2 acquisition. However, according to the Full Transfer Full Access Hypothesis, the initial state is not fossilized forever in the L2 acquisition. In the subsequent L2 acquisition, the interlanguage grammar will undergo restructuring to accommodate the L2 input that does not fit into the L1 grammar. This means that L2 learners will gradually acquire L2 properties, and the interlanguage grammar would show “evidence of restructuring away from the L1 grammar” (White 2003: 61). The present study can also support this viewpoint because the L1 Mandarin speakers showed similar grammaticality judgments with the native English speakers on a few types of grammatical PVCs in English that are ungrammatical in Mandarin.

An interesting result is that all of the three L2 learners’ groups gave similar grammaticality judgments on Item Type 7 (verb+ pronoun+ transparent particle) and Item Type 8 (verb+ pronoun+ idiomatic particle) with the native English speakers. In Mandarin, the order of verb-pronoun-particle is ungrammatical. Therefore, the grammaticality judgments that are similar with the native English speakers by the L1 Mandarin speakers on Item Types 7 and 8 show evidence of the interlanguage grammar shifting away from L1 grammar. Then, I want to figure out why the L1 Mandarin speakers showed similar grammaticality judgments on the structure of verb-pronoun-particle, but different grammaticality judgments on the other structures

like verb-full NP-particle with the native English speakers. According to Clahsen and Felser (2006), adult L2 learners use less syntactic information in L2 sentence processing than native speakers. Adult L2 learners rely more on lexical-semantic cues. Thus, I suspect that pronouns are easier to process than full noun phrases for L2 learners when both of them occur in the same syntactic structure. It is likely that full noun phrases incur a greater processing load when they separate a verb and a particle compared with a pronoun for L2 learners. This could explain why L1 Mandarin speakers showed more accurate grammaticality judgments on the structure of verb-pronoun-particle than the structure of verb-full NP-particle.

Trigger of the Interlanguage Grammar Change: L2 Exposure

From the grammaticality judgments on Item Types 7 and 8, I argue that the L2 learners show evidence of the interlanguage grammar shifting away from their L1 grammar, but I am not sure of what factors contribute to this restructuring. L2 input and Universal Grammar could trigger the restructuring according to White (2003).

The present study investigates whether the L2 input triggers the interlanguage grammar to shift toward L2 grammar. I predict that the more L2 exposure the L2 learners have, the closer their grammaticality judgments would be to the native English speakers. However, although I found the above tendency on a few item types within the three L2 English speakers' groups, I did not find a consistent influence from the L2 exposure on their grammaticality judgments. For example, the advanced English learners with long exposure showed the grammaticality judgment closer to the native English speakers on Item Types 2 and 5 than the intermediate English learners. However, on Item Type 1, I observed the opposite pattern: the intermediate English learners showed the grammaticality judgment closer to the native English speakers than the advanced English learners with long exposure.

I suspect that the reason why the L2 advanced speakers with short exposure sometimes showed closer grammaticality judgments to the correct grammaticality score than those with long exposure is that the L2 advanced speakers with short exposure are more influenced by the English classroom instruction. They have stayed in an English-speaking country for fewer years than those with long exposure, so they probably still remember the explicit instruction on PVCs in English. According to White (2003), it is still not yet clear whether the classroom input would trigger the interlanguage grammar change. It is beyond the present study's scope to investigate this question, but with a specific experiment design, this topic can be further investigated. I will discuss the specific experiment design in Chapter 8.

CHAPTER 7: CONCLUSION

In conclusion, as one of the few research studies that investigates the L2 acquisition of PVCs in English by speakers whose L1 has PVCs but whose PVCs work differently, the present study investigates the grammaticality judgments on PVCs in English by L1 Mandarin-L2 English speakers and finds out that the L2 English learners show different grammaticality judgments from the native English speakers on most of the structures of PVCs. Thus, I speculate that different grammaticality judgments of L1 Mandarin-L2 English speakers from native English speakers leads to the avoidance of PVCs in English shown by Liao and Fukuya (2004). This finding supplements the factors causing the avoidance of PVCs found by Liao and Fukuya (2004). They claimed that proficiency level, phrasal-verb type and the particular testing method affected L2 learners' avoidance of PVCs, but they did not consider L2 learners' grammaticality judgments as one of the factors influencing avoidance of PVCs.

