

DOES L1 TRANSFER INFLUENCE CHINESE SPEAKERS' INTUITION OF ADJECTIVE
ORDERING IN ENGLISH

BY

RUOYU HUANG

THESIS

Submitted in partial fulfillment of the requirements
for the degree of Master of Arts in the Teaching of English as a Second Language
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2017

Urbana, Illinois

Master's Committee:

Associate Professor Tania Ionin, Chair
Assistant Professor Xun Yan

ABSTRACT

L1 influence on second language acquisition has been shown by linguists in many areas. This study is to look into the L1 influence on English adjective ordering among Chinese ESL learners. We hypothesized that if there was a certain adjective ordering “rule” existing in both Chinese and English, it would facilitate Chinese ESL learners’ performance on producing such order in English. The results of our experiment suggested that there was a statistically significant interaction between proficiency levels (native vs. non-native) and adjective categories (non-absolute + absolute vs. absolute + absolute vs. non-absolute + non-absolute). More specifically, Chinese ESL learners performed the best on the “non-absolute + absolute” category that exists in both English and Chinese compared to the other two categories that only exist in English. This finding indicates that L1 influence may play a role in second language acquisition of adjective ordering.

To my parents who always believe in me,
and Dr. Gonzalo Munevar who encouraged me to be a dream chaser.

ACKNOWLEDGEMENTS

I wish to express my sincere gratitude to my thesis advisor, Professor Tania Ionin, who have guided me through the entire process of my research study and provided me with countless valuable suggestions for being a good researcher and writer in academia. I could not have completed all of this without her help.

I would also like to thank my former advisor, my friend, Dr. Gonzalo Munevar, who initially inspired me to get this thesis idea, and who always supported me whenever and wherever I was frustrated. I am extremely grateful to have a life and career mentor like him in my life teaching me how to be a critical scientist and a good man.

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION.....	1
1.1 ADJECTIVE ORDERING IN ENGLISH AND CHINESE	2
1.2 THE INFLUENCE OF L1 TRANSFER AND UNIVERSAL HIERARCHY	3
1.3 RESEARCH QUESTIONS AND A PREVIEW OF THIS PAPER	3
CHAPTER TWO: LITERATURE REVIEW	5
2.1 ADJECTIVE ORDERING IN ENGLISH	5
2.1.1 <i>Theories of English Adjective Ordering</i>	5
2.1.2 <i>Adjective Ordering Rules in ESL Textbooks</i>	7
2.2 HYPOTHESIS OF UNIVERSAL HIERARCHY	8
2.3 ADJECTIVE ORDERING IN MANDARIN CHINESE	9
2.3.1 <i>Indirect Adjectives with Adjective Marker “De”</i>	10
2.3.2 <i>Direct Adjectives with Restrictions</i>	10
2.4 L1 INFLUENCE IN L2 GRAMMAR ACQUISITION	11
2.5 RESEARCH QUESTIONS AND PREDICTIONS	12
CHAPTER THREE: NORMING STUDY	14
3.1 PARTICIPANTS	14
3.2 ADJECTIVE ORDERING PHRASES	14
3.3 MEASUREMENTS AND PROCEDURES	15
3.4 RESULTS	15
3.5 PHRASE FREQUENCY CHECKING	17

CHAPTER FOUR: METHODOLOGY	19
4.1 PARTICIPANTS	19
4.2 MEASUREMENTS AND PROCEDURE	19
4.2.1 <i>Adjective Ordering Task</i>	20
4.2.2 <i>Cloze Test</i>	21
4.2.3 <i>Language Background Questionnaire</i>	22
4.3 DATA ANALYSIS	22
CHAPTER FIVE: RESULTS	24
5.1 ENGLISH PROFICIENCY	24
5.2 ADJECTIVE ORDERING TASK PERFORMANCE	26
5.3 PERFORMANCE COMPARISONS ACROSS GROUPS.....	28
5.4 DETAILED REPORT ON STIMULI FROM CHINESE SPEAKERS.....	31
5.5 THE AWARENESS OF ADJECTIVE ORDERING RULES	33
CHAPTER SIX: DISCUSSION.....	34
6.1 THE FLEXIBILITY OF ADJECTIVE ORDERING AMONG ENGLISH SPEAKERS	34
6.2 L1 INFLUENCE VS. UNIVERSAL HIERARCHY	36
6.2.1 <i>If There are Universal Ordering Rules in the NN and AA Combinations</i>	37
6.2.2 <i>If There is No Universal Ordering Rules in the NN and AA Combinations</i>	37
6.2.3 <i>“Non-absolute+Color” Order</i>	38
6.3 THE INFLUENCE FROM PHRASE FREQUENCY	40
6.4 ADJECTIVE ORDERING TEACHING IMPLICATION.....	41

CHAPTER SEVEN: CONCLUSION	43
7.1 SUMMARY OF FINDINGS.....	43
7.2 SUMMARY OF LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH	44
REFERENCES	46
APPENDIX A: PHRASE LIST FOR THE NORMING STUDY	50
APPENDIX B: TARGET STIMULI WITH CORRECT ORDER	51
APPENDIX C: PRACTICE ITEMS AND FILLERS	52
APPENDIX D: ADJECTIVE ORDERING TEST ANSWER SHEET	53
APPENDIX E: CLOZE TEST	54
APPENDIX F: LANGUAGE BACKGROUND QUESTIONNAIRE FOR CHINESE SPEAKERS	55
APPENDIX G: LANGUAGE BACKGROUND QUESTIONNAIRE FOR ENGLISH SPEAKERS	56

CHAPTER ONE: INTRODUCTION

Grammar is one of the essential and emphasized parts of learning a new language. With good grammar knowledge, language learners can communicate efficiently with others. English speakers use different kinds of modifiers to describe a noun, a verb or a sentence. The adjectives are one of the commonly used modifiers. The huge vocabulary pool in English allows English speakers to choose various adjectives to modify a noun, such as *a blue ball*, *a clean ball*. However, English is one of the languages that allows speakers to use multiple pre-nominal adjectives at a time. Hence, when more than one adjective is involved, English speakers need to put the chosen adjectives in an order. Many researchers have observed that native speakers have consistent preference for adjective orders. For instance, majority of the native speakers prefer to say *a long thin pencil* instead of *a thin long pencil* (Stringer, 2013). There are no grammar errors in the phrase *a thin long pencil*, but it does not feel “right” to most native speakers.

The research about English adjective ordering plays a significant role in developing adjective ordering teaching materials and methods, even though this subdomain of English grammar does not catch a whole lot of attention. Knowing what ESL students are generally struggling with, what they have already known and what is easy for them to acquire in English learning is promising to ESL instructors. Fries (1945) once said, “The most effective materials are those that are based upon a scientific description of the language to be learned, carefully compared with a parallel description of the native language of the learner.” (p.9). That is to say, if we want to tailor an ESL class into learners’ needs, L1 background needs to be considered as a potential influence on ESL learners’ L2 acquisition. In this study, we focused on a group of English learners whose first language was Chinese.

1.1 Adjective Ordering in English and Chinese

In terms of the adjectives' absoluteness, we divided the whole adjective collection into two big groups—absolute adjectives and non-absolute adjectives. An adjective is considered as absolute when it is not relative or gradable. On the contrary, an adjective is non-absolute when it is relative and gradable. For example, size adjectives (e.g. *big, small, etc.*) are gradable. We can say one object is *big* compared to a smaller object; material adjectives are ungradable, because a table is either *wooden* or not *wooden*.

In English, the common adjective combinations in a double adjective phrase are “non-absolute + absolute” (NA), “absolute + absolute” (AA) and “non-absolute + non-absolute” (NN). When a non-absolute and an absolute adjective are both used to modify a noun, English speakers tend to put the non-absolute adjective closer to the noun. For instance, *a clean wooden table* is more acceptable than *a wooden clean table*. When two absolute or two non-absolute adjectives appear together, English speakers also show a consistent preference for adjective ordering. For example, *a broken glass bowl* and *a tall strong man* would be more acceptable than *a glass broken bowl* and *a strong tall man* by most native speakers. It also has been claimed that English speakers have the intuition of “correct” adjective orders in their early childhood (Bever, 1970).

Chinese, on the other hand, has very limited direct pre-nominal adjective combinations in terms of the absoluteness. NA combination is commonly used in Chinese as in English—Chinese speakers put absolute adjectives closer to nouns than non-absolute adjectives (e.g. size > shape). However, neither AA nor NN (except for “N+color”) adjective combination is allowed in direct pre-nominal adjectival modification in Chinese.

1.2 The Influence of L1 Transfer and Universal Hierarchy

It has been claimed in the past decades that the L1 transfer is potentially involved in L2 acquisition of many areas, such as syntax and morphology (Montrul, 2000; Schwartz & Sprouse, 1996). Hence, we expected to see the L1 influence on L2 acquisition of English adjective ordering among ESL learners from a certain L1 background. The successful findings of the L1 influence in other areas motivated us to consider the possibility of L1 influence in English adjective ordering among Chinese speakers.

Apart from L1 transfer, Universal Grammar (UG) is another potential factor that may affect L2 acquisition. It is referred to certain language principles underlying language structure, which are innately given to language learners. It was claimed that the universal principles included in UG could be unconsciously attained by not only first but also second language learners (White, 2012). The potential benefits from the UG is that language learners would unconsciously develop robust knowledge of it. In the case of adjective ordering, language learners are expected to acquire the adjective orders governed by certain universal rules easier than those not part of the Universal Hierarchy. Unfortunately, the Universal Hierarchy is understudied in NN and AA combinations. Researchers have only showed that NA order is universal, but did not claim that the adjective ordering in the NN and AA combinations is also governed by universal rules.

1.3 Research Questions and a Preview of This Paper

Our interest in L2 acquisition of adjective ordering, L1 influence in L2 learning as well as the Universal Hierarchy in adjective ordering leads to two research questions. Our first research question is whether L1 transfer influences Chinese ESL learners' acquisition of L2 adjective

ordering. The second research question is whether there is a positive co-relation between Chinese ESL learners' English proficiency. In other words, do high proficient learners perform better on producing native-speaker-preferred orders? High proficient language learners are expected to make less errors in grammar and to produce more native-speaker-like word orders.

In Chapter Two, we will do a literature review on adjective ordering in both Chinese and English as well as the influence of L1 transfer and the Universal Hierarchy. Chapter Three will give a report about the procedure and the results of our norming study. Chapter Four shows how our main experiment carried out. Chapter Five will give a detailed description of the research results. Later in Chapter Six, we are going to interpret our data in more depth and discuss how to disentangle the issue of L1 transfer vs. Universal Hierarchy in L2 acquisition of adjective ordering. At the end of the paper, we will draw a conclusion about the main findings of our study.

