THE ACCESSIBILITY HIERARCHY AND THE PROCESSING OF ENGLISH RELATIVE

CLAUSES BY CHINESE COLLEGE STUDENTS

by

YANLI MA

(Under the Direction of Don R. McCreary)

ABSTRACT

There has been some debate as to whether the AH, i.e., the typologically determined noun phrase accessibility hierarchy for relativization, can account for the second language acquisition of relative clauses. This paper attempts to investigate the relationship between the AH and the difficulty order of five English relative clause types for ESL learners based on the data collected from a relatively large group of ESL learners who were Chinese college students. Two data elicitation methods, i.e., Sentence Combining and Acceptability Judgment were employed. The observed difficulty order of the five relative clause types in the data is SU > DO > OCOMP/GEN > IO. It is hypothesized that the difficulty order of relative clauses for L2 learners is the result of the interaction between the AH and the surface configuration of relative clauses and sometimes may be markedly affected by target language features and/or language transfer.

INDEX WORDS: Accessibility hierarchy, English relative clauses, Chinese college students, Sentence combining, Acceptability judgment, Surface configuration, Second language acquisition.

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SECTION 1

INTRODUCTION

Typological/implicational universals have been an important area in SLA research in recent years. The most widely studied universal in this area, known as the Accessibility Hierarchy (AH), deals with relative clause formation.

Cook (1993) defines relative clauses as subordinate clauses that modify nouns within noun phrases in the main clause above them. They delimit the set of possible referents of a noun to a subset of objects denoted by that noun (Gass & Ard, 1980).

Relative clauses can be classified into the following 6 types according to the grammatical function of the relativized noun phrase in the embedded clause:

a. Subject relative clause (SU): *That is the man [who ran away]*. (*Who* is the subject of the clause)

b. Direct object relative clause(DO): *That is the man [whom I saw yesterday]* (*Whom* is the direct object of the clause)

c. Indirect object relative clause (IO): *That is the man [to whom I gave the letter]*.

d. Object of preposition relative clause (OPREP): *That is the man [whom I am talking about]*

e. Genitive relative clause (GEN): *That is the man [whose sister is a singer]*.

f. Object of comparative relative clause (OCOMP): *That is the man [whom I am taller than]*.

Based on their investigation of over 50 languages throughout the world, Keenan and Comrie (1977) found that languages vary in the noun phrases (NP) that are accessible to relativization, but that there is a clear relationship between the types of NPs that can be relativized within a

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given language. They propose that one can predict the types of relative clauses that a given language will have based on the following hierarchy: SU > DO > IO> OBL > GEN > OCOMP

This hierarchy is called the Accessibility Hierarchy, or the AH. On this hierarchy, OBL stands for 'object of oblique', and its equivalent in English is 'object of preposition' (OPREP). Keenan and Comrie demonstrate that if a language has a certain relative clause type, it also has relative clause types higher on the hierarchy, i.e., to the left of that relative clause type. The AH reflects both the frequency of the different relative clause types possible in a given language and the presence/absence of specific relative clause types in a language. The AH is an implicational universal and thus reflects a markedness relationship. For instance, on the AH, the SU type is the least marked whereas the OCOMP type is the most marked.

Believing that the behaviors of IO and OPREP are analogous, Gass (1979) combines these two positions in her study of L2 English learners. The present study follows Gass (1979) in the way it treats the two positions of IO and OPREP. In other words, this study involves five types of relative clauses, namely, SU, DO, IO, GEN and OCOMP. Each of these five relative clause types can be further divided into two subtypes according to whether the noun phrase modified by the relative clause is the subject or direct object in the matrix sentence. Thus, there are altogether 10 subtypes of relative clauses, as are listed below:

1) SU SU   Example: The man who came fell.

2) DO SU Example: I saw the man who fell.

3) SU DO

4) DO DO

5) SU IO

6) DO IO

7) SU GEN

8) DO GEN

9) SU OCOMP

10) DO OCOMP

As can be seen from the above, each subtype can be represented by two symbols. For instance, Subtype 2) is represented by *DO* and *SU*. The first of the two symbols for each subtype, such as the *DO* in Subtype 2), represents the grammatical position of the noun phrase (NP) in the matrix sentence. The second symbol, such as the *SU* in Subtype 2), represents the grammatical relation of that NP in the subordinate or relative clause. For Subtype 2), the NP *the man* is in direct object position in the matrix sentence *I saw the man who fell.* The grammatical position of the NP *the man* is subject in the subordinate clause *who fell.*

Although the AH deals grossly with the five relative clause types rather than the 10 subtypes, it is assumed that in some cases it might be useful to examine these subtypes because subtle information obtained therefrom might shed some light on our understanding of the larger picture.

In this paper, I am concerned with the relationship between the Accessibility Hierarchy (AH) and the acquisition of English relative clauses by ESL/EFL learners. The data were gathered from 200 Chinese college students who were intermediate or early advanced ESL learners. Two data elicitation methods, i.e., Sentence Combining and Acceptability Judgment were employed. The major issues pursued in this study are whether and to what extent the AH can explain the acquisition of different English relative clause types by a largely homogeneous group of Chinese ESL learners, and if not, what other factors can account for the data gathered from this group of Chinese subjects.

SECTION 2

LITERATURE REVIEW

Some research has been done on whether the AH can account for the ordering of difficulty in acquiring different types of relative clauses in a second language, that is, whether the AH can be borne out by data from the acquisition of different relative clause types for L2 learners.

Gass (1979), based on the data collected from learners of English with a wide range of native languages, argues that the production of relative clause by L2 learners can be predicted on the basis of the AH. Gass's hypothesis is that "the more accessible positions should be produced with greater accuracy than the less accessible ones" (339). That is to say, the relative order of accuracy for L2 learners in acquiring different relative clause types is supposed to be SU > DO > IO > GEN > OCOMP. Gass's study shows that the predictions of the AH are largely borne out. However, contrary to the predictions made by the AH, the genitive position was easier than the direct object position for Gass's ESL subjects.

Tarallo and Myhill's study (1983), in which native English speakers were required to judge the grammaticality of sentences containing resumptive pronouns in two right-branching languages and two left-branching languages including Chinese, found that for right-branching L2 learners, the SU type was the easiest, while for left-branching L2 learners, the DO type, rather than the SU type, was the easiest. In other words, subjects learning the right-branching languages performed in the order predicted by the AH, whereas those learning the left-branching languages did not. Essentially, in left-branching, subject-initial languages, the extraction site for a SU type is positioned at the opposite end of the clause from the head, while the extraction site

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for a DO type is positioned approximately next to the head. In right-branching, subject-initial languages, the cases for the two types in terms of the distance to the head from the extraction site are just the opposite. The study concludes that the crucial factor is the distance of the head of the relative clause to the extraction site of the relativized noun phrase in the embedded sentence. In Tarallo and Myhill's words, "proximity to head seems to be more important than syntactic role" (71).

Hyltenstam (1984), in a study of resumptive pronouns in L2 Swedish by learners with different L1 backgrounds, found that the result corresponds to the AH, except that the genitive type had more resumptive pronouns than did the object of comparative type.

Pavesi (1986), based on Hyltenstam's design, conducted a comparative study of instructed and non-instructed native Italian speakers learning L2 English. The results show that the patterns for indirect object and direct object and also for genitive and object of comparative are rather vague and that the genitive and object of comparative functions are virtually missing in his non-instructed subject group. Hyltenstam's and Pavesi's results share a common pattern, i.e., OCOMP > GEN, which Pavesi attributes to properties inherent in the target language. Pavesi claims that the findings of her study provide evidence for the constraint of the AH on L2 learners.

Further evidence in support of the markedness hypothesis suggested by the AH can be found in Eckman et al. (1988), who studied the acquisition, by learners with mixed L1s, of three types of English relative clauses: subject, object and object of preposition, and found that the order of difficulty for these types corresponds to the AH.

Hawkins (1988) examined the acquisition of the different forms of L2 French relativizers by some adult native English speakers. He found that the order of the relativizers can be predicted

by both the AH and surface configurational factors. However, Hawkins argues that no evidence shows that learners employed a theory of markedness in constructing rules for relative clauses. Rather, the determining factor is the "linear ordering" of the components of relative clauses in "surface configurations". Surface configuration, according to Hawkins, refers to "the surface structure organization of the constituents" of relative clauses (158). Hawkins further argues that 'a configurational view', which is based on surface configuration information in the form of the proximity of the head of the relative clause to an extraction site in the embedded sentence, can better account for his data than a 'relational view' based on the AH. His conclusion is that the difficulty of relative clause types for L2 learners is "a function of their processing capacity: their capacity to parse L2 data" (178).

Hansen-Strain and Strain (1989) found that their subjects, with different L1 backgrounds, performed much better in genitive relative clause than is predicted by the AH.