Moreover, the present study supports the Full Transfer Full Access Hypothesis by showing that: a. The initial state in L2 acquisition is the L1 grammar. b. In the subsequent process of L2 acquisition, the interlanguage grammar shifts from the L1 grammar to the L2 grammar. The evidence for (a) is that the grammaticality judgments on PVCs in English of the English learners are influenced by the corresponding grammaticality of PVCs in Mandarin. The evidence for (b) is that the L2 learners show similar grammaticality judgments on a few types of PVCs in English that have the opposite grammaticality of the corresponding PVCs in Mandarin.

The present study also has implications for L2 instruction of PVCs in English. The present study finds that Mandarin speakers have different grammaticality judgments from native

English speakers, and their judgments show L1 influence. If the L2 instructors can show the differences between PVCs in learners' L1 and L2 to the learners in addition to teaching them the structure of PVCs in L2, it would help L2 learners to be less confused about PVCs in their L1 and L2.

Finally, having investigated what triggers the development of the interlanguage grammar, I do not find the influence from exposure to the English environment on the grammaticality judgments by the L2 learners. I speculate that the explicit classroom instruction might be a trigger of the development of the interlanguage grammar, but this speculation needs future investigation.

CHAPTER 8: LIMITATIONS AND FUTURE INQUIRY

The present study still has some limitations. One of them is that the present study relies on data from small numbers of participants, particularly in the intermediate proficiency group, so their grammaticality judgments and confidence ratings may not be representative of the groups they belong to. The small numbers of participants also cause some abnormal results in the present study. For example, the mean of the grammaticality judgment of the L2 advanced speakers with short exposure on Item Type 3 (5.00) was even closer to the correct answer than the mean of the native English speakers (4.83). The other limitation is about the recruitment of the present study. In the group that has five L2 intermediate speakers with short exposure, four of the participants did not take any standardized English tests. Without a score on a standardized English test, it is difficult to know L2 learners' English proficiency level. I recruited the four people as L2 intermediate speakers relying on my own observation about their English proficiency when I interacted with them. For example, some of these participants asked me what "Mandarin" meant when they read the adult consent form, and some of them saw English words that they did not know in the test and asked me if they could use a dictionary to look up the meaning of these words. Based on these observation, I knew that these participants were not advanced English learners, but I still could not know if they had low proficiency or intermediate proficiency of English.

Due to the inconsistent grammaticality judgments showed by the L2 advanced speakers with short exposure and those with long exposure, I do not find strong evidence to show the role of exposure to the L2 environment in triggering the development of the interlanguage grammar.

However, I suspect that the explicit classroom instruction might also trigger the shifting away of the interlanguage grammar from the L1 grammar to the L2 grammar. I propose that in order to investigate this topic, researchers can recruit three groups of native Mandarin learners of English. Within the three groups, one group of learners has never been to an English-speaking country. The other two groups of learners have short residence years (less than 2 years) and long residence years (more than 5 years) in an English-speaking country. All of the participants are advanced learners of English. The learners who have not received native English input would attend a classroom session in which they are taught PVCs in English and practice using PVCs. Then, the group of participants will do the grammaticality judgment test on PVCs in English one month after the instruction took place. Cadierno-Lopez (1992) examined short and longer term effects of instruction by investigating L2 acquisition of clitic direct object pronouns and past tense verb morphology by adult classroom learners of Spanish. She found that the effect of input-based instruction held over the three post-tests, which happened immediately after the instruction, one week after instruction and one month after instruction. Thus, I propose that for this future study, the post-test is also administered one month after the instruction took place. Those learners of English who have been to an English-speaking country will not attend the classroom session. They will only be given the grammaticality judgment test on PVCs in English. The researchers can compare the grammaticality judgments among the three groups. If the learners with long exposure to the English environment give the most accurate grammaticality judgments, and the learners who have received the explicit instruction give the least accurate judgments with the judgments by the learners with short exposure to the English environment in the middle, then this would show that L2 input triggers the interlanguage grammar change. If the learners who have received the instruction give the most accurate

grammaticality judgments, and the learners with long L2 exposure give the least accurate judgments with the judgments by the learners with short L2 exposure in the middle, then this would show that the explicit classroom instruction triggers the interlanguage grammar change.