CHAPTER TWO: LITERATURE REVIEW

In this Chapter, we shed a light on linguistics research about Chinese and English adjective ordering. By comparing what former researchers have found, we concluded that there were some rules for English adjective ordering that also exist in Mandarin Chinese. Studies on cross-linguistic influence (L1 influence) were introduced in the following section as well, which motivated us to do a research on Chinese ESL learners' acquisition of L2 adjective ordering.

2.1 Adjective Ordering in English

In many languages, people use pre-nominal adjectival modifiers to enhance the accuracy and vividness of nouns in speaking and writing. When this type of modification involves more than one adjectives, however, different languages have different ways to order them. It has been widely agreed that native speakers of English have consistent and robust order preference for multiple pre-nominal adjectives in a phrase (Bloomfield, 1933; Lance, 1968; Quirk et al., 1972; Vendler, 1968). For example, *big red Swiss table* is more acceptable than *red Swiss big table* or any other different adjective sequence (Danks & Glucksberg, 1971). Bever (1970) even found out that English as L1 children started to use adult native speaker preferred orders at a very young age. The preferred orders come to English speakers so naturally that most of them cannot vocalize the rules.

2.1.1 Theories of English Adjective Ordering

Since 1960s, linguistics researchers have started explaining and describing such phenomenon in English adjective ordering by developing sophisticated rule systems. It was initially proposed by Annear (1964) that the adjective orders were determined by the order of adjective classes. She grouped adjective into 6 classes from “ma” modifiers to “mf” modifiers

(p.101). More specifically, “Mf” modifiers were defined as those preceding all other modifiers; “Me” modifiers were marked as those related to measure; “Md” modifiers were referred to nationalities, etc. The basic rationale behind it was that the class hierarchy determines the adjective orders (e.g. nationality adjectives is supposed to be further away from the noun than material adjectives). Ironically, this proposal was criticized by Annear herself later in her paper that it was post hoc (Martin, 1969b) because this “rule” failed to explain any other linguistics phenomenon but adjective ordering.

Following Annear’s step, Linguistics researchers developed various theories to explain the “rules” of English adjective ordering in terms of adjectives’ semantic properties. The “denotative definiteness” was one of the properties that had been discussed quite often (Huang & Federmeier, 2012). An adjective was considered less definite than another, if you needed to do more comparisons between objects before using this adjective (Martin, 1969). For example, you need to compare at least two balls to determine which one is relatively *big* while no comparison is needed to describe a table that is *wooden*. Definiteness was also considered the same as absoluteness, since they were highly correlated ($r \geq .90$) (Danks & Schwenk, 1972). To put it simply, a definite or absolute adjective was not relative or gradable, and many researchers suggested that the more definite or absolute an adjective was the closer it should be put to a noun (Sweet, 1898; Ziff, 1960). Apart from the absoluteness and definiteness, noun-likeness was also discussed by researchers like Biber et al. (1999). They believed that the more noun-like an adjective was, the closer it was placed to a noun. For instance, *Italian* and *stone* can both be a noun while *big* is always considered as an adjective. When *Italian* or *stone* functions as an

adjective with *big*, the only acceptable order is *big Italian* (e.g. *a big Italian guy*) or *big stone* (e.g. *a big stone lion*).

It was also claimed by Martin (1969a) that the priority of choosing an adjective affected the order: the first chosen adjective by a native speaker would be put next to the noun and accordingly the second chosen adjective would be closer to the noun than the third chosen one. These mixed theories of semantic and psychological effects were soon accepted by many researchers, and people started to think out of the box and reached out to more non-syntactic accounts, such as communication context. It was discovered by Danks and Schwenk (1972) that the “normal” adjective orders could be reversed because of a person’s emphasis. Take *the large red car* for instance, when a person wants to put emphasis on the color of the car, he/she is very likely to say *a RED large car (not a blue one)* instead of using the “normal” order.

2.1.2 Adjective Ordering Rules in ESL Textbooks

Different from the research area where various theories were developed, ESL grammar textbooks have very consistent ways to introduce adjective ordering rules in English. In most cases, textbooks sort adjectives into different categories and display the general adjective category hierarchy. For example, in *Basic English Grammar (3rd Ed)*, Azar and Hagen (2006a) introduced the adjective ordering rule to beginning level ESL students: opinion > size > age > color > nationality > material (pp. 410-413). Thewlis (2007) introduced the rule to intermediate level ESL students in the book *Grammar Dimensions 3: Form, Meaning, and Use (4th Ed)*: evaluation/opinion > appearance (usually size > shape > condition) > age > color > origin (geographical > material). In Maurer’s book (2000) *Focus on Grammar: An advanced course for reference and practice (2nd ed)*, an advanced level adjective ordering rule was introduced:

opinions/qualities > size/height/length > age/temperature > shapes > colors > nationalities/social classes/origins > materials. It appears that the more proficient the target ESL students are, the more complicated the hierarchy will be introduced. Additionally, compared to other subdomains of English grammar, adjective ordering is not essential and emphasized in English teaching and learning. It was introduced once at a stage of English learning and never revisited by teachers or textbooks (Stringer, 2013). Students are asked to memorize the canonical hierarchy and apply it to their English production without practicing much in English learning.

2.2 Hypothesis of Universal Hierarchy

In a book chapter by Stringer (2013)—*Modifying the teaching of modifiers: A lesson from Universal Grammar*, Stringer doubted the effectiveness of the current adjective ordering teaching materials due to the fact that many introductions were not adjusted to students' needs in terms of their L1 background. Accordingly, he proposed that ESL learners' performance might vary from one L1 to another. He grouped all the adjectives into two categories in terms of their absoluteness—absolute adjectives and non-absolute adjectives. The former ones are ungradable or not relative (such as material, origin, etc.), and the latter ones are gradable or relative (such as opinions, length, etc.). He tested non-absolute + non-absolute (NN) and non-absolute + absolute (NA) combinations on Arabic, Korean and Chinese ESL learners and concluded that all three groups had robust knowledge on the NA combination while the performance on the NN combination was relatively lower (For some reason, he did not show the performance of those three groups on the AA combination). Even though Arabic and Korean did not use direct pre-nominal adjectives to modify a noun, the participants from those two groups showed a decent

score on the NA combination, indicating great understanding on this particular combination in English.

Stringer (2013) hypothesized that Universal Hierarchy might play a role in L2 acquisition of English adjective ordering. With the development of adjective ordering research, researchers have discovered that although there was variance among direct adjective ordering hierarchies in different languages, those hierarchies had some rules in common. Most of the common orders belonged to the NA combination, such as “Size > Shape”(e.g. *small square house*) which was found not only in English, but also in Italian, Thai, Celtic, and Chinese (Sproat & Shih, 1991; Stringer, 2013). This linguistics phenomenon was discussed by Stringer that NA order was “plausibly part of Universal Grammar” (p.96), which facilitated the acquisition of the knowledge of the NA combination, and explained why Arabic and Korean speakers whose native language did not have direct pre-nominal adjectives performed so well on the NA combination. The NN and AA categories, however, have not been well studied across languages. There is no solid evidence indicating that these two order categories are governed by universal rules in adjective ordering.

2.3 Adjective Ordering in Mandarin Chinese

Different from English speakers who need to directly put multiple adjectives into an order before a noun, Mandarin Chinese speakers, on the other hand, have two options to manipulate multiple pre-nominal adjectives: an indirect way and a direct way (same as English). The detailed explanation will be introduced in the following sections.

2.3.1 Indirect Adjectives with Adjective Marker “De”

Instead of directly using multiple adjectives in a phrase, Chinese speakers have the option to use relative marker *De*. *De* has many functions in Chinese, one of which is to develop a relative clause structure for a noun. For example, *Xiao De lv De Long* (*small-De green-De Dragon = small green dragon*) means that a dragon that is small and that is green.

The advantage of using indirect adjectives is that the adjective order does not matter (Sproat & Shih, 1991; Stringer, 2013). For instance, *Da-De Hong-De Ruishi-De Zhuozi* (*big-De red-De Swiss-De table = big red Swiss table*) is acceptable, so are *Hong-De Da-De Ruishi-De Zhuozi* (*red-De big-De Swiss-De table = red big Swiss table*), *Ruishi-De Hong-De Da-De table* (*Swiss-De red-De big-De table = Swiss red big table*) and any other alternative orders. This is a very common strategy to use pre-nominal adjectives, especially when more than two adjectives are involved to modify a noun.

2.3.2 Direct Adjectives with Restrictions

However, when direct adjectives (without *De*) are used before a noun, two adjective order restrictions appears—(1) the number of pre-nominal adjectives is limited to only two, and (2) one of the adjectives is non-absolute adjective (relative adjective such as *long*) and the other is absolute adjective (ungradable adjective such as *baked*) (Stringer, 2013). Sproat and Shih (1991) listed some possible combinations for direct adjectives in terms of their semantic category: (1) quality > color (*Jiu Hong Wa = old red socks*), (2) quality > shape (*Hao Yuan Panzi = good round plate*), (3) size > color (*Xiao Lv Huaping = small green vase*) (4) size > shape (*Da Yuan Zhuo = Big round table*). Later Stringer (2013) concluded in his research that the only possible order for direct pre-nominal adjectives in Chinese is Non-absolute + absolute (NA), and NN and

AA order do not exist in direct adjectival modification. This conclusion is doubtful because Stringer took color adjectives as absolute ones. However, considering color has different shades, it can also be relative and gradable. For example, two “red” objects can be compared based on the shades of the color red—one of the objects could be considered as redder than the other. Hence, we consider *quality + color* and *size + color* as NN. Thus, possible combinations in Chinese are NA and N+color. AA and NN (except for N+color), however, do not exist when Chinese speakers use direct adjectival modifiers.

2.4 L1 influence in L2 Grammar Acquisition

In the recent SLA studies, L2 acquisition is not considered as an independent cognitive process, but influenced by many things, such as teaching methodology, learning environment, age, and learners’ L1 knowledge. Researchers have suggested in the past that L1 influence plays an important role in morphology (Montrul, 2000; Murakami & Alexopoulou, 2016), syntax (Schwartz & Sprouse, 1996), phonology (Duncan & Paradis, 2016; Strange & Schafer, 2008) and lexicon (Stringer, 2010).

