

Korean Speakers' Access to Universal Grammar:  
On the Issue of Subjacency Violation  
한국인의 보편 문법에의 접근성; 하위 인접 조건의 위반에 관한 고찰

Jin-Hee Yeh ( Dept. of Applied English)  
예진희 (영어통역과)

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ABSTRACT: A lot of studies have been investigating the role played by principles and parameters of Universal Grammar (UG) in the second language acquisition (SLA). The question arises whether second language learners are able to reset parameters when their L1 parameters are different from those of L2. There are currently three possibilities. First, UG principles constrain SLA in ways similar to children's first language acquisition; that is, complete access to UG. Second, they initially transfer their L1 value, but subsequently are able to acquire new settings, that is, partial access to UG. Thirdly, they hold on to L1 settings, but are not able to reset them to the L2 values. In order to determine which of these hypotheses is correct, this paper presents an experiment that tested Korean speakers on their ability to judge grammaticality on the three types of sentences containing subjacency. The results were: first, the Korean speakers do comparatively well at judging the subjacency violation and extremely well at judging the no-inversion category. Second, the Korean speakers do not have difficulty acquiring language-particular rules like subject-verb inversion. Concluding these results, this paper claims that the Korean speakers can reset the parameter responsible for the subjacency restriction in English, and thus have full access to UG. It also recommends a further investigation with better methodological process and procedure.

## 1. Introduction

In recent years, there has been an increase in the number of studies investigating the role played by principles and parameters of Universal Grammar (UG) in the second language acquisition (SLA). The question arises whether second language learners are able to reset parameters when their L1 parameters are different from those of L2. There are currently three possibilities. First, UG principles constrain SLA in ways similar to children's first language acquisition; that is, complete access to UG. Second, they initially transfer their L1 value, but subsequently are able to acquire new settings, that is, partial access to UG. Thirdly, they hold on to L1

settings, but are not able to reset them to the L2 values. While the first two options assume that parameter resetting is possible, the third one does not.

In order to determine which of these hypotheses is correct, this paper presents an experiment that tested Korean speakers on their ability to judge grammaticality on the three types of sentences containing subjacency, a UG principal. While English does not allow a subjacency violation, Korean does not show no clear evidence of subjacency at the level of S-structure. In order for Korean speakers to make a right judgment on such structures in English, they must first reset the parameter responsible for this difference. If Korean subjects accept only the English setting, this is the evidence that supports the direct access hypothesis; if they accept only the L1 setting and do not observe subjacency, this argues for indirect access.

This paper is organized as six sections: Section one is introducing this paper. Section two describes the parametric difference between English and Korean. In Section two, the experiment is presented. Section three describes the results, and Section four discusses them. Finally, in Section five, the conclusion is presented.

## 2. The Parameter Being Tested

### 2.1. English and Korean Difference in Subjacency

Subjacency is a principle which provides constraints on how far categories may be moved by *move a*, i.e. it places bounds on movement (White, 1989). In terms of movement, English exhibits overt syntactic movement in *wh*-questions, as in (1b) and (2b).

- (1) a. John met someone last night.  
b. Who did John meet last night?
- (2) a. Mary believes that Bill said that John met someone last night.  
b. Who does Mary believe that Bill said that John met last night?

In Korean, in contrast, *wh*-phrases do not move in the syntax, but remain in their original position, as can be seen from the examples in (3) and (4).

- (3) John-i nugu-ril ize manet-sumnika?  
John who yesterday met?
- (4) Mary-ka Bill-i malhan John-i nugu-ril ize manetago mit-sumnika?  
Mary Bill said John who yesterday meet believe?

Since English prohibits a constituent from moving out of more than one clause in a single step, the sentences in (5b) and (6b) are ungrammatical.

- (5) a. Mary heard the news that John met someone last night.  
b. \*Who did Mary hear the news that John met last night?
- (6) a. Mary wonders who did what last night.  
b. \*What does Mary wonder who did last night?

The equivalent Korean sentences, shown in (7) and (8), are okay since no movement is involved, and thus subjacency does not apply.