Jones's study (1991) of the acquisition of relative clauses by Japanese college students indicates that the accuracy order for the different pronoun functions on sentence-combining tasks conforms to the AH. One distinctive feature of Jones's study is that it provides separate accuracy orders for genitive and non-genitive structures.

In short, there is some evidence that the markedness defined by the AH constrains the acquisition of relative clauses in L2. However, findings regarding the exact ordering of different relative clause types seem to vary from one study to another. There is also evidence that learners construct rules for relative clauses in a way that can be predicted or determined by surface configurational properties of relative clauses.

This study is an attempt to view the AH based on the data from a relatively large group of largely homogeneous ESL learners whose native language is Chinese. Since two data elicitation

methods are employed in the process of data collection, the study will also deal with the relationship between these methods in the context of the acquisition of different relative clauses for L2 learners. Furthermore, in cases where the data in this study do not agree with the predictions of the AH, we will attempt to explain this discrepancy or to find some other theories or factors that may account for the data.

SECTION 3

DATA COLLECTION

The research reported in this paper deals with the acquisition of English relative clauses by a group of native Chinese speaking undergraduates at Hebei University of Science and Technology in North China. For this purpose, a three-page research questionnaire was designed, a sample of which is attached on the following pages.

Research Questionnaire

Dear Student:

We are pleased that you agree to participate in this research as a subject. You needn't tell us your name. Please tell us your following information, which is relevant to the purpose of this research:

1. Your birthdate: Month _3_ Day _15_ Year _1985_
2. Age at which you began to study English: _13_
3. Your English score in the National College Entrance Examination: _104_
4. Your most recent score in the College English Test (Band 4): ___

You will be required to complete 2 tasks. They are related to English relative clause. If you are not clear about what a relative clause is, feel free to ask your teacher to explain it to you. You will best help us if you can exactly follow the directions and examples provided below. Thanks for your participation and cooperation!

Task I Sentence Combining (句子组合)

Directions: There are 10 pairs of sentences in this part. You are required to combine each pair of sentences into a single sentence by using a relative clause. Please begin with the FIRST sentence of each pair. Put your answers on the lines provided. (本部分有 10 对句子. 要求用一关系从句将每对句子组合成一个复合句. 要求从每对句子的第一句开始做起(参见例句). 请将答案写在横线上.)

Example 1: The girl ran home. I saw the girl.
Correct Answer: The girl that I saw ran home.
Note that the answer *The girl ran home after I saw her* does not meet the requirement, because it is not a **relative clause**. Another answer *I saw the girl that ran home* does not meet the requirement either, because it begins with the **second** sentence instead of the **first** sentence of the pair.

Example 2: The man was a criminal. The police caught the man.
Correct Answer: The man that the police caught was a criminal

Example 3: The dog was black. The dog chased me.
Correct Answer: The dog that chased me was black.

1. The boy fell.   The boy's girlfriend left him.

   The boy ~~that~~ whom his girlfriend left fell.   X

2. The girl laughed..   The boy is bigger than the girl.

   The girl ~~who~~ that the boy is bigger than laughed.   √

3. The girl laughed.   The boy gave the girl a book.

The girl whom the boy gave a book laughed. X

4. I saw the girl.   The boy gave the girl a book.

I saw the girl whom the boy gave a book. X

5. The girl slept.   The boy hit the girl.

The girl that (whom) the boy hit slept. ✓

6. I saw the girl.   The boy is bigger than the girl.

I saw the girl that (who) the boy is bigger than. ✓

7. I saw the girl.   The boy hit the girl.

I saw the girl that the boy hit. ✓

8. I saw the man.   The man came.

I saw the man that came. ✓

9. I saw the boy.   The boy's girlfriend left him.

I saw the boy that his girlfriend left. ✓

10. The man fell.   The man came.

The man that came fell. ✓

Task II Acceptability Judgment (语法判断)

Directions: You are required to judge whether each of the following 10 sentences is good English sentence or not good English sentence. Each sentence is followed by 2 choices: *Good* and *Not good*. If you think a sentence is good, underline *Good* and ignore the long line. If you think a sentence is not good, underline *Not Good* and write down a sentence you think is good on the long line. Remember you should focus on relative clause structure rather than other grammatical features while making your judgment. (本部分要求判断下列 10 个句子在语法上是否正确. 在每句后面有两个选项: *Good* 和 *Not good*. 如果你认为该句正确, 在 *Good* 下划线. 忽略提供的长线. 如果你认为该句不正确, 在 *Not good* 下划线, 并且在提供的长线上写出你认为正确的句子. 注意判断的依据应是关系从句的结构, 而非其它语法项目)

Example1: The boy that I saw ran home.   *Good*   *Not good*

_____

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Example 2: The dog that I saw it was barking.   *Good*   *Not good*

The dog that I saw was barking.

1. The woman whose brother ran away came.   *Good*   *Not good*

_____.

2. The boy that the girl is smarter than ran away.   *Good*   *Not good*

The boy that the girl was smarter than ran away.

3. The teacher that she gave the book to is my sister.   *Good*   *Not good*

_____.

4. The boy saw the woman that she loved the child.   *Good*   *Not good*

The boy saw the woman that loved the child.

5. The baby that was crying was hungry.   *Good*   *Not good*

_____.

6. The man whom the woman saw left the city.   *Good* ,   *Not good*

_____.

7. I saw the girl that the boy hit her.   *Good*   *Not good*

I saw the girl that the boy hit.

8. I saw the girl that her brother ran away.   *Good*   *Not good*

I saw the girl whose brother ran away.

9. I saw the girl that the boy is taller than her.   *Good*   *Not good*

I saw the girl that the boy is taller than.

10. I saw the girl that the boy gave her a book.   *Good*   *Not good*

I saw the girl that the boy gave a book.

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As is shown in the sample, the questionnaire comprised two tasks: Sentence Combining (SC), and Acceptability Judgment (AJ). The 10 items in the SC task and the 10 items in the AJ task were borrowed from Gass et al. (1999).

Gass (1979) explains that data gathered through SC reflects the subject's productive knowledge of a language, while data gathered through AJ reflects the subject's receptive knowledge of that language. The results from the SC task reflect the learner's actual competence in that there are specific instructions as to how to produce a specific structure, while the results from the AJ task may not fully reflect the learner's knowledge in that the input is controlled to a large extent by the investigator. The statistical results in Gass's research show that there is a difference in responses between the SC task and the AJ task.

The SC task, designed to gain information regarding a subject's production knowledge of English relative clauses, was composed of 10 items, each of which contained a pair of sentences. The subjects were required to combine the two sentences to form one sentence. The instructions were such that the subjects were expected to produce only sentences containing the 10 subtypes of English relative clauses.

The AJ task, designed to gather information regarding a subject's receptive knowledge of English relative clauses, involved a subject's responses regarding the acceptability of 10 English sentences, each of which contained one of the 10 subtypes of relative clauses. Some sentences were acceptable (good) whereas others were unacceptable (not good). Specifically, the instructions were such that, if the subject judged a sentence as not good, he or she would be expected to produce a corresponding sentence he or she thought to be good. It is assumed that the sentences produced by the subjects in the AJ task can provide more information about a subject's judgment of a particular item. These sentences might be used to analyze the response trends or

error patterns of the entire subject group on an item or on a relative clause type. It is further assumed that information gathered from these subject-produced sentences may enable us to compare the two elicitation methods of SC and AJ more accurately.

In actual administration, the research questionnaires were distributed to all of the 207 undergraduate students in four College English classes at the university, three of which were taught by one EFL teacher and the fourth by another. Among these freshmen participants, 31 (26 male, 5 female) majored in Communication Engineering, 66 (41 male, 25 female) majored in Material Engineering, 70 (45 male, 25 female) majored in Automation Engineering, and 40 (17 male, 23 female) majored in Industrial Design. It was later found that five of the 207 collected questionnaires had serious printing errors and another two questionnaires were virtually left unanswered. Thus, my analysis and report are based on the 200 valid questionnaires collected from the participants. The majority of these 200 participants were born between 1983 and 1985 and they began to learn English as a foreign language at the ages of 13 or 14. The English proficiency levels of these subjects, to some extent, could be judged by their English scores achieved in the National College Entrance Examination (NCEE) administered by the Ministry of Education of China. All the subjects took the NCEE English test in 2003, half a year before the administration of this research test. This NCEE English test, with a possible score range of 0-150, included the following parts: listening comprehension, vocabulary & grammar, reading comprehension and writing. The scores of these subjects in this NCEE test ranged from 36 to 127 with a mean of 96. Judged from this perspective, the English proficiency levels of the majority of these subjects at the time of responding to the research questionnaire can be described as either intermediate or early advanced. The relevance of the NCEE English test to this research will be further addressed later in this paper.