However, there is not much research discovering the potential L1 influence on L2 adjective ordering. It is not clear how learners develop the knowledge of adjective ordering in English, especially for those whose native language are not derived from Latin. Stringer (2013) was the first researcher paying attention to learner’s native languages that is not European language on adjective ordering, but his focus was on the Universal Grammar, which was expected to be involved in SLA (as described in the previous section, he believed that NA order was part of the Universal Hierarchy, which made this particular order natural and easy to acquire among ESL learners across linguistics background).

2.5 Research Questions and Predictions

Based on what we have learned from the English and Chinese adjective ordering “rules” as well as what we are interested in Chinese ESL learners’ acquisition of English adjective ordering, two main research questions of our study are addressed as bellow:

- (1) Does L1 transfer influence Chinese ESL learners’ acquisition of English ordering?
- (2) Do high proficient learners perform differently on producing native-speaker-preferred English adjective orders from low proficient learners?

If the L1 transfer does play a role in second language acquisition, Chinese speakers are expected to show better performance on the NA order than the NN and AA order since most of the NN order (except for N+color order. We didn’t specifically focus on the N+color order in this study because it only takes a small portion in the NN combination.) and all the AA order do not exist in Chinese. We were expecting to see performance differences from the NA and the other two categories (NN and AA).

If the influence of the universality of certain order(s) is involved, the order(s) that is(are) part of the Universal Hierarchy will be easier for learners to acquire and produce compared to those not universal. In that case, having better performance on the NA order could also mean that the universality of NA is at work, if NA order is the only universal order, and NN and AA are not. In other words, when NA is the only universal order, and when language learners are accessing the universality of NA, they are expected to have better knowledge of NA than that of NN and AA. In that case, we were not able to distinguish the influence of L1 transfer from that of the universality of NA for explaining learners’ better performance on NA. More discussion on

this issue will be addressed in Chapter Six—Discussion, including how the further research on the universality of NN and AA can help us disentangle L1 transfer vs. universality.

CHAPTER THREE: NORMING STUDY

A total of 20 native speakers of English participated in the norming study, helping us create a bench mark for the adjective ordering task. This chapter will give a full report about the methods and results of the norming study.

3.1 Participants

All 20 participants for the norming study were recruited from the University of Illinois at Urbana-Champaign. After a full participation, each participant was offered monetary compensation. According to the background checking, those 20 participants have English as their native language.

3.2 Adjective Ordering Phrases

We created a list of 30 phrases with three categories of adjective combinations (10 phrases for each combination category)—(1) NN: non-absolute + non-absolute (e.g. *a long thin pencil*), (2) AA: absolute + absolute (e.g. *a triangular iron object*) and (3) NA: non-absolute + absolute (eg. *a big stone lion*). See Table 3.2 for the whole list of phrases. The “absolute+non-absolute” (AN) combination was not considered in this study, for NA order is so strong that it makes the reverted order unusual in English.

For each combination, one order was defined as the expected order: a participant received a point for choosing the expected order, and no points for choosing the opposite order. For the NA category, the expected order was always NA rather than AN. For the NN and AA categories, the expected order was determined either based on Stringer’s study (2013) or on judgements of a small group of native speakers (four people) who are ESL instructors in the MATESL program.

3.3 Measurements and Procedures

The norming study was conducted in quiet places (e.g. conference room) without distraction. 20 out of 20 native speakers in the norming group were asked to complete a list of incomplete phrases with two given adjectives in a parenthesis. For example, “A/an _____ car (*big/old*)”. They were asked to complete each phrase by putting two given adjectives in a preferred order. For example, they could put “*big old*” instead of “old big” as their preferred order in “A/an _____ car.”

3.4 Results

Table 3.1 indicated the results of their average scores on each combination as well as the average total score. For each combination (AA, NN, NA), the maximum possible score was 10 points (10 items for each combination). A participant received one point for each response that corresponded to the expected order. Thus a score of zero in a given category means that the participant never chose the expected order (e.g. always chose the opposite order), a score of 5 means that the participant chose the expected order for 5 of the 10 items in that category, and so on. Overall, the total average score 9.4 showed there was a strong preference among native speakers on these 30 phrases, but surprisingly there was no category achieved a perfect score 10. Regarding specific categories, the NA combination reached a strongest preference (mean = 9.85) compared to the other two combinations. Table 3.2 listed the mean scores for all 30 phrases.

Table 3.1 Native Speaker's Adjective Ordering Performance in the norming study

Category	Mean	SD	N
A_A	9.0	1.076	20
N_N	9.35	.988	20
N_A	9.85	.366	20
Total	9.4	.924	60

Table 3.2 Adjective Ordering Task Results

Phrase	Mean	Category
a big old car	1	NN
a clean blue ball	1	NN
a tall strong man	0.9	NN
a long thin pencil	0.95	NN
a deep wide river	0.75	NN
a witty young boy	0.85	NN
a large crowded class	1	NN
a beautiful white flower	1	NN
a soft chubby hand	0.95	NN
a great new haircut	0.95	NN
a painted metal bowl	1	AA
a flowered cotton dress	0.75	AA
a broken plastic watch	1	AA
a triangular iron object	0.9	AA
a printed academic certificate	1	AA
a Thai silk cloth	0.6	AA
a squeaky carpeted floor	0.95	AA
a flavored liquid medicine	0.9	AA
an engraved marble table	1	AA
a polished plastic key	0.9	AA
a helpful liquid medicine	1	NA
a tempting vegetarian dish	1	NA
a dangerous glass house	1	NA
an old leather purse	1	NA
a heavy hardback encyclopedia	0.95	NA
a big stone lion	1	NA
a messy underground lab	1	NA
an expensive square television	0.95	NA
a delicious baked ham	0.95	NA
a friendly Italian waiter	1	NA

3.5 Phrase Frequency Checking

Collocation is one of the things we wanted to check in this study because collocation may influence adjective ordering—if an adjective and a noun always occur together, when a second adjective is involved, it would not separate the noun phrase in collocation, in which case the adjective ordering rules won't apply. We used Corpus of Contemporary American English (COCA) to check the phrase frequency because it is a large and balanced corpus of American English that contains 520 million words of text from spoken, fiction, popular magazines, newspapers and academic texts. Table 3.3 gave us a list of raw frequency numbers for each phrase from COCA, the adjectives from “Phrase 1” were preferred by native speakers to be put further than the adjectives from “Phrase 2.” According to frequency checking results, the phrases from the “Phrase 1” were not necessarily less frequent than the phrases from “Phrase 2.” For example, *expensive television* is more frequent than *square television* even though the natives preferred to say *an expensive square television*.

Table 3.3 Phrase Frequency

Phrase 1	Frequency	Phrase 2	Frequency	Category
big car	154	old car	393	NN
clean ball	3	blue ball	50	NN
tall man	766	strong man	294	NN
long pencil	3	thin pencil	4	NN
deep river	57	wide river	46	NN
witty boy	no result	young boy	1558	NN
large class	102	crowded class	4	NN
beautiful flower	52	white flower	102	NN
soft hand	37	chubby hand	15	NN
great haircut	14	new haircut	85	NN
painted bowl	1	metal bowl	92	AA
flowered dress	71	cotton dress	180	AA
broken watch	13	plastic watch	4	AA
triangular object	no result	iron object	5	AA
printed certificate	no result	academic certificate	1	AA
Thai sloth	no result	silk cloth	no result	AA
squeaky floor	1	carpeted floor	87	AA
flavored medicine	no result	liquid medicine	5	AA
engraved table	no result	marble table	39	AA
polished key	no result	plastic key	16	AA
helpful medicine	no result	liquid medicine	5	NA
tempting dish	no result	vegetarian dish	24	NA
dangerous house	no result	glass house	155	NA
old purse	9	leather purse	63	NA
heavy encyclopedia	no result	hardback encyclopedia	no result	NA
big lion	10	stone lion	no result	NA
messy lab	no result	underground lab	1	NA
expensive television	9	square television	no result	NA
delicious ham	no result	baked ham	65	NA
friendly waiter	1	Italian waiter	1	NA

CHAPTER FOUR: METHODOLOGY

This chapter will provide with background information of 58 participants (20 English speakers and 38 Chinese speakers), detailed procedure of this experiment as well as a summative description of each task carried out in this study.

4.1 Participants

A total of 58 participants were recruited from the University of Illinois at Urbana-Champaign, including 20 native speakers of English for the control group and 38 native speakers of Chinese (Mandarin) for the experimental group. After a full participation, each participant was offered either extra credit or monetary compensation.

The 20 native speakers were recruited as a control group, aged from 18 to 40 (mean = 23.55 years old; SD = 5.995 years old). All of them considered English as their only native language. All 38 Chinese speakers participated as an experimental group, aged from 18 to 30 (mean = 21.08 years old; SD = 3.05 years old). 17 of them had been staying in the US for more than one year (range from one to five years), and the rest of them had been in this country for less than a year (mean of the group = 1.4 years; SD = 1.24 years). Regarding the age of starting learning English, 30 out of 38 Chinese reported they started learning English in elementary school and the rest started learning English in middle school.

4.2 Measurements and Procedure

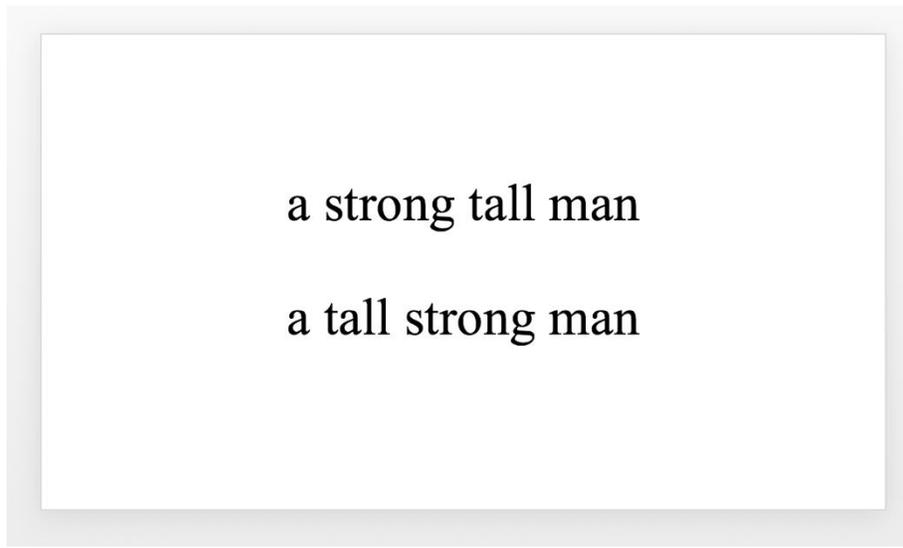
The main experiment was divided into two sections— (1) a 10-minute Adjective Order test for the control group; (2) a 10-minute Adjective Order test and a Cloze test on the experimental group. Both group got a linguistics background questionnaire at the end of the research. The experiment was carried out in a quiet Library rooms (MATESL library or

Linguistics library in the Foreign Language Building at the University of Illinois at Urbana-Champaign) with access to a computer and a big TV screen.