- (7) Mary-ka John-i ize nugu-ril mannan sohig-il dilit-sumnnika?  
Mary John yesterday who meet news heard  
Who did Mary hear the news that John met yesterday?
- (8) Mary-ka nu-ga muii-sil ize hen-ninji-ril ishimsiriwi-hamnika?  
Mary who what yesterday did wonder  
What does Mary wonder who did yesterday?

The difference in acceptability of sentences involving extraction from NPs in English and Korean provides a way to test whether L2 learners can reset the parameter concerning this difference. In addition, speakers of Korean do learn, or at least become proficient communicating in English which exhibits the evidence of subjacency in a wider range of constructions than those exhibited in their native languages (Schachter, 1990). They can and do learn to communicate in English, and English does have a *wh*-fronting rule together with the subjacency constraint on its applicability. If Subjacency exists as a constraint in the psychological knowledge-state of these individuals, it might be detectable through their English grammaticality judgments.

If Koreans can reset the relevant parameter, they should notice the subjacency violation and reject the sentences involving it. If, however, they cannot reset the parameter, they will exhibit lack of knowledge of the subjacency test.

## 2.2 Previous Studies of Subjacency

A number of previous studies have investigated the acquisition of subjacency in English by second language learners whose L1 exhibits limited or no movement, and have reached a variety of conclusions.

Bley-Vroman et al. (1988) tested knowledge of subjacency by speakers of Korean, a language without any syntactic *wh*-movement. Bley-Vroman concluded that UG operates in adult language acquisition by noting that

their subjects performed better than chance, not guessing at random. Johnson & Newport (1991) tested speakers of Chinese on knowledge of Subjacency in *wh*-questions, a construction in which no movement occurs. Their results were that non-native speakers' performance declined continuously over age of arrival in the U.S. until adulthood. Although their conclusion focuses on the effect of age and critical period, there seems to be an agreement that UG is partially available to adult L2 learners. Schachter (1989) tested twenty Chinese, twenty one Korean and twenty Indonesian speakers on subjacency violations. While Korean exhibits no overt syntactic movement, Chinese and Indonesian have limited movement in other structures. She claimed that her results are the major challenge to UG advocates by saying that Korean subjects deviate most from native-speaker norms due to the absence of the relevant constraint in their L1. Thus, her conclusion was that only those properties found in the L1 are available to L2 learners.

On the contrary, there are other studies testing subjacency that show the evidence supporting the full access to UG. Martohardjono & Gair (1993) tested 27 male Indonesian speakers, all of whom are college students in Canada, on their knowledge of subjacency. Their result was that the rate of recognition of subjacency violations is higher for advanced learners than for intermediate learners. From this, they concluded that full access to UG is eventually possible to non-native speakers. Bolotin (1995) tested Arabic adult speakers' knowledge of subjacency by using the difference of relative clauses between English and Arabic. While English relative clauses are formed by a movement, Arabic ones are basegenerated with a resumptive pronoun in the location of the relativized item, and thus do not involve movement. However, her result says that the Arabic speakers know that movement occurs in relative clauses, from which she reached a conclusion that non-native speakers can reset the parameter and thus have full access to UG.

From these studies, it is not yet clear whether L2 learners can or cannot reset parameter and whether UG is fully or partially accessible in SLA. One thing, however, is certain that L2 learners perform above chance on judging subjacency violations, but below the level of native speakers. So some sort of UG is operating, but what extent? To answer that question and to offer a more detailed explanation for L2 learners' lack of native-like proficiency, the experiment that follows has been done.

### **3. Method**

#### **3.1 Subjects**

The participants in this study were 22 native adult speakers of Korean who were living in Lawrence, Kansas at the time of testing. They are students in both graduate and Ph. D level at the University of Kansas. The choice of subjects was guided by my desire to test Koreans who had achieved an advanced level of proficiency as could be determined by test scores. A relatively advanced level of proficiency was important to my study; clearly, beginning students might not be able to make the relevant judgments simply because the structures in question were unfamiliar to them. I wanted to make sure that if the subjects did poorly, it could not simply be attributed to low English proficiency. Although their English proficiency level is advanced, most of them speak Korean both at home and at school.