SECTION 4

DATA ANALYSIS

Before evaluating the subjects' performance, assessment criterion is needed to determine what are correct answers and what are not. The SC task and the AJ task involve different assessment criteria and procedures. For the SC task, it was determined that a sentence produced by a subject would be judged as incorrect if the sentence involved one or more of the following features:

1) Forming the clause by using the first sentence of a pair instead of the second sentence

2) No relative clause in the combined sentence.

3) The formation of any clause types other than the one desired

4) No preposition "to" for the indirect object type clause

5) No possessive pronoun "whose" for the genitive type clause

6) No comparative word "than" for the object of the comparative type clause

7) Using the relativizer *which* rather than *that, who* or *whom* in referring to an animate head noun.

8) Any change in word order, especially as a result of using passive voice and using the antonym of a given adjective

9) The omission of any noun or pronoun in an original sentence not entailed by the relativization.

For the AJ task, the crucial issue of assessment is the determination of the acceptability of each of the 10 given sentences. This was done by means of native speaker intuition. I asked three native English speakers to judge the acceptability of these 10 sentences. It was generally agreed that five sentences, i.e., No. 1, 2, 3, 5 and 6 are acceptable or good, the others are unacceptable or not good. If a subject judged an acceptable sentence as 'Good' or an unacceptable sentence as 'Not good', his judgment would be considered as correct. If, in responding to one of the 10 items in the AJ task, a subject correctly judged an unacceptable sentence as 'Not good', but then the corresponding sentence he produced was incorrect, his response to that item would still be counted as correct.

SECTION 5

RESULTS

Table 1 reports the number of correct answers for each of the 10 items in the SC task. The number of participants (N) is 200.

Table 1: Correct Answers for the 10 Items in the SC Task

Item No. in the SC Task	Relative Clause Type	Relative Clause Subtype	The Number of Correct Answers
1	GEN	SU GEN	89
2	OCOMP	SU OCOMP	110
3	IO	SU IO	37
4	IO	DO IO	46
5	DO	SU DO	141
6	OCOMP	DO OCOMP	91
7	DO	DO DO	109
8	SU	DO SU	130
9	GEN	DO GEN	101
10	SU	SU SU	165

Table 2 reports the number of correct answers for each of the 10 items in the AJ task (N = 200).

Table 2: Correct Answers for the 10 Items in the AJ Task

Item No. in the AJ Task	Relative Clause Type	Relative Clause Subtype	The Number of Correct Answers
1	GEN	SU GEN	171
2	OCOMP	SU OCOMP	146
3	IO	SU IO	95
4	SU	DO SU	179
5	SU	SU SU	158
6	DO	SU DO	179
7	DO	DO DO	182
8	GEN	DO GEN	146
9	OCOMP	DO OCOMP	173
10	IO	DO IO	175

Table 3, derived from Table 1 and Table 2, represents the number of correct answers and corresponding correctness percentages for the five relative clause types in the SC and the AJ tasks. N = 400 (200 x 2).

Table 3: Correct Answers in the Two Tasks for the Five Relative Clause Types

Relative Clause Type	Correct Answers in the SC		Correct Answers in the AJ	
	Task	(Percentage)	Task	(Percentage)
SU	295	(74 %)	337	(84 %)
DO	250	(63 %)	339	(85 %)
IO	83	(21 %)	270	(68 %)
GEN	190	(48 %)	317	(79 %)
OCOMP	201	(50 %)	319	(80 %)

Table 3 demonstrates the following patterns. First, the overall performance of this group of participants in the AJ task is better than that in the SC task and the difference in correctness percentage between any two types in the AJ task is smaller than that in the SC task. Next, for the IO type, there is a surprisingly large difference between the correctness percentage in the SC task (21%) and the corresponding percentage in the AJ task (68%). Thirdly, in the AJ task, the participants' performance on the DO type is almost equal to their performance on the SU type. Furthermore, there is hardly any difference between their performances on the GEN and the OCOMP types in both tasks. Most importantly, it can be observed from Table 3 that the accuracy (correctness) order for the five relative types in the SC task is SU > DO > OCOMP > GEN > IO and the accuracy order in the AJ task is DO > SU > OCOMP > GEN > IO. The following figures illustrate the two accuracy patterns more clearly.
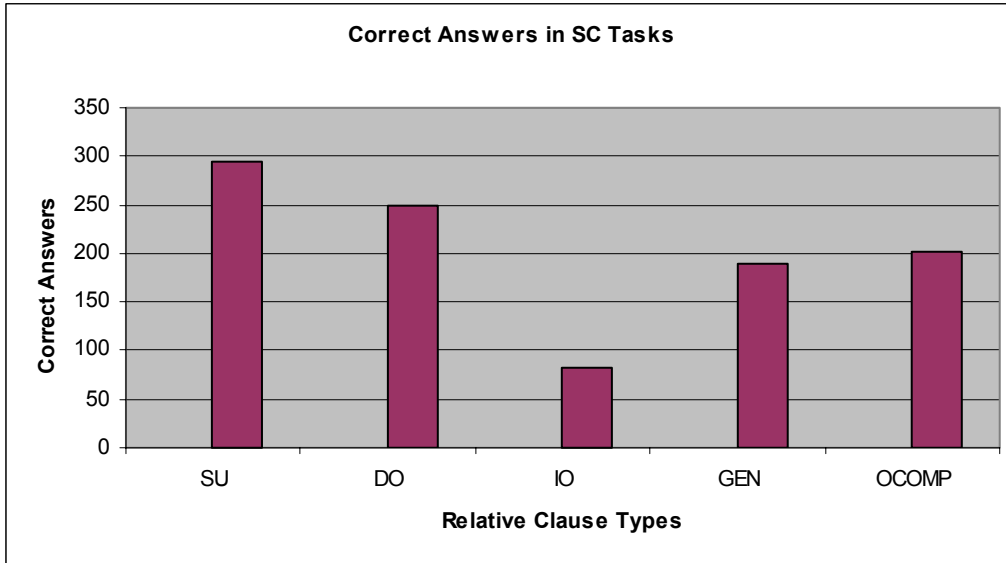
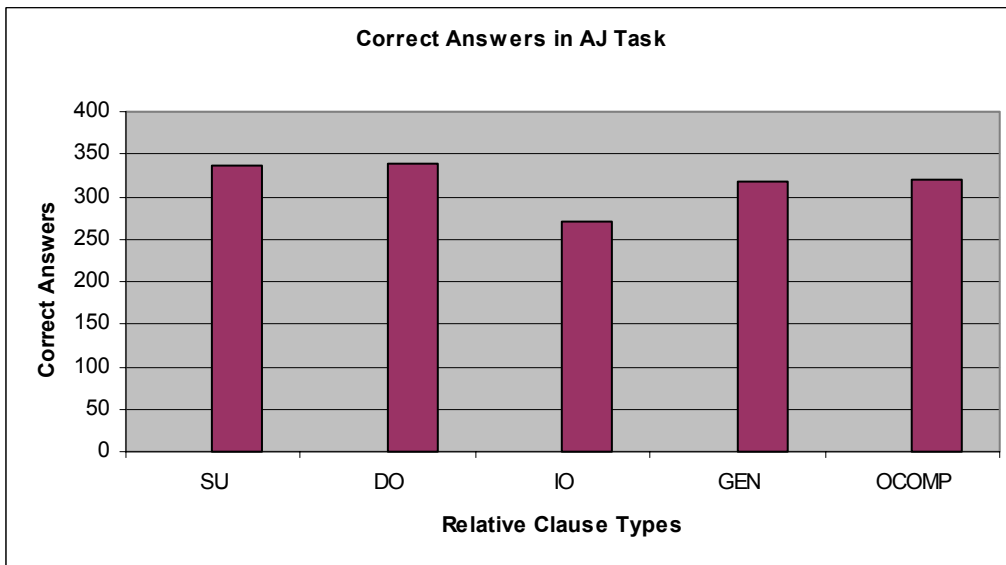Figure 1: Correct Answers in the SC task for the Five Relative Clause Types

Figure 2: Correct Answers in the AJ task for the Five Relative Clause Types

As is shown in the above two figures, neither of the observed accuracy patterns for the five relative clause types in the two tasks corresponds well to the order predicted by the AH, i.e., SU > DO > IO > GEN > OCOMP.

It has been noted that the data gathered through the SC task reflects the subject's productive knowledge of relative clause types whereas the AJ task reflects the subject's receptive knowledge of relative clause types, so it is not surprising that the participants' performance in the SC task is somewhat different from their performance in the AJ task. However, since both of these tasks are supposed to measure the relative accuracy order of the five relative clause types for L2 learners and a statistical treatment based on the data in Table 3 reveals that there is a high correlation coefficiency (r = 0.96) between the participant's performances in the two tasks, it seems reasonable for us to investigate the accuracy order for the five relative clause types by combining corresponding correct answers in the two tasks. Figure 3, derived from the data in Table 3, represents the combined correct answers for the five relative clause types in the two tasks (N = 800).

