A Study of the Acquisition of Multiple *Wh*-Questions in English

(영어 다중의문사의문문 습득 연구)

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A Study of the Acquisition of Multiple *Wh*-Questions in English

A thesis

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영어 다중의문사 의문문 습득 연구

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요약

영어 다중의문사 의문문(English multiple *wh*-questions)은 *Who ate what?*과 같이 요구 정보를 담고 있는 의문사가 2개 또는 그 이상이 한 문장 내에 나타나는 의문형을 말하는 것으로 언어에 따라 그 수용성의 정도(extent of the acceptability)가 다르다.

다중의문사 의문문의 유형은 크게 6가지로 구분되며, 한국어나 일본어의 경우 원어민 화자들은 6가지 유형에 대하여 모두 긍정적으로 수용하는 반면에, 영어 원어민 화자들은 부가어(adjuncts) 기능의 *how* 나 *why* 유형에 대하여서는 부정적인 수용성을 보인다.

수용성 정도의 차이가 영어를 제2언어습득이나 외국어학습의 대상으로 할 때 목표어(Target language)에 대한 이해와 학습 또는 습득에 큰 영향을 미칠 수 있기에 본 논문에서 영어와 한국어의 다중의문사 의문문 6가지에 대한 수용성 정도의 차이를 조사 비교하고자 하였다.

최초로 노출된 목표어의 문형(文形) 습득이나 학습에 미치는 영향요소 즉, 언어간에 내재되어 있는 보편문법(UG)과 그 원리와 매개변인(Principle & Parameter)들의 관련정도가 목표어 학습이나 습득의 성공적 수행 여부를 결정 할 수 있다는 가정 하에, UG의 영향 여부에 대한 연구가 필요하다고 판단하고, 설문조사의 결과를 토대로 모국어 전이(transfer)와 UG 접근가능성 그리고 P&P를 연계한 문제 접근과 그 해결 방법을 모색하고자 하였다.

본 논문에서는 총 120명의 한국인 피 실험자들에게 기획된 20개 항목의 영어 다중의문사 의문문과 단일의문사 의문문 그리고 동일한 의미의 한국어 다중 및 단일의문사 의문문에 대한 수용성 정도를 판단하는 설문조사를 실시하였다. 설문조사는 3단계로써 영어 예문들에 대한 모국어의 영향을 더불어 조사하기위해 제1단계는 영어설문, 제2단계는 한국어설문, 제3단계는 영어설문조사를 반복하여 실시하였으며 아래의 단계를 거쳐 설문조사 결과를 분석함으로써 결론을 도출하고자 하였다.

2장에서는 언어습득과 관련된 이론적 배경으로서 근본차이가설(Fundamental Difference Hypothesis)과 보편문법접근이론(UG Access Theories)에 대한 언급과 더불어 보어(Complement)의 위치를 차지하는 의문사들과 부가어의 위치를 차지하는 의문사들 사이의 문법성 차이에 대한 이론적 배경가설들을 살펴본다.

3장에서는 본 연구에서 실시한 설문조사의 핵심 요소로써의 몇 가지 도출된 문제를 제시하고 실질적인 설문조사의 내용과 결과를 다룬다.

4장에서는 3장의 설문결과를 근거로 2장에서 제기된 문제들에 대한 접근 방법 중 더 타당한 이론적 근거에 대하여 적절한 논의를 시도하였다. 특히, UG와 관련된 5가지 가설들을 부연하고 실험결과를 토대로 그 타당성이 가장 높다고 판단되는 '부분적 모국어 전이/부분적 보편문법 적응'(Partial Transfer/Partial Access) 가설을 표면화 하고자 하였으며, 더불어 제2언어 습득환경이나 외국어학습 환경의 노출여부에 따른 영향도 고찰해 보고자 하였다.

CHAPTER 1 Introduction

1.1 Purposes

Second Language Acquisition is an interface between linguistic theories and language education. It examines the process of acquiring a second language, focusing on whether this process is similar to acquiring a first language and/or is, in part, guided by innate principles of grammar. In this thesis, I will explore the process of acquiring English multiple *wh*-questions by Korean speakers within the framework of the Principle-Parameter theory of Universal Grammar.

It is a well-known fact that the multiple *wh*-questions in Korean are generally accepted, whereas those in English are selectively accepted. An immediate question that arises here is how Korean learners acquire L2 English multiple *wh*-questions and what strategies they use. This thesis pursues an appropriate approach to this question, addressing the following issues:

The first issue is to see whether there is any difference in the difficulty in acquiring various multiple *wh*-questions between two languages.

The second issue deals with the length of exposure to the multiple *wh*-questions of the target language.

The third issue is about the complement-adjunct asymmetry in the grammaticality judgment of *wh*-phrases in questions.

The forth issue discusses the presence/absence of L1 transfer to L2 English multiple *wh*-questions.

1.2 Organization

This thesis is organized as follows:

Chapter 2 addresses some issues of English multiple wh-questions and their problems. By doing so, UG access theories will be compared to Fundamental Difference Theory with respect to the contrast of complements and adjuncts *wh*-phrases.

Chapter 3 deals with the research questions and relevant hypotheses for the acceptability of multiple *wh*-questions in English and Korean. This chapter analyzes the results of survey and shows that there is difference between English native data and two Korean native data taken after and before the Korean questionnaire (KE-A and KE-B), respectively.