The means and range for their background are given in Table 1. As can be seen, the average age of the subjects was 30.5 ranging from 23 to 38 and thus the average age at which they had arrived in the United States can be presumed as about 27.4 considering the years they have been living in the U.S., although I did not directly ask them when they first came to America. Accordingly, all had begun their immersion at the age of 20 and above, and thus they were true adult second language learners. They had been in this country an average of 3 years, and had completed an average of 15 years of formal school education of English.

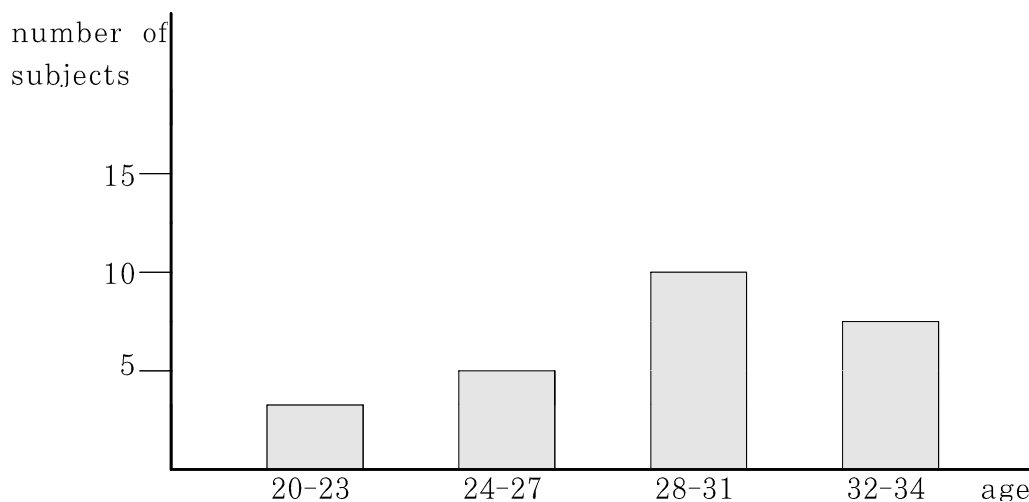


Figure 1 Age of subjects at time of testing

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Table 1. Background on subjects

	<u>mean</u>	<u>range</u>
age of testing	30.1	23-38
years in U.S.	3.1	0-8
years studying English	15.8	3-22

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Fig.1 shows the age distribution. As can be seen, most subjects were in their mid twenties to mid thirties at the time of testing. Fig. 2 shows the distribution for the years that the subjects have been living in the U.S. Of the 22, 9 (about 40 %) had been here for two years or less, while another 13 had been here for two to eight years. Fig. 3 shows years that subjects have been studying English. As can be seen, almost all of the 22 subjects have been studying English more than 6 years (from 6 to 21 years). Only one subject answers that he had been studying English less than five years.

However, he seemed to assume this meant the years he had been immersed in the U.S. Fig. 4 shows gender distribution of the subjects. As can be seen, six of the 22 subjects were females, the other 16 were male students. The reason gender was included as a variable was that it may have affect the subjects' perception of the relevant English structure.

As I said before, I limited the subjects' education level to above graduate level. So the figure on the subjects' education level does not appear here. Thirteen undergraduates who were enrolled at the time of testing in an introductory linguistics course at the University of Kansas served as the native speaker control group for this study.