It can be observed that Figure 3 shows the same pattern of accuracy as Figure 1, i.e., SU > DO > OCOMP > GEN > IO, still different from the pattern predicted by the AH.

We have investigated the accuracy pattern in terms of the two different tasks. In fact, it is also possible to examine the accuracy pattern from a different perspective. It has been indicated that most of the participants in this study were at intermediate or early advanced English proficiency level, which can be largely represented by their English scores in the NCEE. It is possible for us to divide the participants into two proficiency groups according to their NCEE English scores and examine whether the two groups demonstrate the same accuracy order for the five relative clause types. It was found that two of the 200 participants did not report their NCEE English scores in their questionnaires. For the remaining 198 participants, I ranked their data list from the highest score to the lowest one. Then, it was determined that the first 99 participants fall

into the High Proficiency group and the remaining 99 participants fall into the Low Proficiency group.
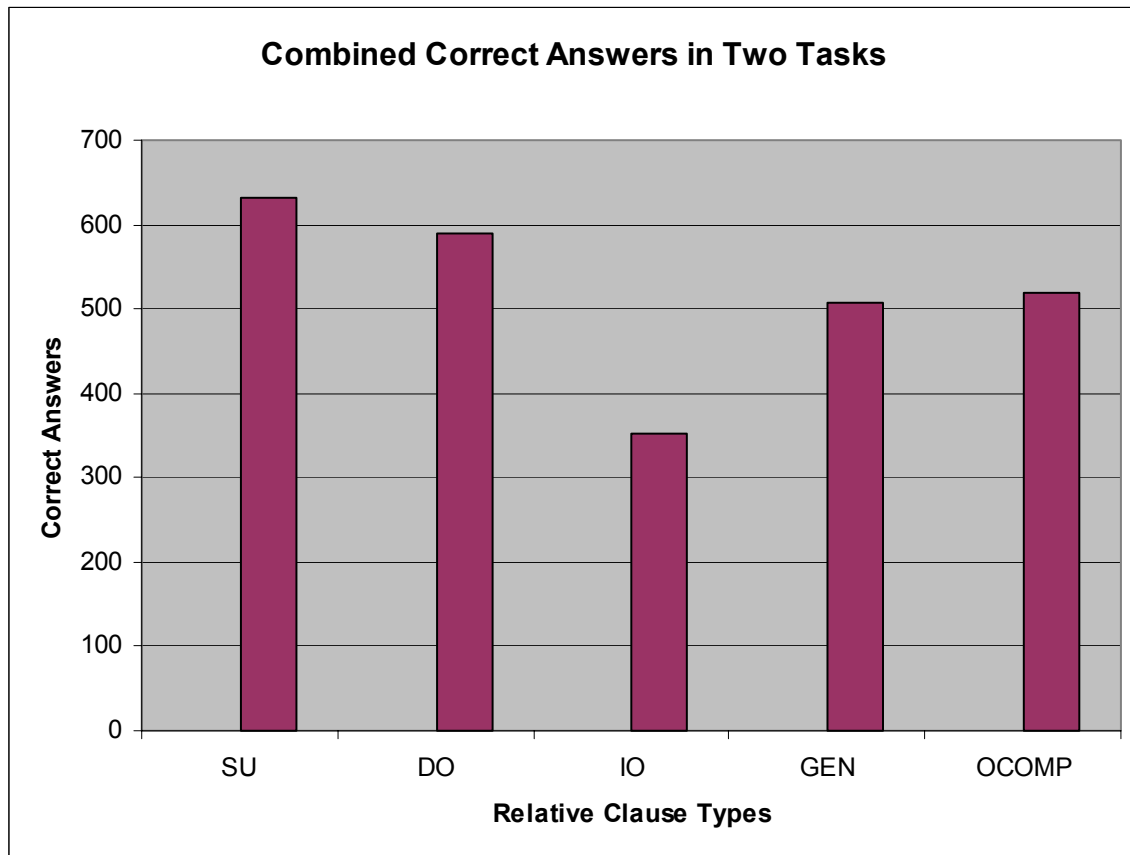
Figure 3: Combined Correct Answers in the Two Tasks for the Five Clause Types

Table 4 reports the overall performances (two tasks combined) on the five relative clause types by these two proficiency groups (N = 396).

Three trends can be perceived from Table 4. First, the High Proficiency group performed better than the Low Proficiency group on each of the five relative clause types. Second, the accuracy order for the Low Proficiency group resembles that shown in Figure 1 and Figure 3. Lastly, the difference in accuracy order between the two groups is that for the Low Proficiency group OCOMP > GEN while for the High Proficiency group GEN > OCOMP.

Table 4: Correct Answers for the Five Clause Types by the Two Proficiency Groups

Relative Clause Type	High Proficiency Group Correct Answers(**Percentages**)		Low Proficiency Group Correct Answers(**Percentages**)	
SU	350	**(88%)**	277	**(70%)**
DO	317	**(80%)**	268	**(68%)**
IO	220	**(56%)**	131	**(33%)**
GEN	290	**(73%)**	214	**(54%)**
OCOMP	275	**(69%)**	242	**(61%)**

What can be concluded from the data so far is that the accuracy order as demonstrated by the data does not conform well to the predictions made by the AH. Although different ways of manipulating the data have yielded somewhat different patterns, several elements remain largely consistent. First, the SU type is the easiest and the DO type is the second easiest. Next, among the five relative clause types, the IO type is the most difficult one for this group of participants. Thirdly, the OCOMP type generally has a higher accuracy percentage than the GEN type, but there is only a slight difference between these two types in terms of correctness percentage. Thus, the observed accuracy pattern for the five relative clause types in the present data can be summarized by the following hierarchy: SU > DO > OCOMP/GEN > IO (OCOMP/GEN means that there is not a marked difference between the two types of OCOMP and GEN in terms of accuracy level). Unfortunately, this pattern is not in conformity with the pattern predicted by the AH.

Now let us analyze and explore what is behind our observed pattern. To achieve this purpose, we will have to delve into some specifics of the data. Not only is it necessary to analyze

the specifics of the data concerning the five relative clause types, it might also be worthwhile to examine the details of the data regarding the 10 relative clause subtypes. Undoubtedly, the data concerning a subtype will inform us about the relative clause type above it and help us capture possible subtle factors that can explain the relative ease or difficulty of the relative clause type above that subtype. In addition, since in each of the two tasks, any one of the items corresponds to one of the 10 subtypes, the data concerning a subtype may help us ascertain whether a particular item is a good or poor test item. The following tables and figures represent some data for the 10 subtypes. Table 5, based on Table 1 and Table 2, represents correct answers in the two tasks for each of the 10 subtypes (N = 200).

Table 5: Correct Answers in the Two Tasks for the 10 Subtypes

Relative Clause Subtype	The Number of Correct Answers in the SC Task	The Number of Correct Answers in the AJ Task
SU SU	165	158
DO SU	130	179
SU DO	141	157
DO DO	109	182
SU IO	37	95
DO IO	46	175
SU GEN	89	171
DO GEN	101	146
SU OCOMP	110	146
DO OCOMP	91	173

Figure 4 is a graphical representation of the data in Table 5.

Correct Answers in Two Tasks
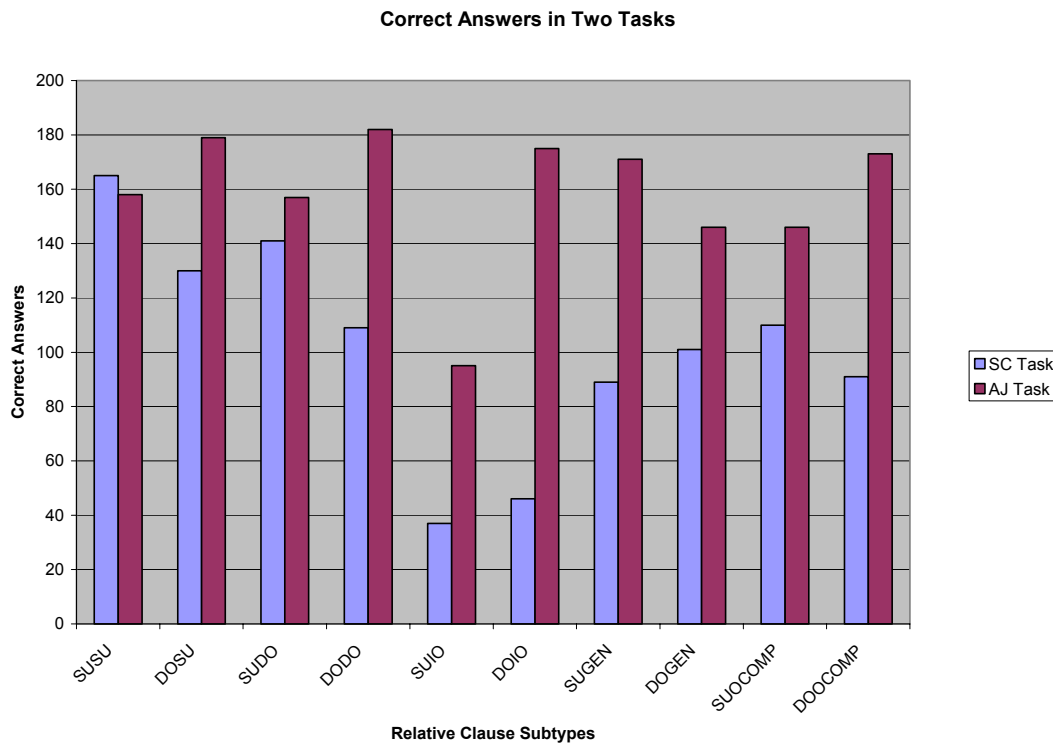
Figure 4: Correct Answers in the Two Tasks for the 10 Subtypes

Table 6 reports correct answers in the two tasks by the two proficiency groups for the 10

Subtypes (N =99).