Another direction of future research is to recruit L2 Mandarin learners whose L1 is English at the intermediate and advanced proficiency level and L2 English learners whose L1 is Mandarin at the intermediate and advanced proficiency level and compare the grammaticality judgments between the Mandarin learners and the English learners. The Mandarin learners will judge the grammaticality of PVCs in Mandarin, and the English learners will judge the grammaticality of the corresponding PVCs in English. I would like to know if the Mandarin learners will show L1 influence in their grammaticality judgments. For example, English has the structure of verb-full NP-particle, but this structure is ungrammatical in Mandarin. I would like to know if the Mandarin learners would give higher grammaticality rating to the structure of verb-full NP-particle in Mandarin.

**APPENDIX A: THE STANDARDIZED ENGLISH TEST SCORE AND RESIDENCE
YEARS OF EACH L1 MANDARIN SPEAKER**

Group	ID	TOEFL/IELTS	How Long in an English-speaking Country
L2 Intermediate	1	IELTS 6.5	5 months
L2 Intermediate	3	No	1.5 years
L2 Intermediate	5	No	9 months
L2 Intermediate	7	No	10 months
L2 Intermediate	9	No	3 months
L2 Advanced-Short	11	TOEFL 98	5 months
L2 Advanced-Short	12	TOEFL 102	6 months
L2 Advanced-Short	13	TOEFL 100	20 months
L2 Advanced-Short	14	TOEFL 99	5 months
L2 Advanced-Short	15	TOEFL 113	14 months
L2 Advanced-Short	16	TOEFL 105	14 months
L2 Advanced-Short	18	TOEFL 96	16 months
L2 Advanced-Short	19	TOEFL 99	6 months
L2 Advanced-Long	21	TOEFL 108	5.5 years
L2 Advanced-Long	22	No	15 years
L2 Advanced-Long	24	TOEFL 96	7 years
L2 Advanced-Long	26	TOEFL 109	4.5 years
L2 Advanced-Long	27	TOEFL 105	6 years
L2 Advanced-Long	28	TOEFL 104	4.5 years
L2 Advanced-Long	30	TOEFL 99	9 years

APPENDIX B: TEST SENTENCES

Please judge the grammaticality of the following sentences along a five-point scale from 1 (ungrammatical) to 5 (grammatical). Please also rate the degree of confidence in each judgment you make along a five-point scale from 1 (unconfident) to 5 (confident).

1. She is going to put on the hat.
2. Please turn off the TV.
3. Susan accidentally took away her colleague's magazine.
4. She told Bill to put down that expensive vase.
5. Bill turned down all the job offers in order to irritate his father.
6. Bill never lets down his friends.
7. Susan made up a story about a robbery.
8. Susan does not like her new colleague because he is always showing off his talent.
9. She is going to put the hat on.
10. Please turn the TV off.
11. Susan accidentally took her colleague's magazine away.
12. She told Bill to put that expensive vase down.
13. Bill turned all the job offers down in order to irritate his father.
14. Bill never lets his friends down.
15. Susan made a story up about a robbery.
16. Susan does not like her new colleague because he is always showing his talent off.
17. *She is going to put on it.
18. *Please turn off it when you leave the room.
19. * Susan accidentally took away it.

20. *She told Bill to put down it.
21. *Susan made up it.
22. *Bill never lets down her.
23. *Don't forget to put out it.
24. *Bill turned down them in order to irritate his father.
25. She is going to put it on.
26. Please turn it off when you leave the room.
27. Susan accidentally took it away.
28. She told Bill to put it down.
29. Bill never lets her down.
30. Don't forget to put it out.
31. Susan made it up.
32. Bill turned them down in order to irritate his father.
33. She sped up the pole. (Fraser 1976: 1)
34. She ran off the stage. (Fraser 1976: 2)
35. Harry will look over the fence. (Fraser 1976: 1)
36. They warn against violence.
37. *She sped the pole up. (Fraser 1976: 2)
38. *She ran the stage off. (Fraser 1976: 2)
39. *Harry is looking the baby after.
40. *They warn violence against.