4.2.1 Adjective Ordering Task

The Adjective Ordering Task was conducted on an auto-played PowerPoint file. All participants were guided to sit in front of a big TV to respond to the stimuli showed on the screen. 30 double-adjective phrases piloted in the norming study were chosen as target stimuli and presented on the screen. In the center of each slide, there were two phrases with the same adjectives but different orders (see figure 3.1 for an example). The participants had 6 seconds (we did not want participants to think too much about context or recall and apply the rules they have learned to each item) to choose the one that had their preferred adjective order and wrote down A or B on an answer sheet to denote their preference (“A” for the top item, and “B” for the bottom item). As in the norming study, the participants got one point for choosing an expected order for each combination category, and they got zero for choosing the opposite order. The maximum possible score for each category was 10 and the total score for the adjective ordering test was 30.

Figure 4.1 Sample Adjective Ordering Test Item



To keep participants from being aware of the purpose of this study—to test their intuition of adjective orders in English, we added 30 fillers to the task as distractions. 10 of them were about adverb orders (e.g. *sleeping peacefully on the floor* or *peacefully sleeping on the floor*); 10 of them were about phrase verb orders (e.g. *pick up my phone* or *pick my phone up*); 10 of them were about sentence level orders (e.g. *I bought a gift for my sister* or *I bought my sister a gift*). In addition, after giving the instruction on the adjective ordering task, we gave each participant 6 items to respond to as a practice.

4.2.2 Cloze Test

After the Adjective Ordering Task, all Chinese speakers was asked to complete a Cloze test. This type of test had been commonly used commonly in L2 acquisition studies to test ESL learners' overall language proficiency since 1970s (Ajideh & Mozaffarzadeh, 2012). We chose the one that had been used in Ionin and Montrul's study (2010) to estimate the participants' English proficiency, which had also been shown in Ionin and Montrul' study (2010) that the test was reliable (Cronbah alpha = .817).

It was a forced-choice Cloze test with forty words removed from a meaningful passage. For each blank, the participants needed to choose one out of three given options that they thought fit the blank the most. The total score of this test was 40 and the participants get one point for getting one blank correct. We did not administer this test to native speakers in the control group because according to Ionin and Montrul (2010), native speakers performed at-ceiling on this test.

4.2.3 Language Background Questionnaire

One of the language background questionnaires was designed for gaining the information about Chinese participants' English background as well as how much they had already known about adjective ordering rules in English. The questions were mainly focusing on their age of starting learning English, their length of residency in the United States, their confidence in English grammar and how much knowledge of Adjective orders could they recall.

Another language background questionnaire was for collecting language background information for native speakers, in which all control group participants were asked to report what their native language was, whether they were learning other languages and when they started learning the other languages.

4.3 Data Analysis

In this study, we did data analysis to find the answers to the following two research questions addressed previously: (1) Do L1 transfer influence Chinese ESL learners' intuition of adjective orders in English? (2) What is the relationship between Chinese ESL learners' English proficiency and their overall "accuracy" of producing native-speaker-preferred adjective orders in English?

To answer these two research questions, we first divided 38 Chinese speakers into two proficiency levels (low vs. high) based on the results of their Cloze test. The ideal data was with a wide range of proficiency levels. Our data, however, failed to provide big differences among proficiency scores, for all participants got at least 31 points on the Cloze test. Hence, in our study, the relative low proficient group was that scored from 31 to 34 and the relative high proficient group was that scored from 35 to 38.

After that the mixed repeated-measures ANOVA was used to analyze the adjective ordering performance among three groups—native speaker group, low proficiency group and high proficiency group. By doing so, the statistical results would tell us about how much difference the performance was not only across three groups (native vs. low vs. high), but also across three adjective combinations (NN vs. AA vs. NA).

CHAPTER FIVE: RESULTS

In this chapter, we will report detailed results for each completed task and provide a summative description for each comparison results. Deep interpretation on each task performance will be covered in Chapter Six—Discussion.

5.1 English Proficiency

All 38 Chinese speakers from the experimental group completed the Cloze test. According to the test results (maximum score = 40), the overall proficiency of the Chinese speakers was very high with a mean=34.61(SD = 1.733). None of the them got the maximum score 40 or scored below 31. Table 5.1 showed the details of the descriptive statistics. Figure 5.1 gave us the frequency of each score: 29 out of 38 participants scored at 33, 34, 35, and 36.

Figure 5.1 Frequency of ESL learners' Proficiency Score

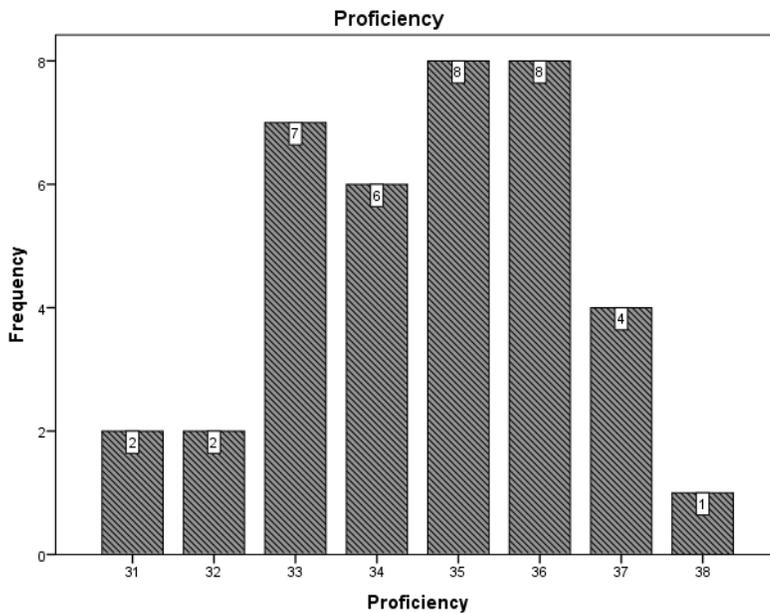


Table 5.1 Descriptive Statistics of the Proficiency Test

	N	Minimum	Maximum	Mean	Std. Deviation
Proficiency	38	31	38	34.61	1.733

Although we hypothesized that high proficient ESL learners would produce more native-speaker-preferred adjective orders in English, the scatter plot (figure 5.2) gave us a rather weak relationship between the proficiency and Adjective Ordering Task scores. The Pearson Correlation analysis (Table 5.2) reported that there was no significant correlation between Chinese participants' proficiency and each as well as the total adjective ordering scores.

Figure 5.2 Scatter Plot of English Proficiency against Adjective Ordering Test Score

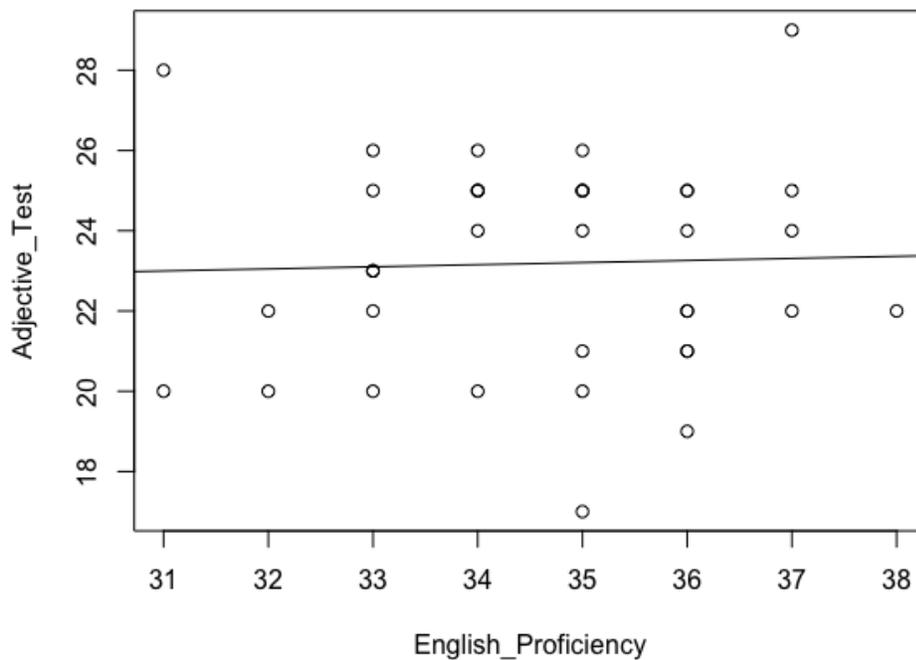


Table 5.2 Correlations (N=38)

		Total	N_N	A_A	N_A
Proficiency	Pearson Correlation	.035	.058	.098	-.148
	Sig. (2 tailed)	.835	.728	.560	.376

We later divided all proficiency scores into two groups—relatively lower proficiency scores (below 35, N=17) and relatively higher proficiency scores (above 34, N=21) and did a repeated ANOVA in SPSS to analyze the performance across three groups (native speaker group vs. high proficiency group vs. low proficiency group).

5.2 Adjective Ordering Task Performance

20 out of 20 native speakers from the control group did the adjective ordering task, and the overall performance was showed in table 5.3. Similar to the norming group, the control group had an overall strong preference on those 30 phrases. More specifically, the native speakers got higher mean score on the NA combination, but lower scores on the AA and NN combination. Still, no perfect score was observed among native speakers in the control group.