Figure 5, derived from Table 6, represents the number of correct answers in the SC

task by the two proficiency groups for the 10 subtypes.

Figure 6, derived from Table 6, represents the number of correct answers in the AJ task by

the two proficiency groups for the 10 subtypes.

Table 6: Correct Answers for the 10 Subtypes by the Two Proficiency Groups

Relative Clause Subtype	HP Group in the SC Task	LP Group in the SC Task	LP Group in the AJ Task	LP Group in the AJ Task
SU SU	92	71	84	73
DO SU	80	49	94	84
SU DO	75	64	83	73
DO DO	64	45	95	86
SU IO	27	10	66	28
DO IO	34	12	93	81
SU GEN	58	31	91	78
DO GEN	62	38	79	67
SU OCOMP	56	54	74	71
DO OCOMP	53	38	92	79

Correct Answers for Two Proficiency Groups in SC Task
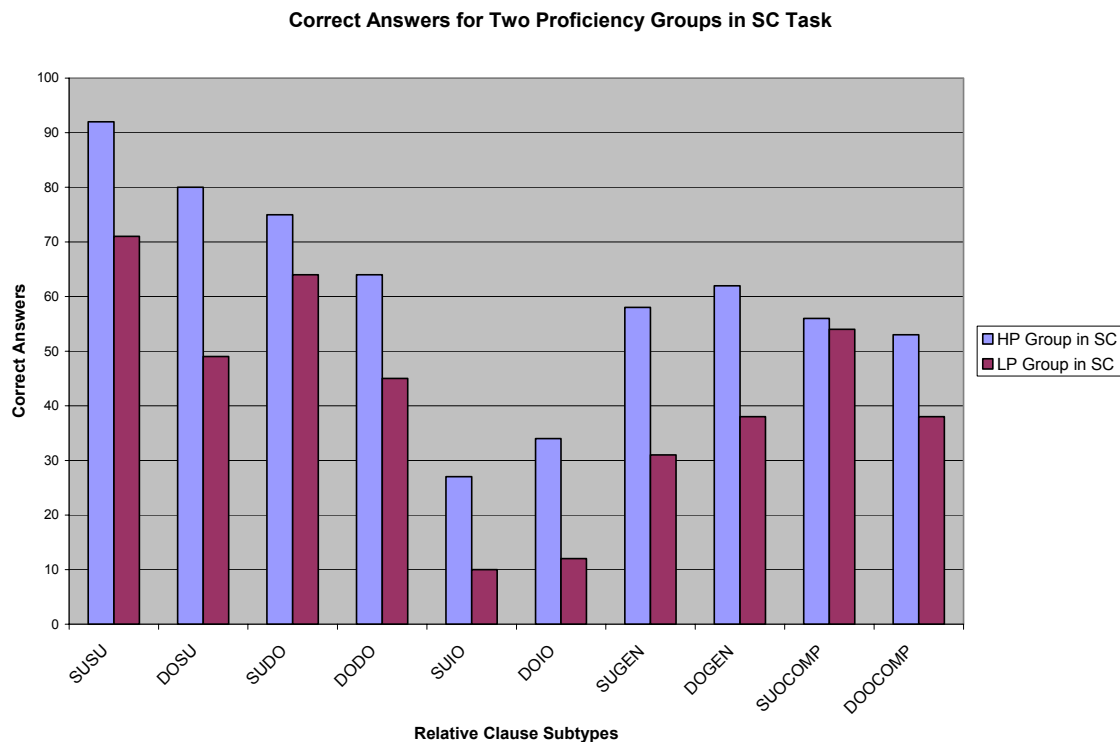
Figure 5: Correct Answers in the SC Task for the Two Proficiency Groups

Correct Answers for Two Proficiency Group in AJ Task
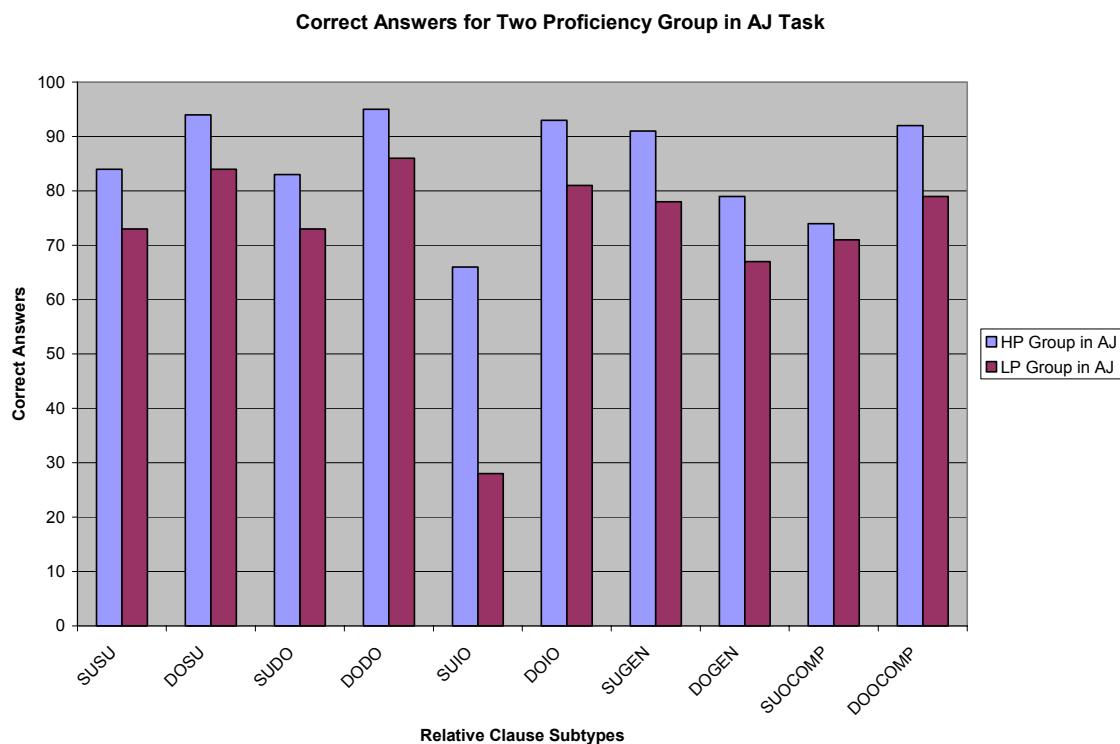

Figure 6: Correct Answers in the AJ Task for the Two Proficiency Groups

SECTION 6

DISCUSSION

I will begin this section of the paper with a case study of a test item, which is concerned more with methodological issues than thematic ones. I assume that we will be in a better position to discuss the latter if we can first clarify the former. In particular, it is critical for us to deal with some apparent deviations in the data that might be attributed to possible methodological defects.

The case study I will be conducting is based on Item 10 in the AJ task. This item is chosen for the following considerations. First, a study of Figure 4 shows that the number of correct answers on the DOIO subtype in the AJ task is markedly deviant from the overall pattern in the figure, and Table 5 shows that there is a conspicuously large difference between the number of correct answers in the SC task (46) and that in the AJ task (175). Moreover, a comparison of Figures 5 and 6 reveals that the difference between the number of correct answers on DOIO in the SC task and that in the AJ task for the two proficiency groups is noticeably larger than corresponding difference on any of the other nine subtypes. These observations indicate that the performance of this group of participants on the DOIO subtype in the AJ task is suspect. The item in the AJ task that corresponds to the DOIO subtype is Item 10. Thus, we may suspect that Item 10 might be in some way problematic.