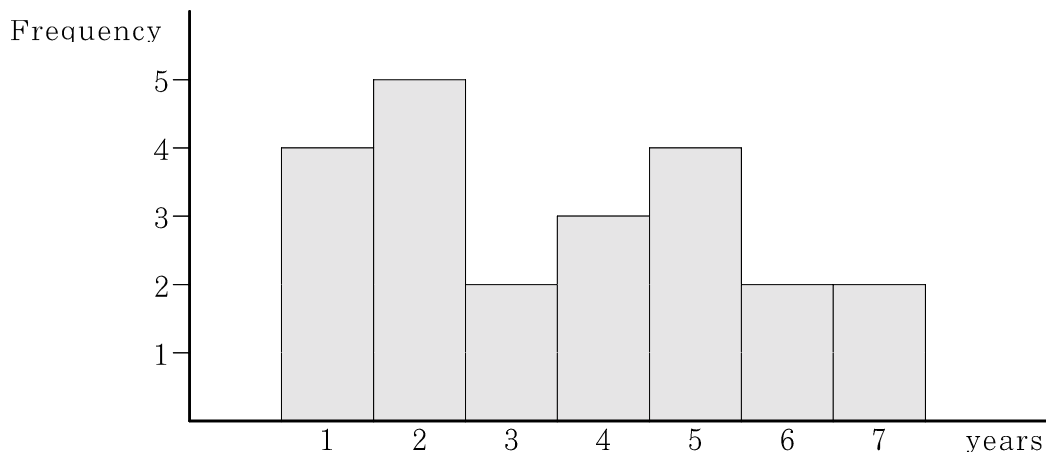


Figure 2 Years subjects have lived in U.S.

### 3.2 Materials

The experiment consisted of a pretest and a grammaticality judgment task. The pretest contained 15 sentences, all of which were complex sentences of making some mistakes while making up sentences myself. Subjects including either relative clauses or WH- or NP- complements, shown in the sample below. The purpose of the pretest was to make sure that subjects could handle sentences of the structural complexity required for the grammaticality judgment task. As one of non-native speaker of English, I consulted Johnson & Newport (1991) sentence battery for fear of