Table 5.3 Adjective Ordering Task Performance in the Control Group

Category	Mean	SD	N
A_A	8.35	1.349	20
N_N	9.15	.8127	20
N_A	9.95	.2236	20
Total	9.15	1.1173	60

All 38 Chinese participants completed the adjective ordering task with no data being discarded. The overall performance was reported by Table 5.4. Unlike the control group that had high scores on each combination, Chinese speakers only showed robust knowledge of the NA combination that reached a 9 point level (mean = 9.32). On the contrary, the performance on the AA and NN combination was relatively lower (the mean scores were 7.29 and 6.58 respectively). The detailed performance from high and low proficiency groups was illustrated in Table 5.5 and Table 5.6

Table 5.4 Adjective Ordering Task Performance in the Experimental Group (high + low)

Category	Mean	SD	N
A_A	7.29	1.334	38
N_N	6.58	1.518	38
N_A	9.32	.873	38
Total	7.73	1.716	114

Table 5.5 Adjective Ordering Task Performance in the High Proficiency Group

Category	Mean	SD	N
A_A	7.381	1.2836	21
N_N	6.524	1.6619	21
N_A	9.143	.9636	21
Total	7.683	1.7117	63

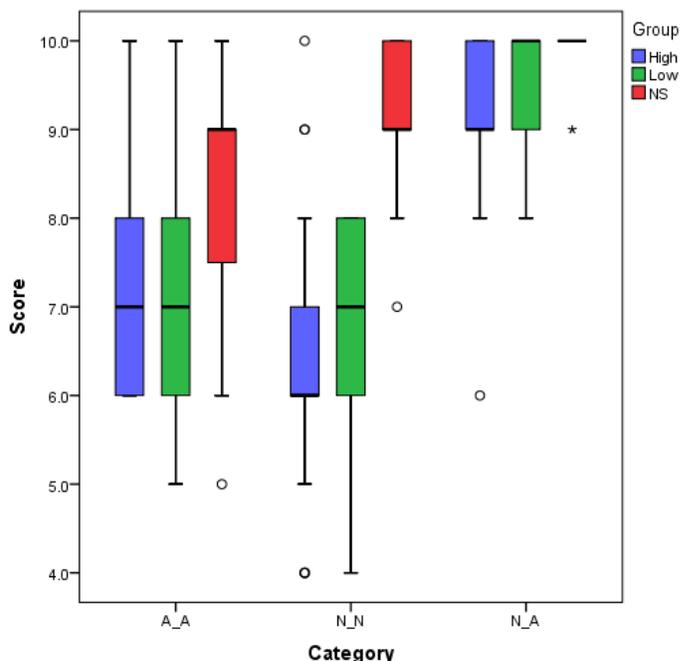
Table 5.6 Adjective Ordering Task Performance in the Low Proficiency Group

Category	Mean	SD	N
A_A	7.176	1.4246	17
N_N	6.647	1.3666	17
N_A	9.529	.7174	17
Total	7.784	1.7357	51

Concerning score ranges (see figure 5.3), all three groups had narrower ranges on the NA combination compared to the other two—except for one person scoring at 9, the rest of the native speaker group got a 10 on the NA combination. In the meantime, except for one person scoring at 6, both high and low proficiency groups scored at least 8 on the NA combination. Comparing with each group, two experimental groups had wider range on every combination than the control group, indicating that those two groups less stable performance than the control group on

every combination category. However, the range difference between the high and low proficiency group on the overall performance was not obvious.

Figure 5.3 Adjective Ordering Preference on Three Groups



5.3 Performance Comparisons Across Groups

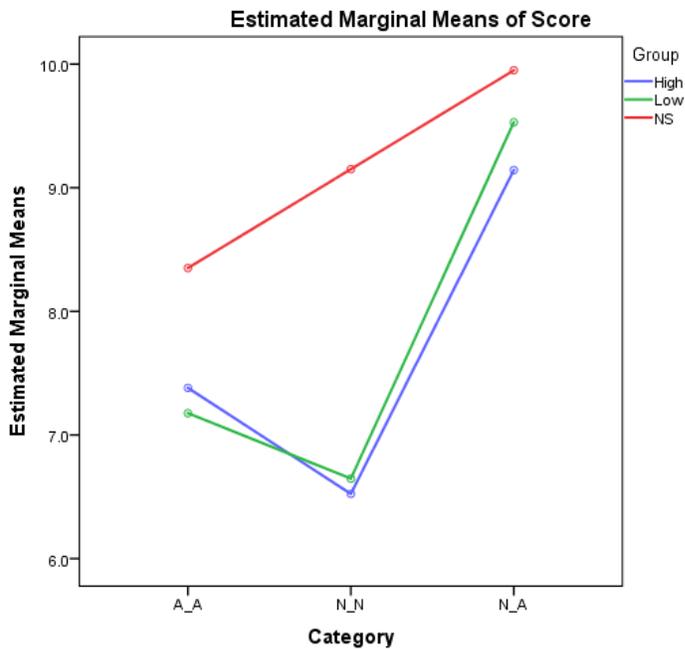
We used Analysis of Variance (ANOVA) in SPSS to analyze whether any of the independent variables in this study—Category (AA vs. NN vs. NA), Group (native speaker group vs. high proficiency vs. low proficiency group) had effects on the adjective ordering performance. Table 5.7 indicated that main effects of task and group were both significant, and there was also a significant interaction between them ($p < .05$). Additionally, Figure 5.4 gave us a plot about each group's mean score across three adjective combination categories, from which we saw that the overall performance from the control group was superior to that from the two experimental groups. The biggest difference appeared to be on the NN combination, and the second biggest difference appeared to be on the AA combination. The performance on the NA

combination from the experimental group was seemingly close to that from the control group. Within the experimental group, the performance difference between the high and low proficiency group was very close to each other. Hence, we continued to do a pairwise comparison (Post Hoc test) for the interaction between Category and Group to locate the significant difference.

Table 5.7 Tests of Between-Subjects Effects

Source	Type III sum of squares	df	Mean Square	F	Sig.	Partial Eta Squared
Category	154.926	2	77.463	56.705	.000000	.407
Group	79.481	2	39.886	29.198	.000000	.261
Category * Group	27.145	4	7.198	5.269	.000510	.113

Figure 5.4 The Mean Scores of Adjective Ordering Task Across Groups and Categories



As we expected from the Figure 5.4, the pairwise comparison (Post Hoc test) on the interaction between Category and Group (Table 5.8) showed that on the AA and NN order

categories, the performance of native speakers differ from that of Chinese speakers ($p < .05$). In the meantime, the performance from the high and low proficiency groups on AA and NN showed no difference ($p > 0.05$). On the NA combination, there was no statistical significance between native speaker group and the low proficiency group ($p = .277$), but the performance on such combination between native speaker group and high proficiency group was statistically significant ($p = 0.028$). However, according to the ANOVA results, the performance difference between the high and low proficiency group was not significant ($p = 0.312$), which could not show that the low proficiency group performed differently from the high proficiency group. One thing we could conclude here is that no matter it was the high or low proficiency group, their performance on the NA combination is closer to native speakers' performance compared to the other two categories.

Table 5.8 Category * Group – Pairwise Comparison (Post Hoc Test)

Category	(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig. ^b
A_A	High	Low	.204	.381	.593
		NS	-.969*	.365	.009
	Low	High	-.204	.381	.593
		NS	-1.174*	.386	.003
	NS	High	.969	.365	.009
		Low	1.174*	.386	.003
N_N	High	Low	-.123	.381	.747
		NS	-2.626*	.365	< .001
	Low	High	.123	.381	.747
		NS	-2.503*	.386	< .001
	NS	High	2.626*	.365	< .001
		Low	2.503*	.386	< .001
N_A	High	Low	-.387	.381	.312
		NS	-.807*	.365	.028
	Low	High	.387	.381	.312
		NS	-.421	.386	.277
	NS	High	.807*	.365	.028
		Low	.421	.386	.277

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

5.4 Detailed Report on Stimuli from Chinese Speakers

We calculated mean scores for each target stimulus on NA, NN and AA combination.

Table 5.9, 5.10 and 5.11 showed us the ranking of the items in terms of their mean scores.

Table 5.9 Mean Score on NA Items

Phrase	Mean	Category
an expensive square television	1	NA
a big stone lion	1	NA
a helpful liquid medicine	0.974	NA
a dangerous glass house	0.974	NA
a heavy hardback encyclopedia	0.974	NA
a friendly Italian waiter	0.947	NA
a delicious baked ham	0.921	NA
an old leather purse	0.895	NA
a messy underground lab	0.842	NA
a tempting vegetarian dish	0.789	NA

Table 5.10 Mean Score on NN Items

Phrase	Mean	Category
a beautiful white flower	0.868	NN
a clean blue ball	0.842	NN
a large crowded class	0.763	NN
a soft chubby hand	0.763	NN
a great new haircut	0.763	NN
a big old car	0.632	NN
a long thin pencil	0.632	NN
a deep wide river	0.579	NN
a tall strong man	0.368	NN
a witty young boy	0.368	NN

Table 5.11 Mean Score on AA Items

Phrase	Mean	Category
a printed academic certificate	0.895	AA
a painted metal bowl	0.868	AA
an engraved marble table	0.816	AA
a squeaky carpeted floor	0.789	AA
a polished plastic key	0.789	AA
a broken plastic watch	0.789	AA
a triangular iron object	0.658	AA
a flowered cotton dress	0.632	AA
a flavored liquid medicine	0.605	AA
a Thai silk cloth	0.447	AA

Although the overall performance on the NA combination was relatively higher than that on NN and AA combination, there were a few phrases standing out in terms of their high mean scores. For example, two phrases with color adjectives (*a beautiful white flower* and *a clean blue ball*) both achieved very high score compared to other items on this combination. This was not surprising because in Stringer’s previous study (2013) color adjectives were considered as absolute ones, and the N+color order was put in the NA combination, which was expected to get higher scores than any other items in the NN combination.

Regarding the influence from the phrase frequency (refer to the frequency Table 3.3 in Chapter three), It was surprising that the phrase *a witty young boy*, in which *young boy* was more frequent than *witty boy* (freq: 1558 vs. 0). The Chinese speakers, however, performed the worst on this item (mean = 0.368). In addition, Chinese speakers performed very well on items *a large crowded class* (freq: 102 vs. 4), *a soft chubby hand* (freq: 37 vs. 15), *a broken plastic watch* (freq: 13 vs. 4), *a big stone lion* (freq: 10 vs. 0), *an expensive television* (freq: 9 vs. 0), even though all these items were not following the “less frequent + more frequent + noun” pattern.

5.5 The awareness of Adjective Ordering Rules

Apart from the adjective ordering test results, we were also interested in how much the Chinese speakers in this study were aware of the adjective ordering rules, so we added a follow-up question in the language background questionnaire: *Have you learned adjective ordering before? If yes, can you recall the rules introduced to you?* The rule recall and explanation in Chinese was allowed, in case they only remembered the rules in Chinese.