The sentence to be judged by the participants in Item 10 is *I saw the girl that the boy gave her a book*. Among the 200 subjects, 22 judged it as good and three students did not respond to it. The remaining 175 subjects made the correct judgment that it is not good. We have suggested

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that this number of correct answers is unusually large. It might be useful to analyze the responses to this item in more detail. This is possible because, for the AJ task, the subject was required to produce a sentence he or she thought to be good if he or she judged the original sentence to be unacceptable. It was found that, of the 175 subjects who correctly judged the original sentence *I saw the girl that the boy gave her a book*, 14 did not produce any sentence of their own. An investigation of the sentences produced by the remaining 161 subjects shows that only 45 sentences are correct.

Some implications can be drawn from these numbers. The fact that a subject correctly judged a sentence as not good does not necessarily indicate that he or she could produce a corresponding good sentence. That is, the fact that a subject made a correct judgment of an erroneous sentence does not necessarily mean he or she understood and mastered the specific relative clause structure examined in that sentence. Similarly, it can be inferred that correct judgment of a good sentence by a participant does not necessarily mean that the participant understood and mastered the specific relative clause structure in that sentence. These implications correspond to Gass's claim (1979) that the AJ task may not fully reflect the learner's grammatical knowledge.

The fact that only about one fourth (45 out of 175) of the participants who made the correct judgment succeeded in producing a correct sentence of their own may also suggest that Item 10 in the AJ task is not a good test item because the participants seemed to be too prone to judge it as not good. It has been indicated that although the AJ task and the SC task are not supposed to measure exactly the same grammatical knowledge of L2 learners, they are closely correlated to each other, and it might be possible to compare the result in the AJ task with that in the SC task. There is good evidence for the high correlation between the two tasks in the case of Item 10. It

has been noted that, for Item 10, 175 participants made a correct judgment, whereas 45 out of

them produced a correct sentence of their own. We can compare this result with Item 4 in the SC

task, which is also a DO IO subtype. From Table 1, it can be seen that the number of correct

answers for Item 4 in the SC task is 46, a number nearly equal to 45, the number of correct

sentences produced by the 175 participants who made correct judgment on Item 10 in the AJ

task.

The above case study throws some light on the methodology of data elicitation and analysis

in this study. It suggests that although the AJ task, as an elicitation method, is somewhat

problematic and there might be some less satisfactory test items in the two tasks, the specific

requirement in the AJ task that the subject produce a sentence of his own if he judges the original

sentence as ungrammatical can compensate for the weakness inherent in the AJ elicitation

method and enable us to identify some possible poor test items. Furthermore, in the present

study, we are actually using two elicitation methods of the SC and AJ to investigate the same

issue, i.e., the relative clause accessibility hierarchy. This hierarchy is supposed to be the same

for either the production or the comprehension of different relative clause types. One can readily

compare the results of these two methods to check the reliability of the present research.

Presumably, if the two methods demonstrate similar patterns, we will have more confidence in

the reliability of our present study. If a comparison is made between Figure 1 and Figure 2, one

can see that the patterns in the SC task and the AJ task are largely similar (some differences in

the two patterns may be partly attributed to the weakness of the AJ method).

Now that we have clarified some methodological issues, we are now in a position to pursue

thematic issues. However, one caveat is in order. In the following data analysis and discussion, I

will cite more data from the SC task than from the AJ task, on the assumption that that the SC task yields more reliable results than the AJ task.

It seems that "a configurational view", as proposed by Hawkins (1988), can explain the present data in a way that "a relational view" based on the AH cannot. Hawkins makes a distinction between the relational view and the configurational view. The former views the task of acquiring L2 relative clause as a mapping problem. That is, the L2 learner's task is to map inbuilt grammatical knowledge, including knowledge of an associated theory of markedness such as the AH, onto primary relative clause data. In contrast, according to the configurational view, the L2 learner's inbuilt grammatical knowledge contains knowledge of grammatical relations, but not an associated theory of markedness. This approach views the task of acquiring L2 relative clause as a parsing problem. That is, the L2 learner's task is to figure out the way that the 3 constituents of the surface configurations of relative clauses, i.e., the head, the relativizer and the extraction site, interact with each other in dealing with the L2 primary data. Thus the difficulty of relative clause types is intimately related to the L2 learner's ability to interpret and manipulate the different components of a surface structure configuration. In other words, the difficulty of relative clause types is a function of the L2 learner's real-time processing capacity and his ability to parse primary data. An important property of the surface configuration of relative clauses is the distance of the head to the extraction site of a relativized NP. It has been implied that in Tarallo and Myhill's study (1983), there is some indication of the correlation between the proximity of constituents in surface configuration and the relative difficulty of a particular relative clause type. Hawkins (1988) argues that the configurational view can adequately account for the acquisition of relativizers and stylistically inverted relative clauses in French for native English speakers.

To see how this configurational approach can apply to the analysis of our data, a comparison of a SU clause and a DO clause based on this approach might be illuminating. In the following examples, Clause 1 is a SU type while Clause 2 is a DO type.

Clause 1: *The girl*   *who*   *fell*.

       (head)   (relativizer)(extraction site)

Clause 2: *The girl*   *that*   *the boy*   *hit* ___ .

       (head)   (relativizer)   (extraction site)

In Clause 1, as is indicated below the clause, the NP *the girl* is the head, the word *who* is the relative marker or relativizer, and the empty space following the word *who* is the extraction site which the relativized NP *the girl* is moved out of. In Clause 2, the head of the clause is *the girl*, the relativizer is *that* and the extraction site is the space following the word *hit*. In Clause 1, the distance of the head *the girl* to the extraction site is one word, whereas in Clause 2, the distance of the head *the girl* to the extraction site is four words. In other words, the distance of the head *the girl* to the extraction cite in the SU clause is closer than the distance of the head *the girl* to the extraction cite in the DO clause. Consequently, it may be assumed that the SU clause is easier than the DO clause because in the SU clause the extraction site is more proximate to the head and thus the processing of the SU clause is less demanding and entails less processing capacity of the L2 learner than the DO clause.

One may ask what it would be like if two clause types have approximately the same degree of proximity of the head to the extraction site. A comparison of an IO clause and an OCOMP clause may provide an answer to this question. In the following examples, Clause 1 is an IO type while Clause 2 is an OCOMP type.

Clause 1: *The girl*   *that* *the boy gave a book to*   ____ .

Clause 2: *The girl* *that* the boy is bigger than ____.

The distance of the head *the girl* to the extraction cite in the IO clause is 7 words, whereas the distance of the head *the girl* to the extraction cite in the DO clause is 6 words. Since the two distances are approximately the same, the two clauses appear to have approximately the same level of difficulty. However, the structures of the two clauses are not exactly the same. Clause 1, which is an IO type and involves the processing of the relationships between 3 different entities, i.e., *the boy*, *the girl* and *a book*, may be more cognitively demanding than Clause 2, which is an OCOMP type and involves the relationship between 2 entities, i.e., *the boy* and *the girl*. To generalize the above case of comparison from the perspective of the configurational approach, one can claim that if an IO clause and an OCOMP clause have approximately the same degree of proximity to the extraction site from the head, the IO clause will tend to have a higher level of difficulty than the OCOMP clause, because the interpretation and manipulation of the IO clause is more cognitively demanding and thus entails more processing capacity of the L2 learner than the OCOMP clause does.

Based on the same hypothesis, it is not difficult to infer that SU and DO are generally easier than IO and OCOMP, since the head of a clause in the former two types is usually closer to its extraction site than that in the latter two types. At this point, one may wish to know where the GEN type fits in this hierarchy according to the hypothesis of the configurational approach. It has to be admitted that the GEN type is somewhat special because, as we will describe shortly, has an independent hierarchy of its own. Our discussion in this paragraph deals only with the highest level in the GEN hierarchy, as is exemplified by the following clause: *The boy whose girlfriend ____ left him.* In this GEN clause, the extraction site is positioned immediately next to the phrase *whose girlfriend*. This kind of GEN clause is the only level of the GEN hierarchy

examined in our data. We will compare this clause with a DO clause: *The girl that the boy hit*

___ . In the GEN clause, the head is *the boy* and the extraction site is located in between the

words *girlfriend* and *left*, while in the DO clause, the head is *the boy* and the extraction site is

located after the word *hit*. An initial comparison of these 2 clauses appears to suggest that the

DO clause is more difficult than the GEN clause, because the distance of the head to the

extraction site in the DO clause is longer than the distance of the head to the extraction site in the

GEN clause. However, we have not yet taken into account the role played by the level of

configurational structure of the two clause types. According to Hawkins (1988), learners would

be expected to have more difficulty with GEN than with DO since GEN represent "a more

deeply embedded level of structure" (177) than DO. In other words, there is a marked difference

in the level of configurational structure between the GEN type and the DO type. Consequently,

the GEN type is actually more difficult than the DO type for L2 learners. Hawkins further points

out that a genitive extracted from a site further from the head would have higher difficulty level

than one extracted from a site nearer the head.