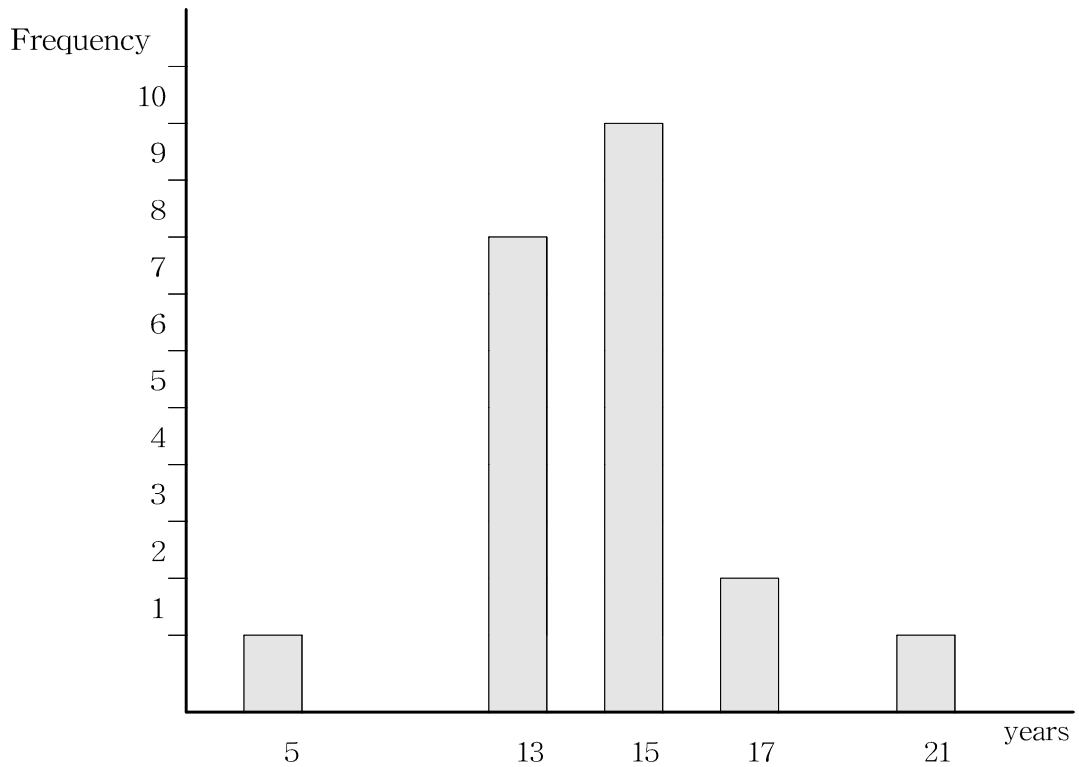


Figure 3 Years of studying English

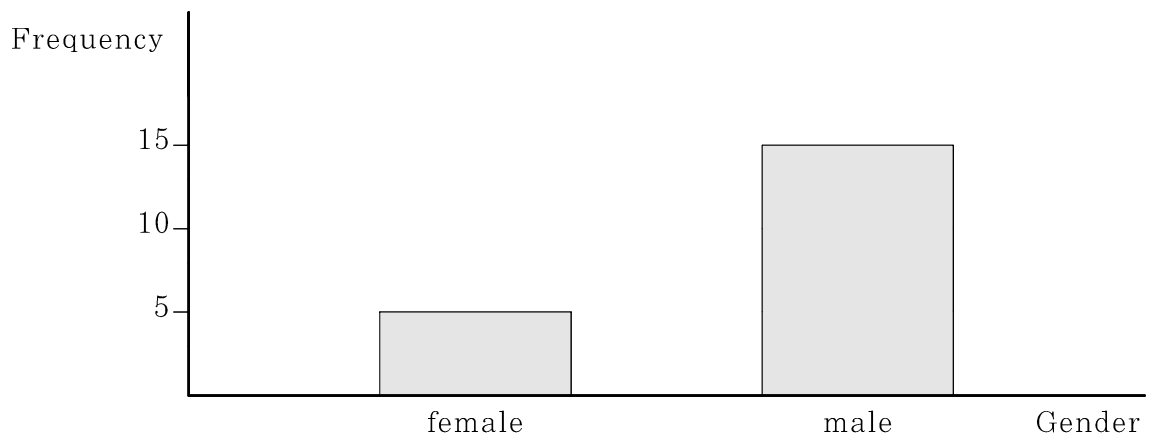


Figure 4 Gender distribution of subjects

making some mistakes while making up sentences myself. Subjects were asked to translate them into Korean. Because the subjects' knowledge of the specific vocabulary was not of interest in this test, they were allowed to consult the dictionary or to leave unfamiliar English words not translated. A sample appears in the following.

Pretest Sentence

The boy who scared the girl climbed a tree ( Relative Clause).

The instructor asked why George missed the test (WH-complement).  
Tom has heard a rumor that his wife loves John (NP-complement).

For Johnson & Newport study, all sentences with a given structure were balanced for word and syllable length because they were given aurally. However, this is a written grammaticality judgment test, so the sentences were not balanced for such matter. The entire sentence battery was randomized.

The grammaticality judgment task consisted of 24 test sentences and 6 fillers. The syntax test was formed around three different types of sentence structures to which subadjacency is relevant in English: relative clauses (RC), WH-complements (WH-comp), and NP-complements (NP-comp), illustrated in (1) through (3) below. The test sentences included twelve grammatical structure and twelve ungrammatical structures. Type (a) is a *wh*-question in which subject and verb are inverted properly, and so grammatical. Type (b) is a *wh*-question which violates the subadjacency principle, so ungrammatical because *wh*-word was moved over two bounding nodes. Type (c) is grammatical because it includes movement of a *wh*-word but over only one bounding node. Type (d) constraints errors of subject-auxiliary inversion. It is ungrammatical because it fails to invert the subject and auxiliary. There were two sentences of each type (a) through (d), so finally the total was 24 test sentences: 8 RC, 8 WH-comp, and 8 NP-comp; 12 good sentences, 8 subadjacency violations, and 8 no-inversion category. As with the pretest, there were both processing and simple fillers, as shown in (4). And once again, unlike Johnson & Newport study, the sentences were not balanced for word or syllable length, but the entire sentences were randomized. The sentence battery is given in the Appendix.

(1) Relative Clauses

- a. What is the man who is running wearing? (good)
- b. \* What will the boy who plays buy a hamburger? (sub. vio.)
- c. Who will the girl who chased Tommy kiss? (good)
- d. \* What the man who fixed the washer did ruin? (no inv.)

(2) WH-complement

- a. Who did Ted ask where he could find Carol? (good)
- b. \*Who would Ken not say why he pushed? (sub. vio.)
- c. Who did Larry ask how George had broken his leg? (good)
- d. \*Who Michael will tell where Don put the book? (no inv.)

(3) NP-complement

- a. What did Mrs. Lee hear that Cindy stole? (good)



- b. \*What did Linda forget the fact that Michael borrowed? (sub.vio.)
- c. Who did the jury believe that the man killed? (good)
- d. \*What Mr. Smith will hear that Tom broke? (no inv.)

(4) fillers

- a. This is the dog that ate the pancake.
- b. \* For Jamie is unusual to play cards.