19 out of 38 Chinese participants reported they did not have lectures on English adjective ordering. Five of the rest reported they had been introduced to some rules but they could not recall any. Five of those who remembered the “rules” had errors in their expression, such as “the nationality is the first, then the material, then the size, and then new or old.” Among the rest of the nine Chinese speakers, four of them thought that an adjective that was “first chosen” (translated from Chinese) should be placed closer to the noun, which was not related to any of the hierarchies introduced in ESL textbooks. Three of them partially showed the common hierarchy introduced in many text books, such as “color > shape > country.” Two of them remembered an example they learned from an English lesson, such as *a beautiful small round old yellow French wooden desk*. In conclusion, none of the 38 Chinese participants reported complete and correct English adjective orders.

CHAPTER SIX: DISCUSSION

This chapter focuses on the deep interpretation on the present research findings, as well as the implication for ESL grammar teaching and further linguistics studies on Adjective Ordering. According to the data analysis results, the first of the following research questions is partially answered and the other remains uncertain.

(1) Does L1 transfer influence Chinese ESL learners' acquisition of Adjective Ordering in English?

(2) Do high proficient learners perform differently from low proficient learners on producing native-speaker-preferred adjective orders?

6.1 The Flexibility of Adjective Ordering Among English Speakers

Correct English grammar to native speakers of English is more like “feeling right.” As Lado (1957) once wrote in his book *Linguistics across cultures: Applied linguistics for language teachers*: “Grammatical structures does not mean absolute rules of correctness.” (p.51).

Generally, English speakers produce native speaker preferred patterns in speaking and writing without being aware of such “patterns.” This happens to adjective ordering as well. However, the patterns of adjective ordering that we observed from English speakers are not as strict as we expected—there was no perfect score on each combination from the norming group (without time pressure) and from the control group in our research. This observation also showed why only using strict syntactic rules to explain adjective ordering in English is inadequate. Annear (1964) was the first researcher to reject such proposal, because deciding how far an adjective should be from a noun due to the classes it belongs to (e.g. size or origin) is not useful for explaining any other linguistic phenomenon than adjective ordering.

The communication focus might be influential to the adjective ordering as well. For example, the inverted order of a “normally” ordered adjective combination appears when a certain adjective is focused. In the case of *a big red car*, Danks and Schwenk (1972) found that when the focus is on the *red*, 57% of the participants preferred the inverted order— *a red big car*. In our study, the adjective order for *the Thai silk cloth* was the most controversial one. 12 out of 20 native speakers in the norming study preferred this order. We marked *Thai silk* as the “correct” order instead of *silk Thai* because in many ESL textbooks, the “canonical” rule is that the origin should be further from the noun than material (Origin > Material). However, 8 out of 20 native speakers in the control group preferred the opposite order—*a silk Thai cloth*. The possible reason as some of the native speakers self-reported was that they referred to a Thai cloth that was silk. In other words, their emphasis is on the material.

Moreover, the flexible preference on adjective orders from native speakers was also observed in Byrne’s study (1979). He claimed that it was quite plausible because native speakers of English vary in individual “linguistic competence” (p.76), which might lead to different preference on adjective orders. The individual “linguistic competence” could be influenced by many things—being fluent in multiple languages, being frequently exposed to a certain adjective + noun combination (the phrase *young boy* is more frequent than the phrase *witty boy*. Hence, people are more likely to say *a witty young boy*) and many other social and psychological reasons.

Although from our research results, native speakers’ preference is relatively consistent and robust, it is possible for them to accept an unpopular pattern in some circumstances without considering that as “grammatically incorrect.” That is to say, the instruction on English adjective

ordering for ESL students should not be limited to introducing the discovered “patterns,” but also the alternative ways to manage multiple pronominal adjectives. Eventually, a second language to L2 learners is a tool to serve a purpose of communication.

6.2 L1 Influence vs. Universal Hierarchy

Linguistic researchers have already been convinced that L1 transfer influences L2 acquisition in many areas such as syntax, phonology, morphology and lexicon (Montrul, 2000; Schwartz & Sprouse, 1996; Strange & Schafer, 2008; Stringer, 2010). Our research, once again, showed that L1 transfer may play a role in L2 acquisition in a subdomain of English grammar—adjective ordering: that the “rule” (NA) of the direct pre-nominal adjective ordering in Chinese that also exists in English facilitates Chinese ESL learners’ performance on the NA order production. Both low and high proficiency groups showed impressively robust knowledge of the NA order in English.

Although our research results aligned with the influence of L1 transfer, we do not know how important role L1 transfer is playing in Chinese ESL learners’ performance on English adjective ordering. In the previous research on Universal Hierarchy, NA was the only order that had been discussed by researchers. This order was considered as part of the Universal Hierarchy because it existed not only in English and many other European languages, but also in many Asian languages such as Thai and Chinese. However, the rest of the categories are understudied that no evidence in other languages shows there are any rules governing the order of two non-absolute or two absolute adjectives in a double adjective phrase, which prevents us from concluding that the better performance on the NA order in our study was because of the L1

transfer. Two possibilities of the universality of NN and AA orders are discussed in the following section, as well as how they lead us to draw different conclusions.

6.2.1 If There are Universal Ordering Rules in the NN and AA Combinations

Assume that AA and NN combinations were governed by universal rules, of which ESL learners were very likely to have robust knowledge, the L1 influence on adjective ordering acquisition among Chinese learners in this study could be interpreted as significant and important. The reason was that if Chinese speakers were accessing universality in the study, they should benefit from the universality across all order categories. However, the fact that Chinese only allows the NA combination in the direct prenominal adjectival modification facilitates Chinese speakers' acquisition of NA order in English.

6.2.2 If There is No Universal Ordering Rules in the NN and AA Combinations

If the NN and AA orders were not governed by any universal rules or the governing rules only existed in English, the influence of the universality and L1 transfer happened to be at the same combination—NA. We do not know whether Chinese speakers' better performance on the NA combination was caused by L1 influence or by the fact that NA combination was universal. In order to disentangle the issue of L1 vs. universality, more language groups need to be involve in the study. For example, there are some languages do not use direct pre-nominal adjectival modification such as Korean (Sproat & Shih, 1991; Stringer, 2013). Since there is no direct modification in Korean, the influence of L1 transfer on L2 acquisition of direct pre-nominal adjective ordering in English does not exist. Putting Korean ESL learners as a second experimental group besides Chinese speakers would help us figure out whether the universality of NA was at work: if Korean speakers ended up having the same results as our Chinese speakers,

the influence of universality is strong. If Korean speakers did not show any difference across three categories (which meant that they were not accessing the universality of NA), it's very likely that the L1 played an important role in acquisition of adjective ordering among our Chinese speakers.

Research on languages that have direct adjectival modification but without preference for adjective orders is also worth studying. For instance, Japanese, Russian and Spanish allows language speakers to use different adjective orders to modify nouns. For example, *ookina akai inu* (large red dog) and *akai ookina inu* (red large dog) are both correct in Japanese. For those L1 speakers, the influence of L1 is being flexible with any orders for a two-adjective noun phrase. Hence, the L1 influence could be considered as strong, if Japanese, Russian and Spanish ESL learners had mediocre and similar performance on NN, AA and NA orders, no matter which order was universal. Because in that case, the influence from the universality did not appear. On the contrary, if those ESL learners had better performance on the combination that had been claimed as part of the Universal Hierarchy, we would conclude that they were accessing the universality, and it should be taken as an influential factor on their L2 acquisition in English adjective ordering.

6.2.3 “Non-absolute+Color” Order

One thing that is also worth discussing and might support the importance of L1 influence in L2 adjective ordering is Chinese students' good performance on the “Non-absolute + color” order in the NN combination. We have reported in the Results section that compared to other items in the NN, the only two items with color adjectives achieved the highest mean scores. We are going to share some interesting thoughts as below.

When direct adjectival modifiers are used before a noun, one of the restrictions is that the pre-nominal adjectives must be monosyllabic (Sproat and Shih, 1991). In Chinese, those adjectives made of two characters are not monosyllabic, thus Chinese speakers prefer to use them with an adjective marker *De*. For example, *Hao Chi De Cai* (*delicious-De dish*) is acceptable but *Hao Chi Cai* (*delicious dish*) is not, in which case, *Hao* and *Chi* together means *delicious*. However, color adjectives are usually denoted by one character (thus they are monosyllabic) and they are often used as direct pre-nominal adjectival modifiers, such as *Huang Hua* (*yellow flower*), *Lan Maozi* (*blue cap*). Using a color adjective to modify a noun without an adjective marker *De* is very common and frequent in Chinese that we could even consider a combination of a color adjective and a noun as a “collocation.”

This type of collocation we discussed here was a bit different from that in English. Sinclair (1991) defined collocation as “items that occur physically together or have stronger chances of being mentioned together” (p. 170). For example, *an occupational hazard* (Phoocharoensil, 2013). However, in Chinese, this special collocation (adjective + noun) mentioned above is not limited to one particular adjective (e.g. *red*), but a whole category (e.g. color) as long as the adjective is monosyllabic. It applies to all color adjectives when we use a pre-nominal color adjective to modify a noun. Generally, Chinese speakers can choose not to use direct adjectives before a noun, but choose an adjective marker *De* to avoid adjective orders, but when “collocation” happens (e.g. “color + noun”), they prefer to go with direct adjectival modification. This might be a potential reason for why in the NN combination, Chinese speakers did relatively better on those two phrases with color adjectives. However, because the number of

the N+color phrases was inadequate in this study, we could not confirm these two combinations are definitely involved in L1 transfer.

Further research on the Chinese speakers could also consider having N+color phrases as one of the main target items, in which case the NA combination would not be the only combination category that L1 may play a role in. That will also help us get more precise information about L1 transfer vs. Universality when there were no universal rules governing NN and AA: if Chinese speakers did better on all N+color items than the rest of the items in the NN combination, we could consider this as a strong evidence showing the importance of L1 influence in acquisition of adjective ordering. On the contrary, if Chinese speakers did not show a statistically significant difference between N+color items and the rest of the items in the NN combination, it weakened the claim that L1 transfer was involved in their L2 acquisition of adjective ordering.

6.3 The Influence from Phrase Frequency

Some people may think phrase frequency affect adjective orders. For instance, if “Adjective A + noun” occurs more frequently than “Adjective B + noun,” then it is very possible that native speakers would prefer the “B+A+noun” order instead of “A+B+noun.” However, the phrase frequency check results showed that the phrase frequency might not affect adjective ordering for both L1 and L2 learners.

First, according to the native speakers’ preferred orders, not every target phrase in our study follows the “less frequent + more frequent + noun” pattern. For example, *tall man* is more frequent than *strong man*, but *tall strong man* is the preferred order by most of the natives.