APPENDIX C: FILLERS

Please judge the grammaticality of the following sentences along a five-point scale from 1 (ungrammatical) to 5 (grammatical). Please also rate the degree of confidence in each judgment you make along a five-point scale from 1 (unconfident) to 5 (confident).

1. With your help, I can complete this project successfully.
2. Susan studies French by watching French movies.
3. Bill will do his homework in an hour.
4. She always drinks coffee on Monday morning.
5. The toy is under the table.
6. *About your help, I can complete this project successfully.
7. *Susan studies French before French movies.
8. *Bill will do his homework at an hour.
9. *She always drinks coffee under Monday morning.
10. *The toy is about the table.
11. Bill says that he wants to drink water.
12. I know that he loves Susan.
13. Susan's mom baked a delicious cake.
14. He planned to read that book.
15. She asked Bill to buy a new notebook.
16. *Bill says that he wants to water drink.
17. *I know that he Susan loves.
18. *Susan's mom a delicious cake baked.
19. *He planned to that book read.

20. *She asked Bill to a new notebook buy.
21. Bill invited himself to his own party.
22. She should make a decision soon.
23. Susan likes herself.
24. Bill's mother asked Bill to clean his bedroom.
25. They love their paintings.
26. *Bill invited herself to his own party.
27. *Herself should make a decision soon.
28. *Susan likes yourself.
29. *Bill's mother asked Bill to clean himself bedroom.
30. *They love themselves paintings.
31. Which parks has Bill been to in North Carolina?
32. What did Susan eat?
33. Whose class did you take last semester?
34. Why is she so smart?
35. When will you go to England?
36. *Which has Bill been to parks in North Carolina?
37. *What Susan ate?
38. *Whose did you take class last semester?
39. *Why smart is she?
40. *When you will go to England?

APPENDIX D: GRAMMATICALITY TRAINING MATERIAL

1. For participants who are native English speakers:

Training:

Here are five examples of ungrammatical English sentences and the corresponding grammatical sentences. Sentences 1,3,5,7,9 are ungrammatical even though you can imagine what they mean.

Ungrammatical sentences	Grammatical sentences
1.*Sarah saw pictures of.	2.Sarah saw pictures of animals.
3.*I seem to that Robert can't be trusted.	4.It seems to me that Robert can't be trusted.
5.* Was scolded Steve.	6.Steve was scolded.
7.* Mary drove Rio and John flew to Sao Paulo.	8. Mary drove to Rio and John flew to Sao Paulo.
9.*Debbie ate chocolate, and Kathy milk drank.	10.Debbie ate chocolate, and Kathy drank milk.

2. For participants who are native Mandarin speakers and speak English as a second language.

Training:

Here are five examples of ungrammatical Chinese sentences and the corresponding grammatical sentences. Sentences 1,3,5,7,9 are ungrammatical even though you can imagine what they mean.

Ungrammatical sentences	Grammatical sentences
1.*她香蕉吃。	2.她吃了香蕉。
3.*哪里比尔去了？	4.比尔去了哪里？
5.* 什么这个小孩吃了？	6.这个小孩吃了什么？
7.*我在水喝。	8.我在喝水。
9.*玛丽开车夏洛特。	10.玛丽开车去夏洛特。

Here are five examples of ungrammatical English sentences and the corresponding grammatical sentences. Sentences 11,13,15,17,19 are ungrammatical even though you can imagine what they mean.

Ungrammatical sentences	Grammatical sentences
11.*Sarah saw pictures of.	12.Sarah saw pictures of animals.
13.*I seem to that Robert can't be trusted.	14.It seems to me that Robert can't be trusted.
15.* Was scolded Steve.	16.Steve was scolded.
17.* Mary drove Rio and John flew to Sao Paulo.	18. Mary drove to Rio and John flew to Sao Paulo.
19.*Debbie ate chocolate, and Kathy milk drank.	20.Debbie ate chocolate, and Kathy drank milk.

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