Each response to the sentences is crucially important. First, the subjacency violation category is helpful for determining whether subjacency is preserved in adult learners. Second, the other sentences help interpret the result and tell whether subjects know *wh*-movement and complex sentence formation well enough to be evaluated on subjacency, whether they adopt any response bias in their performance, and whether they distinguish between grammatical *wh*-movement in complex sentences and ungrammatical *wh*-movement in complex sentence which violate subjacency.

### 3.3 Procedure

Subjects were first told that they are allowed to consult the dictionary or ask someone else to look for the meaning of an unfamiliar word and that this was not intended to see their level of vocabulary. For the translation task, they were asked to translate the sentences into Korean. For the syntax judgment task, they were told to decide whether each sentence made sense and sound okay or not, that is, whether it could be a possible grammatical sentence of English. If the sentence sounded okay, they were to put ( ) mark next to each sentence; if it sounded strange, they were to put ( ) mark next to each sentence. Before starting the actual experiment, the sentences were given to a Korean student to see if he was able to work on the sentences correctly; once he was thought to do it properly, the whole experiment sentences were given to each subject. The sentences with a background information sheet were distributed and done on an individual basis at home.

## 4. Results

All of the Korean speakers passed the pretest, a translation task consisting of three types of sentences (the mean number correct on the pretest was 14.2 out of 15). Thus, all the results from the experimental group were included in the final analysis.

The control group did well as expected before, as can be seen in Table 2. Table 2 shows the mean number that the native speakers got correct for

each of the larger categories- good sentences, subyacency violation, and no-inversion, out of the total of 24 sentences, 12 good sentences, 6 subyacency violations and 6 no-inversion category-, and the standard deviations. The percentage correct, rounded to two decimal place appears in parentheses.

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Table 2. Mean correct total and grouped by three large variables (control)

	mean	( % )	std. dev.
total	21.85	(99.30)	2.609
good	10.31	(85.83)	2.594
sub. vio	5.69	(95.50)	0.048
no. inv	5.85	(97.50)	0.376

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Table 3 gives the mean number that the Korean subjects got correct for each of the larger categories. Also, Table 4 gives the mean score for native speaker control group for each of the three sentence type included in the judgment task, out of the total of 13 subjects, and 8 sentences respectively. Table 5 shows the mean score for the Korean speakers for each of the three sentence type (out of the total of 22 subjects).

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Table 3. Mean correct grouped by three large variables (experimental)

	mean	( % )	std. dev.
total	16.46	(74.79)	3.035
good	6.09	(55.33)	3.337
sub. vio.	4.82	(80.33)	1.368
no. inv.	5.46	(90.83)	0.912

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Table 4. Mean correct grouped by sentence type (control)

	mean	( % )
Relative clause	12.88	(91.24)
WH complement	10.88	(83.65)
NP complement	11.50	(88.46)

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When the results are analyzed comparing the speakers to chance, two-tailed t-tests reveal that for both the total and two subcategories -good and subyacency violation-, the results are statistically above chance ( total:

t=-5.338, p=.0001, good;t=-3.904, p=.0004, sub.vio.;t=-2.214, p=.0339).

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Table 5. Mean correct grouped by sentence type (control)

	mean	( % )
Relative clause	16.12	(73.30)
WH complement	15.00	(68.12)
NP complement	11.50	(65.57)

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Performance on the no-inversion category is statistically below chance (t=-1.47, n.s.).

As can be seen from the tables, the Korean speakers did not reach the native-like proficiency (control: mean = 21.85, 99.3 %, experimental: mean = 16.46, 74.79 %). However, they did not show the performance much lower than the native speakers in the no-inversion category ( control: mean = 5.85, 97.5 %, experimental: mean = 5.46, 90.8 %), even though a few students performed extremely poorly and thus contributing to making final result below-chance level.

When analyzed in terms of sentence type, the Korean speakers were also not able to perform as well as the native speakers (RC: control = 91.34 %, experimental = 73.3 %, WH-comp: control = 83.65 %, experimental = 68.12 %, NP-comp: control = 88.46 %, experimental = 65.57 %).