Second, the phrase frequency did not affect Chinese speakers’ performance. In the case of *a witty*

young boy, *young boy* is much more frequent than *witty boy*, but Chinese speakers got the lowest score on this item. It would be interesting to do a study on the influence of high frequent phrases/collocations, in which we have half “high frequent + low frequent” and half “low frequent + high frequent” items to test both English speakers and ESL learners, in order to find whether high frequent phrases influence language speakers adjective ordering preference.

6.4 Adjective Ordering Teaching Implication

Adjective ordering in English is an understudied subdomain of English grammar. We could not find ample research on teaching adjective ordering. There are many ESL grammar learning or teaching materials available in the market, but the way they introduce adjective ordering rules is very similar. They show the simplified or advanced hierarchy and they hope the learners can memorize and apply them to spoken and written English. Stringer (2013) suggested in his research that ESL instructors should think of more efficient ways to help ESL learners acquire the knowledge of English adjective ordering rather than having them memorize the rules. Instead, exposing ESL learners to an environment with a large amount of input of native speaker preferred adjective orders might enhance their intuition of adjective ordering in English.

According to Chinese participants’ self-report in our study, half of them (19 out of 38) did not have any lectures on adjective ordering in English (it is possible that some of them had learned but they did not remember). For the rest of the participants who had learned, only three of them gave the correct but incomplete hierarchy (did not cover all adjective categories); two memorized an example introduced by teachers as a guide for adjective ordering; four focused on the choosing priority in terms of a word’s importance and relativeness, but the other 10 Chinese speakers either forgot or remembered the rules wrong. It appears that English adjective ordering

is not emphasized in English learning compared to many other subdomains of English grammar. Introducing an adjective ordering hierarchy is the most common way to cover this topic. We did not know how efficient the traditional way is because most of our Chinese participants were not explicitly aware of the “canonical” hierarchy introduced in ESL textbooks.

It was hoped that the more proficient a L2 learner is, the less difficulties he/she would have for producing native-preferred language. The potential reason is that the high proficient learners have been exposed to the target environment more than the lower proficient ones or they have more experience learning and using the second language. We were interested to know if adjective ordering was one of the areas in which high proficient learners performed better than the lower proficient ones. However, according to the Cloze test, we failed to recruit Chinese ESL learners with a wide range of proficiency level, due to that the overall English proficiency at a university is relatively at an advanced level. Hence, whether there is a correlation between Chinese speakers’ English proficiency and their overall adjective performance remains unknown.

CHAPTER SEVEN: CONCLUSION

In this chapter, we are going to summarize (1) the findings of our study, and (2) the limitations of the present study as well as the suggestions for further research.

7.1 Summary of Findings

The main research question of the present study is to find out whether L1 transfer influences Chinese ESL learner's intuition of adjective ordering in English. By comparing the adjective ordering test performance between groups (native speaker group vs. high proficiency Chinese speaker group vs. low proficiency speaker group) as well as the performance between adjective combination categories (NN vs. AA vs. NA), our study showed that the performance on the NA combination among Chinese speakers was statistically significantly different from that on the NN and AA combination. In addition, Chinese speakers' performance on the NA combination was closer to that from the native speaker group, indicating that both high and low proficiency group has robust knowledge of the NA combination compared to the other two combination. This is to say that L1 transfer might play an important role in L2 acquisition of adjective ordering.

In addition, we surprisingly found out that even though the native speakers achieved a consistent and robust preference on every combination, there was still flexibility in adjective ordering in English, which suggested that adjective ordering cannot be explained by strict rules alone.

Furthermore, the influence from high frequent phrases or collocations might not be as strong as we expected for both L1 and L2 acquisition of adjective ordering. Our study results showed that the natives preferred orders were not necessarily following the "less frequent

adjective + more frequent adjective + noun” pattern, and Chinese speakers did not appear to be affected by high frequent phrases or collocations on choosing adjective orders.

These findings above indicate that the challenging area for Chinese ESL learners in English adjective ordering is acquiring the knowledge of NN and AA orders. They are very capable of producing NA order in English, even if they have not had any explicit lessons on English adjective ordering. When teaching English adjective orderings to Chinese speakers, ESL instructors should be aware of what they already know and what they need to learn.

7.2 Summary of Limitations and Suggestions for Further Research

However, due to the uncertainty of the universality of rules in the NN and AA combination, we are unable to answer the following two questions: (1) Is L1 influence the only factor in Chinese ESL learners acquisition of English adjective ordering? (2) How much is L1 or Universality involved in Chinese ESL learners’ acquisition of English adjective ordering? Therefore, more linguistics study on the universal rules in the NN and AA combination should be done in the future to disentangle the issue of Universality vs. L1 transfer. For example, we could add language groups where participants’ first language does not have direct pre-nominal adjectival modification to study if Universal Hierarchy is truly playing a role in L2 acquisition of adjective ordering.

Our English proficiency test showed that the overall proficiency of our Chinese ESL learners was very high. Even though we divided the whole experimental group into high and low proficiency groups, those participants were still at the high-intermediate to advanced level. In that case, we could not generalize our conclusion to every proficiency level of Chinese ESL learners. We are not sure if L1 transfer influences beginner level or intermediate level Chinese

learners. If it does, how different it would be compared to the L1 influence on advanced Chinese ESL learners. Therefore, a wide English proficiency range of Chinese participants is necessary for further studies to figure out the relationship between Chinese ESL learners' proficiency and their intuition of English adjective ordering.

REFERENCES

- Ahluwalia, N. (1992). Major Issues in the Cloze Procedure. *Applied Linguistics*, 81-96. India.
- Ajideh, P. & Mozaffarzadeh, S. (2012). C-test vs. multiple-choice cloze test as tests of reading comprehension in Iranian EFL context: learners' perspective. *English Language Teaching*, 5(11), 143-150.
- Annear, S.S. (1964). The ordering of pre-nominal modifiers in English. Project on linguistic Analysis, Report No. 8, Ohio State University Research Foundation. Cited in Danks & Schwenk (1972).
- Azar, B.S., & Hagen, S.A. (2006a). *Basic English Grammar* (3rd Ed). White Plains: Pearson.
- Bloomfield, L. (1933). *Language*. New York: Holt, Rinehart, and Winston.
- Chomsky, N. (1957). *Syntactic Structures*. The Hague: Mouton.
- Cinque, G. (2010). *The syntax of adjectives*. Cambridge, MA: MIT Press.
- Danks, J.H. & Glucksberg, S. (1971). Psychological scaling of adjective orders. *Journal of Verbal Learning and Verbal Behavior*, 10, 63-67.
- Danks, J.H. & Schwenk, M.A.(1972). Prenominal adjective order and communication context. *Journal of Verbal Learning and Verbal Behavior* 11, 183-187.
- Dulay, H. & Burt, M. (1974). Natural sequences in child language acquisition. *Language Learning*, 24, 37-53.
- Duncan, T. & Paradis, J. (2016). English language learners' nonword repetition performance: The influence of Age, L2 vocabulary size, length of L2 exposure and L1 phonology. *Journal of Speech, Language, and Hearing Research*, 59, 39-48.

- Fries, C.C. (1945) *Teaching and learning English as a foreign language*. Ann Arbor, MI: University of Michigan Press.
- Huang, H. & Federmeier, K (2012). Dispreferred adjective orders elicit brain responses associated with lexico-semantic rather than syntactic processing. *Brain Research*, 62-70.
- Krashen, S. D. (1981). *Principles and practice in second language acquisition*. London: Prentice-Hall.
- Lado, R. (1957). *Linguistics across cultures: Applied linguistics for language teachers*. Ann Arbor, MI: University of Michigan Press.
- Laenzlinger, C. (2005). French adjective ordering: Perspectives on DP-internal movement types. *Lingua*, 115, 645-689.
- Lance, D. (1968). *Sequential ordering in Prenominal Modifiers in English: A critical review*, PhD dissertation, University of Texas, Austin.
- Lees, R. B. (1960). The grammar of English nominalizations. *International Journal of American Linguistics*, 26 (3), Part II.
- Li, C., & Thompson, S. (1981). *Mandarin Chinese: A functional reference grammar*. Berkeley: University of California Press.
- Lu, G. (2006). *Cloze tests and reading strategies in English language teaching in China*. Unpublished, MA Thesis. University of Western Cape, China.
- Martin, J.E. (1969). Some competence-process relationships in noun phrases with pre-nominal and post-nominal adjectives. *Journal of Verbal Learning and Verbal Behavior*, 8, 471-480.
- Martin, J.E. (1969). Semantic determinants of preferred adjective order. *Journal of Verbal Learning and Verbal Behavior*, 8, 697-704.

- Martin, J.E. & Molfese, D.L. (1972). Preferred adjective ordering in very young children. *Journal of Verbal Learning and Verbal Behavior*, 11, 287-292.
- Maurer, J. (2000). *Focus on grammar: An advanced course for reference and practice (2nd ed)*. White Plains: Longman.
- Montrul, S. (2000). Transitivity alternations in second language acquisition: Toward a modular view of transfer. *Studies in Second Language Acquisition*, 22, 229-274.
- Montrul, S. & Ionin, T. (2010). Transfer effects in the interpretation of definite articles by Spanish heritage speakers. *Bilingualism: Language and Cognition*, 13(14), 449-473.
- Moore, G.E. (1922) *Principia ethica*. London: Cambridge University Press, 1922.
- Murakami, A. & Alexopoulou, T. (2016). L1 influence on the acquisition order of English grammatical morphemes. *Studies in Second Language Acquisition*, 38, 365-401.
- Phoocharoensil, S. (2013). Cross-linguistic Influence: Its Impact on L2 English Collocation Production. *English Language Teaching*, 6(1), 1-10.
- Quirk, R., Greenbaum, S., Leech, G., Svartvik, J. (1972). *A grammar of contemporary English*. Harlow: Longman, U.K.
- Schwartz, B.D. & Sprouse, R.A. (1996). L2 cognitive states and the full transfer/full access model. *Second Language Research*, 12, 40-72.
- Scott, G. J. (2002). Stacked adjectival modification and the structure of nominal phrases. *Functional structure in DP and IP: The cartography of syntactic structures*. Oxford: Oxford University Press.
- Shlonsky, U. (2004). The form of Semitic noun phrases. *Lingua*, 114, 1465-1526.
- Sinclair, J. (1991). *Corpus concordance collocation*. Oxford: Oxford University Press.

Sproat, R. & Shih, C. (1991). The cross-linguistic distribution of adjective ordering restrictions.

Interdisciplinary approaches to language. Dordrecht: Kluwer.