Since the above instances of different clause types are representative of the five

corresponding clause types investigated in our data, if we suppose that the configurational

approach alone can account for the difficulty level of the five clause types, we would expect the

pattern to be SU > DO > GEN > OCOMP > IO. This pattern roughly corresponds to the observed

hierarchy of SU > DO > OCOMP/GEN > IO in our data.

Nevertheless, since we believe that L2 acquisition is a highly complex phenomenon, we are

hesitant to assume that there exists a variable such as the properties of the surface configuration

of relative clauses that alone can determine the relative degree of difficulty of the five relative

clause types. Although the AH has not appeared to be a very powerful tool so far, we do not have

strong evidence to deny its role in explaining the observed hierarchy in our data. Above all, it is more reasonable to postulate that the observed pattern is the outcome of the interaction of several variables. It follows that the unconformity between the observed pattern and the prediction made by the AH cannot exclude the AH as a functioning factor, because the observed pattern might be the outcome of the interaction between the AH and some other factors. Likewise, a high degree of conformity between the observed pattern and the pattern predicted by the configurational view might be accidental and does not necessarily mean surface structural configuration of relative clauses is the dominant variable in determining the relative ease or difficulty of a relative clause type, because the observed pattern might be the outcome of the interaction between the surface structural configuration and some other factors.

Considering the likelihood of the interaction of multiple factors in determining the acquisition of relative clauses for L2 learners, the observed pattern in the present data, and the mixed observed patterns in previous relevant research, one might hypothesize that the surface configuration of relative clauses and the AH are the two major consistent determinants of the relative clause hierarchy, with some other factors playing a minor or sporadic role. Although this hypothesis is not a strong one because it is difficult to falsify it with empirical data, it presumably better reflects the complex nature of second language acquisition. We can attempt, however, to find more empirical support for it from the present data. So far, our main focus has been on the observed overall pattern for the relative difficulty of different relative clause types. For our immediate purpose, it might be worthwhile to investigate in more detail the specifics of some particular clause types. In particular, a comparison of the AH, the observed hierarchy in our data, and the hierarchy predicted from the configurational approach indicates that it is necessary to examine further the clause types GEN, IO and OCOMP.

A few studies have demonstrated or implied that it is problematic to include GEN in the AH. Jones (1991) specifies that there are two hierarchies for the five relative clauses of SU, DO, IO, OPREP and OCOMP, one hierarchy for –Genitive and the other for +Genitive. In other words, Genitive has a separate hierarchy of its own. I have mentioned that my data examine merely the highest level of the Genitive hierarchy, i.e., the SU function within the +Genitive hierarchy, as is exemplified in the clause *the boy whose girlfriend left him.* As is implied by Hawkins (1988), it is reasonable to postulate that functions other than SU within the +Genitive hierarchy will be more difficult for L2 learners. Empirical studies, including the present one, customarily treat or view the Genitive as part of a single hierarchy rather than as a separate self-contained hierarchy of its own. One of these studies, conducted by Gass (1979), found that there were more correct answers to the GEN type on both the SC and the AJ tasks than would have been predicted by the AH. Gass hypothesizes that this discrepancy can be attributed to certain structural target language features of the GEN type. In particular, Gass specifies that *whose*, the only relative marker in the GEN type, is uniquely coded and that no variants such as *that* or *which* can be used to replace *whose* in such a context. As a result, the relative marker *whose* can be readily perceived by L2 learners and thus the GEN type exhibits a somewhat lower level of difficulty than predicted by the AH. Gass seems to be reluctant to conclude that the deviation of the observed GEN difficulty level from its expected position in the AH provides counterevidence to the prediction of the AH.

In his study designed to investigate L2 learners' use of resumptive pronouns in Swedish, Hyltenstam (1984) found that contrary to the prediction by the AH, the GEN type had more resumptive pronouns than the OCOMP type for his subjects. Pavesi's replication (1986) of Hyltenstam's study with native Italian speakers learning English yielded the same result.

Taking into account the results of Gass's study (SU > GEN > DO), Hyltensam's and Pavesi's studies (OCOMP > GEN) and the position of the GEN type in my study (OCOMP/GEN > IO), one may conclude that the AH alone cannot adequately explain the mixed results from different sources of data as far as the GEN type is concerned. Alternatively, one may agree with Jones's view (1991) that it is a mistake to include the GEN in the AH.

We can now turn to the IO type. A crucial question concerns why this was the most difficult type for the group of participants in the present study. As is shown in Table 3, the correctness percentage for the IO type in the SC task is as low as 21%. In the SC task, there are two items relevant to the IO type: Item 3, which is a SU IO subtype, and Item 4, which is a DO IO subtype. Obviously, one way to study why the IO type was difficult for the participants is to analyze the typical errors they made in their responses to these items. We will choose Item 4 for our analysis. This item requires that the participants combine a pair of sentences, i.e., *I saw the girl* and *The boy gave the girl a book* into a single sentence containing an IO clause. The following table lists all responses produced by nine or more participants (N =200).

Table 7: Reponses Produced by Nine or More Participants for Item 4 in the SC task

Serial No.	Sentences	Counts
1	I saw the girl that/whom/who the boy gave a book	69
2	I saw the girl that/whom/who the boy gave a book to.	36
3	I saw the girl who/that was given a book by/from the boy	18
4	I saw the girl to whom/who the boy gave a book	10
5	The boy gave the girl that I saw a book.	10
6	I saw that the boy gave the girl a book.	9

It can be seen from the table that the two most frequent erroneous responses the subjects constructed are *I saw the girl that/whom/who the boy gave a book (*69 participants) and *I saw the girl who/that was given a book by/from the boy* (18 participants) . The latter response is grammatically correct in itself, but it does not contain a required IO clause. Instead, the subjects resorted to an avoidance strategy by producing a less difficult SU relative clause. Undoubtedly, the most noticeable problem for these participants is their tendency to omit the preposition *to* in their IO clauses.

There are several possible explanations for this poor performance on the IO type. First, as has been hypothesized from the perspective of the configurational approach, among the five relative clause types, the IO, along with the OCOMP, tends to have the longest distance of the head to the extraction site, and it also tends to have a higher level of cognitively demanding configurational structure than the OCOMP type does. Furthermore, Keenan and Comrie (1977) note that, as far as relative clause formation is concerned, indirect objects do not possess a clear-cut typological status in that they are relativized sometimes as direct objects and at other times as objects of prepositions. Tarallo and Myhill (1983) point out that some native English speakers accept IO clauses without the preposition *to*, though this preposition is normally indispensable in such a context in English. Based on the fact that indirect objects can serve as either oblique or non-oblique objects, Tarallo and Myhill predict that L2 learners will have difficulty relativizing indirect object in that they are not sure what relativization strategy they can use in these cases.

In addition to the above explanations, the poor performance of this group of participants, especially their tendency to miss the preposition *to* in their production of the IO clause, might be attributable to the relationship between English, the target language and Chinese, the native language of the participants in the study, as well as to the factor of language transfer. An

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example will make this point clear. First, let us consider two English sentences with exactly the same meaning: Sentence 1(S1) *The boy gave the girl a book* and Sentence 2 (S2) *The boy gave a book to the girl*. Curiously, the NP *the girl* in S1 cannot be legitimately relativized in that the resulting clause (C1) *the girl that the boy gave ___ a book* is not generally considered to be grammatically acceptable in English. However, the NP *the girl* in S2 can be legitimately relativized in that the resulting relativized clause (C2) *the girl that the boy gave a book to ___* is grammatically acceptable in English. Interestingly, in Chinese, the formal equivalent of S1, i.e,

<u>Nanhai</u> <u>Gei</u> <u>Nuhai</u> <u>Yibenshu</u>.

(the boy) (gave) (the girl)   (a book)

is well accepted, whereas, the formal equivalent of S2, i.e.,

<u>Nanhai</u> <u>Gei</u> <u>Yibenshu</u> <u>?</u> <u>Nuhai.</u>

(the boy) (gave)   (a book)   to (the girl)

is not accepted. It follows that native Chinese speakers will tend to accept C1, which is derived from S1, rather than C2, which is derived from S2. That is to say, if the NP *the girl* in S1 or S2 is to be relativized, native Chinese speakers, as a consequence of language transfer, will tend to produce the erroneous sentence: *the girl that the boy gave ___ a book*, rather than the desired response *the girl that the boy gave a book to ___*. Therefore, it is no wonder that for Item 4, almost 30 percent of the subjects produced the sentence(s) *I saw the girl that/whom/who the boy gave a book*. As a further evidence of language transfer in this context, 10 subjects produced the sentence *The boy gave the girl that I saw a book,* while none of the subjects produced the sentence *The boy gave a book to the girl that I saw,* though neither of the two sentences contain a required IO clause (refer to Table 7).