Fig. 5 and Fig. 6 show these results: Fig. 5 shows the comparison of total and three subcategories between the native speakers and the Korean speakers and Fig. 6 shows the comparison in terms of sentence type between the two groups.

Meanwhile, one thing should be pointed out here. Considering only the results of good sentences, both the native speakers and the Korean speakers show lower performance than were expected before the test ( control = 85.83 %, experimental = 55.33 %). This is probably because all the sentences were question formation, not declarative sentences which was commented by some of the subjects after the test. Question type sentences usually sound less natural than declarative sentences, especially for those including embedded sentences. At the time of preparing the study, my professor Dr. Bolotin suggested that the sentences be given as declarative forms rather than questions. However, I have to admit that I was not confident of making them declarative forms without making any grammatical mistakes. Later, I found that I should have followed her advice. The reason for making all the sentences question type was, as was mentioned earlier, they come from Johnson & Newport sentence battery (some words were changed, but the basic structure is the same) and their sentences were all question

formation except those used for translation task in the pretest. However, it should have been considered that this test is a written grammaticality judgment test while theirs was aurally given to the subjects.

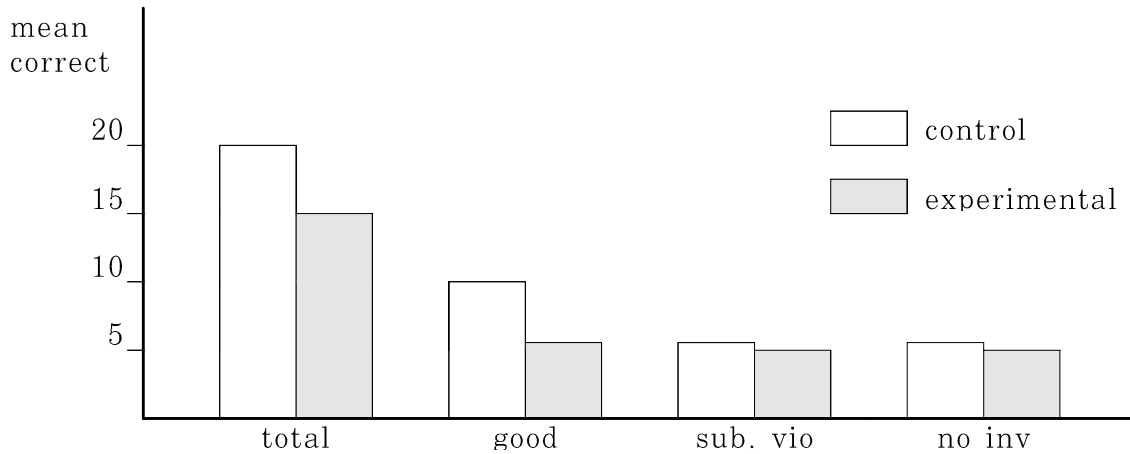


Figure 5 Comparison of total & each subcategory between two groups

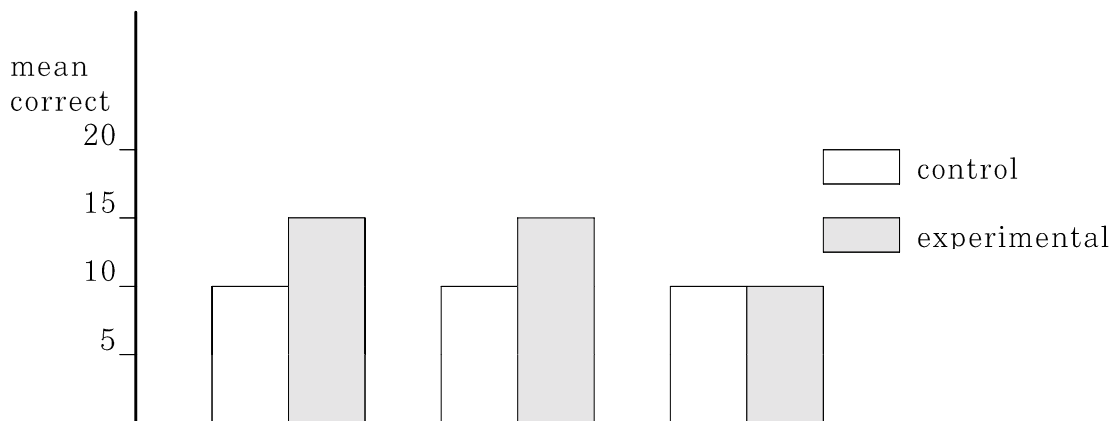


Figure 6 Comparison of two groups in terms of sentence type

In order to see whether there is any correlation between the variables, the statistical method (R-score) was applied. However, there turned out to be no correlation between background factors, except one between gender and no-inversion category (  $R = - .427$ ,  $p = .0474$ ). The male subjects performed better than the female subjects. The possible reason why there was no correlation between background variables, such as age, the year subjects first arrived in the U.S., the years they have been here may be that age and years appeared as ranges rather than as exact number on the answer sheets because there must have been a possibility that some subjects did not want to reveal their private information like age.

## 5. Discussion

Several findings emerge from the results. First, the subjects performed above chance in terms of both the total and good and subadjacency violation categories. This supports that the Korean speakers did not yet reach the native-like proficiency level.

Second, the Korean speakers, although performed poorly on the good sentence category (55.33 %), do comparatively well at judging the subadjacency violation (80.33 %) and extremely well at judging the no-inversion category (90.83 %). Considering that all the sentences were question type and thus sound unnatural and that it must be hard for non-native speakers to distinguish good sentences from bad ones, this result can be interpreted that the Korean speakers know that English does not allow movement more than one bounding node at a time and can reset parameters, especially those at above the intermediate level.