Strange, W. & Schafer, V.L. (2008). Speech perception in second language learners. *Phonology*

and second language acquisition. Philadelphia: John Benjamins.

Stringer, D. (2010). The gloss trap. *Linguistic Relativity in SLA: Thinking for Speaking*.

Clevedon: Multilingual Matters.

Stringer, D. (2013). Modifying the teaching of modifiers: A lesson from Universal Grammar. In

Whong, M., Gil, K-H., & Marsden, H.(eds.), *Universal Grammar and the Second*

Language Classroom, 77-100. Dordrecht: Springer.

Sweet, H. (1898). *A new English grammar*. Oxford: Clarendon Press.

Thewlis, S.H. (2007). Grammar dimensions 3: Form, meaning, and use (4th ed). Boston: Heinle

& Heinle.

Vendler, Z. (1957). Verbs and times. *Philosophical Review*, 66, 143-160.

Vendler, Z (1963a). The transformation grammar of English adjectives. *Transformations and*

discourse analysis papers, University of Pennsylvania.

Vendler, Z. (1963b). The grammar of goodness. *Philosophical Review*, 72, 446-465.

White, L. (2012). Universal Grammar, cross-linguistic variation and second language acquisition.

Language Teaching, 45(3), 309-328.

Whorf, B.L. (1945). Grammatical Categories. *Language*, 21(1), 1-11.

Ziff, P. (1960). *Semantic analysis*. Ithaca, N.Y.: Cornell University Press.

APPENDIX A: PHRASE LIST FOR THE NORMING STUDY

Instruction: Complete the following phrases by choosing your preferred adjective orders. Don't think about the context, just write down the orders that sound correct and natural to you. You can simply put initials for each adjective in a phrase if they don't have the same initial.

1. a/an _____ car (big/old)
2. a _____ ball (blue/clean)
3. a _____ man (tall/strong)
4. a _____ pencil (long/thin)
5. a _____ river (wide/deep)
6. a _____ boy (witty/young)
7. a _____ class (crowded/large)
8. a _____ flower (white/beautiful)
9. a _____ hand (chubby/soft)
10. a _____ haircut (great/new)
11. a _____ bowl (painted/metal)
12. a _____ dress (cotton/flowered)
13. a _____ watch (broken/plastic)
14. a/an _____ object (iron/triangular)
15. a/an _____ certificate (academic/printed)
16. a _____ cloth (Thai/silk)
17. a _____ floor (carpeted/squeaky)
18. a _____ medicine (liquid/flavored)
19. a/an _____ table (marble/engraved)
20. a _____ key (polished/plastic)
21. a _____ medicine (liquid/helpful)
22. a _____ dish (vegetarian/tempting)
23. a _____ house (glass/dangerous)
24. a/an _____ purse (old/leather)
25. a _____ encyclopedia (heavy/hardback)
26. a _____ lion (stone/big)
27. a/an _____ lab (underground/messy)
28. a/an _____ television (square/expensive)
29. a _____ ham (baked/delicious)
30. a/an _____ waiter (Italian/friendly)

APPENDIX B: TARGET STIMULI WITH CORRECT ORDER

Category 1: NN (non-absolute + non-absolute) order

1. A big old car
2. A clean blue ball
3. A tall strong man
4. A long thin pencil
5. A deep wide river
6. A witty young boy
7. A large crowded class
8. A beautiful white flower
9. A soft chubby hand
10. A great new haircut

Category 2: AA (absolute + absolute) order

1. A painted metal bowl
2. A flowered cotton dress
3. A broken plastic watch
4. A triangular iron object
5. A printed academic certificate
6. A Thai silk cloth
7. A squeaky carpeted floor
8. A flavored liquid medicine
9. An engraved marble table
10. A polished plastic key

Category 3: NA (non-absolute + absolute) order

1. A helpful liquid medicine
2. A tempting vegetarian dish
3. A dangerous glass house
4. An old leather purse
5. A heavy hardback encyclopedia
6. A big stone lion
7. A messy underground lab
8. An expensive square television
9. A delicious baked ham
10. A friendly Italian waiter

APPENDIX C: PRACTICE ITEMS AND FILLERS

Practice Items:

A big bad wolf

A plastic Chinese toy

A shiny glass house

Talking loudly in the library/loudly talking in the library

Putting on your clothes/putting your clothes on

She was very angry, as her husband was late/she was very angry, as was her husband late

Fillers

1. Slowly reading a book/reading a book slowly
2. Driving home carefully/carefully driving home
3. Playing tennis well/well playing tennis
4. Staring deeply into her eyes/deeply staring into her eyes
5. Growing vegetables naturally/naturally growing vegetables
6. Taking this bus now/now taking this bus
7. Going to school today/today going to school
8. Eating breakfast often/often eating breakfast
9. Singing a song loudly/loudly singing a song
10. Sleeping peacefully on the floor/peacefully sleeping on the floor
11. Pick up the phone/pick the phone up
12. Clean up the room/clean the room up
13. Waking up everyone/waking everyone up
14. Figuring the formula out/figuring out the formula
15. Putting down a chair/putting a chair down
16. Turning up the volume/turning the volume up
17. Backing up my data/backing my data up
18. Calling off a wedding/calling a wedding off
19. Putting off a meeting/putting a meeting off
20. Get over the flue/get the flue over
21. I gave a book to Merry/I gave Merry a book
22. I wish you a good luck/I wish a good luck to you
23. I promise you this/I promise this to you
24. I bought a gift for my sister/I bought my sister a gift
25. Here comes Simon/Here Simon comes
26. Not far from here you can see the hotel/not far from here can you see the hotel
27. "I don't know" said John/ "I don't know" John said
28. She doesn't start until she has seen him/she doesn't start until has she seen him
29. Only after you helped me I was able to solve the problem/only after you helped me was I able to solve the problem
30. Not a single present you gave me for my birthday/Not a single present did you gave me for my birthday.

APPENDIX D: ADJECTIVE ORDERING TEST ANSWER SHEET

Instruction: The PowerPoint will be presented automatically. Please DO NOT press any button to interrupt or end it once the slides start. On each slide, there will be two phrases (A and B) with the same meaning but different word orders. You have 6 seconds to choose which one (A or B) sounds more correct and natural to you. Don't think too much about it, just pick the one you prefer to say and simply write down the answer (A or B) below. Before you go to the actual test, there are six items for you to practice.

Practice Items

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____

Testing Items

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____

7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____

13. _____ 14. _____ 15. _____ 16. _____ 17. _____ 18. _____

19. _____ 20. _____ 21. _____ 22. _____ 23. _____ 24. _____

25. _____ 26. _____ 27. _____ 28. _____ 29. _____ 30. _____

31. _____ 32. _____ 33. _____ 34. _____ 35. _____ 36. _____

37. _____ 38. _____ 39. _____ 40. _____ 41. _____ 42. _____

43. _____ 44. _____ 45. _____ 46. _____ 47. _____ 48. _____

49. _____ 50. _____ 51. _____ 52. _____ 53. _____ 54. _____

55. _____ 56. _____ 57. _____ 58. _____ 59. _____ 60. _____

APPENDIX E: CLOZE TEST

For each blank in the following passage, please circle one of three options given. Please choose the option appropriate for the context. Please choose one option only for each blank.

Joe came home from work on Friday. It was payday, but he wasn't ___(1) even / more / ever___ excited about it. He knew that ___(2) then / when / while___ he sat down and paid his ___(3) checks / bills / salary___ and set aside money for groceries, ___(4) driving / pay / gas___ for the car and a small ___(5) deposit / withdrawal / money___ in his savings account, there wouldn't be ___(6) quite / not / too___ much left over for a good ___(7) pleasure / leisure / life___. He thought about going out for ___(8) eat / dinner / eating___ at his favorite restaurant, but he ___(9) just / only / very___ wasn't in the mood. He wandered ___(10) around / at / in___ his apartment and ate a sandwich. ___(11) In / For / After___ a while, he couldn't stop himself ___(12) for / from / about___ worrying about the money situation. Finally, ___(13) he / she / it___ got into his car and started ___(14) drive / driven / driving___.

He didn't have a destination in ___(15) head / mind / fact___, but he knew that he wanted ___(16) be / to be / being___ far away from the city ___(17) which / there / where___ he lived. He turned onto a quiet country ___(18) road / house / air___. The country sights made him feel ___(19) as good / better / best___. His mind wandered as he drove ___(20) past / in / to___ small farms and he began to ___(21) try / think / imagine___ living on his own piece of ___(22) house / land / farm___ and becoming self-sufficient. It had always ___(23) being / been / be___ a dream of his, but he ___(24) having / have / had___ never done anything to make it ___(25) a / one / some___ reality. Even as he was thinking, ___(26) their / his / her___ logical side was scoffing at his ___(27) favorite / practical / impractical___ imaginings. He debated the advantages and ___(28) cons / disadvantages / problems___ of living in the country and ___(29) growing / breeding / building___ his own food. He imagined his ___(30) farmhouse / truck / tractor___ equipped with a solar energy panel ___(31) at / out / on___ the roof to heat the house ___(32) in / for / over___ winter and power a water heater. ___(33) She / He / They___ envisioned fields of vegetables for canning ___(34) either / and / but___ preserving to last through the winter. ___(35) Whether / Even / If___ the crops had a good yield, ___(36) maybe / possible / may___ he could sell the surplus and ___(37) store / save / buy___ some farming equipment with the extra ___(38) economy / cost / money___. Suddenly, Joe stopped thinking and laughed ___(39) at / out / so___ loud, "I'm really going to go ___(40) through / away / in___ with this?"

**APPENDIX F: LANGUAGE BACKGROUND QUESTIONNAIRE FOR CHINESE
SPEAKERS**

Participant Number: _____

1. What is your gender? Male Female

2. How old are you? _____

3. What is your native language? _____

4. Do you speak any other language besides your native language and English? _____

5. How long have you been in the US? _____

6. When did you start learning English? _____

7. How many years have you had formal education in English speaking countries? _____

8. From 1(not confident at all) to 10 (extremely confident), how confident are you with English Grammar? _____

9. Do you know any rules about adjective orderings in English?

No, I have never learned any rules about adjective ordering at all.

Yes, I do know some rules. If yes, what are the rules you have learned? You can explain the rules in your native language if you want. _____

**APPENDIX G: LANGUAGE BACKGROUND QUESTIONNAIRE FOR ENGLISH
SPEAKERS**

Participant Number: _____

1. What is your gender? Male Female

2. How old are you? _____

3. What is your native language? _____

4. Do you speak any other language besides English? _____

5. If you do speak another language, when did you start learning it? _____