Furthermore, the clause *the girl that the boy gave a book to ___* is a relative clause with preposition stranding. Pavesi (1986) claims that preposition stranding is an "extremely rare" (49) linguistic phenomenon, observed only within the Indo-European family. Thus, according to Pavesi, preposition stranding may play a major role in determining the degree of complexity of the IO structure. Therefore, it seems reasonable to hypothesize that IO clauses with preposition stranding as exemplified in the clause *The girl that the boy gave a book to __* can be rather difficult for native speakers of Chinese, which does not belong to the Indo-European family. As a corroboration of this hypothesis, for Item 4, only 36 out of the 200 subjects produced the desired IO clause(s) with preposition stranding, i.e., *I saw the girl that/whom/who the boy gave a book to.*

One further crucial question we must answer is why this group of subjects performed so well on the OCOM type with 50 percent correctness in the SC task and 80 percent correctness in the AJ task. This result is not in accordance with the prediction of the AH, according to which OCOMP is supposed to be the most difficult type in the relative clause hierarchy for L2 learners. This result is also in sharp contrast with the findings of Gass's study (1980), which show that the percentage of correct sentences for the OCOMP type in the SC task was well below 10 percent, the lowest among the five relative clause types reported in her study.

Of course, it is not advisable to compare the percentage of correctness for the OCOMP type in the present study with the corresponding percentage in Gass's study, because the methods and participant groups were not the same. It would be more meaningful to explore the factors behind the observed high percentage of correctness based on an analysis of the present data.

 First, let us observe data collected from the participants' responses to Item 6 in the SC task. This item requires that the participants combine a pair of sentences, i.e., *I saw the girl* and *The*

boy is bigger than the girl into a single sentence containing an OCOMP clause. The following

table lists all responses produced by five or more participants (N =200).

Table 8: Responses Produced by Five or More Participants for Item 6 in the SC Task

Serial No.	Sentences	Counts
1	I saw the girl that/whom/who the boy is bigger than.	91
2	I saw the girl that/who was smaller than the boy.	18
3	I saw that the boy is bigger than the girl.	12
4	I saw the girl than whom the boy is/was bigger	10
5	The boy is bigger than the girl that I saw.	6
6	I saw the girl that the boy is bigger than her.	5

Nearly half of the 200 participants produced the correct sentence(s) containing an OCOMP

clause: *I saw the girl that/whom/who the boy is bigger than.* A large number of the participants

tended to resort to avoidance strategy producing either a sentence containing a SU clause such as

I saw the girl that/who was smaller than the boy or a sentence containing no relative clause at all

such as *I saw that the boy is bigger than the girl*.

In explaining the lack of differentiation between the GEN and the OCOMP type in her data,

Pavesi (1986) assumes that the comparative conjunction *than* in the OCOMP resembles a

preposition in its behavior and postulates that OCOMP, IO and OO (Oblique Object) are

represented in the interlanguage of the L2 learners as sharing a common feature: stranding.

However, Pavesi's observation seems to give us little help in accounting for the good performance on the OCOMP type for the group of participants in the present study.

Fortunately, there is some evidence in our data suggesting that the good performance by this group of participants may be associated with their cognitive levels. It may be noticed from Figures 5 and 6 that the SU OCOMP subtype shows a distinctive pattern, i.e., the High Proficiency group and the Low Proficiency group performed almost equally well on that subtype. This might indicate that the subjects' performance on the SU OCOMP type is not as much related to their English proficiency levels as their performances on other subtypes are and that it is more related to non-language factors. Presumably it might be the case that the subjects' performance on this subtype is more affected by their cognitive levels. By cognitive level, I mean the ability of logical analysis, in particular the ability of making analogy. In general, adults may have higher cognitive level than children; science and engineering college students may have higher cognitive level than their counterparts majoring in arts. Since the participants were all college students majoring primarily in engineering, it may be postulated that they were roughly at the same level of cognitive development and that their overall good performance on the SU OCOMP subtype might be due in part to their higher cognitive levels. Admittedly, we do not have very good evidence for this and we cannot make the same postulation for the DO OCOMP subtype, since the DO OCOMP does not show the same pattern in the data.

Nevertheless, it might be possible that, in dealing with the OCOMP type, cognitive factors play a significant part for this particular group of participants. First, considering that OCOMP is very rare in both Chinese and English, the learners have hardly any language experience to draw upon in dealing with this relative clause type. Therefore, it is not unreasonable to assume that this group of participants would tend to resort to cognitive analogy in this context. This might be

especially true considering the fact that the two tasks they were performing were written ones and thus they had adequate time to engage in such cognitive process as analogy. For instance, if a participant knew the acceptability of the DO relative clause *The girl that I saw __*, he might infer by analogy the presence of the OCOMP clause *The girl that I am taller than __*. Let us take Item 6 in the SC task for a further example. For a good number of participants, producing an OCOMP sentence might be a matter of making a choice between two candidate answers: *I saw the girl that the boy is taller than* and *I saw the girl that the boy is taller than her*. Both of these two sentences were presumably unfamiliar and even sounded awkward to them. Somehow, however, they tended to judge that the comparative conjunction *than* should have a logical object and that the relative marker *that* serves as the logical object of the comparative conjunction *than*, though *that* is separated from and positioned in front of *than*. Thus, adding a pronoun like *her* immediately after *than* would be redundant. Based on this cognitive judgment, they would tend to choose the sentence *I saw the girl that the boy is taller than* as the more desirable of the two undesirable candidate answers. This assumption can partly explain why, for Item 6 in the SC task, nearly half of the participants produced the correct OCOMP clause(s): *I saw the girl that/whom/who the boy is bigger than* and only five out of the 200 subjects produced the response containing pronoun retention *I saw the girl that the boy is bigger than her.*

It can be added that language transfer does not seem to play an important role for these native Chinese speakers as far as the OCOMP type is concerned, because the OCOMP relative clause is rare in spoken Chinese and unacceptable in written Chinese. Gass's study (1980) also indicates that language transfer is not a relevant notion for the OCOMP type.

I have attempted to account for the observed pattern of the order of difficulty for various relative clauses, with special attention given to the GEN, IO and OCOMP types. Since the

participants in this study belong to a largely homogeneous group of Chinese engineering undergraduates, the data may not be representative of ESL learners among native Chinese speakers. In future research, it will be necessary to collect data from other groups of native Chinese speaking ESL learners, especially young learners in non-instructional environments. In particular, it is most desirable to examine the IO and OCOMP types more intensively, preferably with other groups of native Chinese speaking ESL learners, so that we can verify whether the performances of the participants in this study on the IO and OCOMP types are typical of Chinese ESL learners.

SECTION 7

CONCLUSION

Gass (1980), in her study of the acquisition of English relative clauses by adult speakers of diverse native language backgrounds, proposes that unitary theories are inadequate in explaining the acquisition of English relative clauses by L2 learners. At the same time, Gass maintains that universal principles, such as those represented by the AH, play a dominant role in determining an order of relative difficulty for different relative clause types. Language-specific factors such as the features of the target or the native language should come into play only where universal factors underdetermine the result.

It seems that the configurational view, advanced and substantiated by Hawkins (1989), can better account for the observed order of difficulty for different relative clauses in the data than the relational view. However, this is far from saying that the AH does not play a role in the observed pattern. Furthermore, the acquisition of relative clauses by L2 learners is such a complicated phenomenon that it is dangerous to espouse a unitary or quasi-unitary theory. It is assumed on the basis of the data in the present study that several factors play a role in determining the observed relative difficulty order of different relative clause types, namely, the surface configuration of relative clauses, the effect of typological markedness as represented by the AH, language transfer and other factors, such as specific target language features and the level of cognitive development of L2 learners. These factors can be at play simultaneously, and the observed difficulty hierarchy SU > DO > OCOMP/GEN > IO is most likely the outcome of

the interaction between these factors. It has been suggested that the observed hierarchy largely conforms to the hypothesized hierarchy SU > DO > GEN > OCOMP > IO inferred from the configurational view. However, since we prefer a multifactor theory rather than a unitary one, it is desirable to view this correspondence as a coincidence and interpret the observed hierarchy as the outcome of the interaction of the several factors listed above, with the surface configuration of relative clauses and the AH playing a consistent and major role in it.

In conclusion, on the basis of the observed difficulty order for different relative clause types, we can assert the strong hypothesis that the configurational view based on the surface configuration of relative clauses has more explanatory power for the acquisition of relative clauses than the relational view based on the AH. A weaker yet safer hypothesis is that the surface configuration of relative clauses and the AH combine to play a dominant role in the process. Neither surface configuration nor the AH alone can adequately account for the acquisition of relative clauses for L2 learners. Furthermore, if we agree with Hyltenstam's distinction (1984) between the two notions of prediction and explanation in the context of L2 acquisition of relative clauses, we can accept, without hesitation, Gass 's claim (1980) that the AH can serve as a basis for making predictions about L2 learners' production of relative clauses. It will be equally reasonable for us to accept the view that the acquisition of relative clauses for L2 learners can also be predicted from the perspective of the configurational approach.

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