Thirdly, even though they performed below chance, the Korean speakers do not have difficulty acquiring language-particular rules like subject-verb inversion (90.83 % compared with 97.5 % of native speakers,  $stn.dev. = .912$ ).

Generalizing across these results, it appears that when the proficiency level of non-native speakers is improving, they can acquire the new setting for the L2. However, when they come across the sentences which sound unnatural and complex, they have hard time judging the grammaticality. However, in the long run, as time goes by, they seem to reach a native-like proficiency and UG appears to be operating in their L2 knowledge.

In the process of analyzing and interpreting data, however, several methodological problems arise. First, as was mentioned earlier, the sentence battery should have been composed of both declarative and question types. The percentage for correct answers would have been higher in that way, especially for the native speakers. Second, the background variables should have been given as exact number rather than as ranges and the time when the subjects began immersion in the U.S. should have been asked. It would have been easier and more accurate to analyze the variables. Thirdly, more detailed direction either in L2 (English) or in L1 (Korean) should have been given to the subjects. After the test, some subjects commented that they did not quite understand the direction. For example, 'sound okay or strange' was not enough for them to fully understand what was intended.

## 6. Conclusion

Korean speakers can reset the parameter responsible for the subadjacency

restriction in English, and thus have full access to UG. However, a further investigation with better methodological process and procedure needs to be done.

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## Appendix (Sentence Battery)

### Relative clauses

*good*

Who will the girl who chased Tommy kiss?  
Who did the man who robbed Mrs. Smith frighten?  
What did the woman who cleaned the oven wash?  
What is the man who is running wearing?

*subjacency violation*

What will the boy who plays buy a hamburger?  
Who did the woman who saved hug a neighbor?

*no-inversion*

Who the girl who played with her cousin does hate?  
What the man who fixed the washer did ruin?

### WH-complement

*good*

Who did Larry ask how George had broken his leg?  
Who did the nurse tell whether the patient had recovered?  
Who did Ted ask where he could find Carol?  
Who did the policeman ask where the watch was found?

*subjacency violation*

What did the mayor know why Mr. Smith lost?  
Who would Ken not say why he pushed?

*no-inversion*

Who Michael will tell where Don put the book?  
Who Sally did show how Mrs. Gomez makes her cookies?

### NP-complement

*good*

What did Mrs. Park notice that Alfred was reading?  
Who did the jury believe that the man killed?  
What did Mr. Johnson hear that his daughter had won?  
What did Mrs. Lee hear that Cindy stole?

*subjacency violation*

What did Linda forget the fact that Michael borrowed?

What did my mother hear the news that Mrs. Jones is buying?

*no-inversion*

What Roger does realize that he should say?

What Mr. Smith will hear that Tom broke?