In chapter 4, structural considerations and some implications will be discussed with respect to the grammaticality of multiple *wh*-questions in both languages. This chapter also addresses an account for the influence of Native Language and the exposure on the target language.

CHAPTER 2 Theoretical Background

2.1 Multiple *Wh*-questions

Multiple *wh*-questions are the constructions that contain more than two *wh*-words in a sentence; for example, *Who ate what?* in English and *Nwu-ka mwuess-ul mekess-ni?* in Korean. The *wh*-phrases in the sentence are used to request information so that an appropriate answer to *Who read what?* would be *Jim read a book, Sue read a magazine,* or *Tom read a letter,* and so forth. These answers provide informations of both *who* and *what.*

Multiple *wh*-questions that include just two argument *wh*-words are referred to as argument multiple *wh*-questions or complement multiple *wh*-questions in this thesis. Multiple *wh*-questions that involve one argument *wh*-word in the subject position and one adjunct *wh*-word are called adjunct multiple *wh*-questions for the sake of convenience. These two types of multiple *wh*-questions are illustrated in (1), respecting:

(1) Argument (complemental multiple *wh*-questions)

a. Who ate what?

b. Who went where?

(2) Adjunct multiple *wh*-questions

a. ? Who sang where?

b. ? Who went when?

c. * Who came how?

d. * Who cried why? (V-roman & Yoshinaga, 1998)

The term argument is used here to refer to the subject, object, or locative, while the term adjunct labels the element which cannot have a theta-role. For example, in (1a) *who* gets an agent role from the verb *eat,* and *what* also obtains a theme role from the verb *eat.* In (2c), *who* bears an agent role, but *how* has no theta role.

In contrast to English, *wh*-phrases in Korean are quite free from such restrictions. The questions in (3), which correspond to those of (1) and (2), are completely natural in Korean:

(3) a. Nwu-ka muess-ul mekess-ni?
who-nom what-acc ate-Q
Who ate what?

b. Nwu-ka eti-ey kass-ni?
who-nom where-loc went-Q
Who went where?

c. Nwu-ka eti-eyse noraypwulless-ni?
who-nom where-loc sang-Q
Who sang where?

d. Nwu-ka encey kass-ni?
who-nom when went-Q
Who went when?

e. Nwu-ka ettekkey oass-ni?
who-nom how came-Q
Who came how?

f. Nwu-ka oay wuless-ni?
who-nom why cried-Q
Who cried why?

Language themselves differ in the range of possible *wh*-questions. In English, for instance, multiple *wh*-questions involving two arguments *wh*-phrases are acceptable, whereas those involving one argument and one adjunct *wh*-phrases are not always acceptable. Korean is, however, known to allow a wider range of such questions than English.

2.2 Theories of Language Acquisition

2.2.1 Fundamental Difference Hypothesis

The Fundamental Difference Hypothesis starts from the belief that with regard to language learning, children and adults are different in many important ways. For example, the ultimate attainment reached by children and adults differs. In normal

situation, children always reach a state of complete knowledge of their native language. In second language acquisition (at least, adult second language acquisition), it is rarely attained. Second language learners have knowledge of a full system of language. They do not have to learn what language is all about when they are learning a specific language. For example, at the level of performance, adults know that there are social reasons for using different language varieties. What they have to learn in acquiring a second language system is the specific language forms that may be used in a given social setting. Children, on the other hand, have to learn not only the appropriate language forms, but also the fact that there are different forms to be used in different situations. The basic claim of the Fundamental Difference Hypothesis is that adult second language learners do not have access to UG. Rather, what they know of language universal is constructed through their L1.

2.2.2 UG Access Hypotheses

The opposing view to the Fundamental Difference Hypothesis is the Access to UG Hypothesis. There are a number of possible positions that one can take within this theory. White (2000) outlined five possible positions, regarding the availability of UG, that center around two main variables, transfer and access.

A. Full transfer/partial (or no) access: This approach specifies that the initial state of learning is the L1 final state. Adults come to the language-learning situation with fully-formed grammars. They have access to UG through the L1, so that if a UG principle is not found in the L1, it will not be available for SLA. This is essentially the Fundamental Difference Hypothesis.

B. No transfer/full access: This position maintains that, as in child language acquisition, the starting point for acquisition is UG. There is a disconnection between the L1 and the developing L2 grammar. A prediction based on this position is that L1 and L2 acquisition would precede in a similar fashion, and would end up at the same point.

C. Full transfer/full access: This position, like the first one, assumes that the starting point for L2 acquisition is the final state of L1, but unlike the first position, assumes the availability of UG (Schwartz, 1998; Schwartz & Sprouse, 1996, 2000). Here the learner is assumed to use the L1 grammar as a basis, but to have full access to UG when the L1 is deemed insufficient for the learning task at hand. Unlike the no-transfer/full-access L2 learning will differ and there is no prediction that learners will ultimately attain complete knowledge of the L2.

D. Partial transfer/full access: This position is similar to full transfer/full access in the sense that learners draw on both the L1 and UG(Eubank, 1994; Vainikka & Young-Scholten, 1996). However, different properties are available through UG and through the L1. On this view, learners may or may not reach the final state of an L2 grammar depending on what is available through the L1 and what is available through UG.

E. Partial transfer/partial access: This position predicts that ultimate attainment of an L2 is not possible because there is permanent impairment in the acquisition system. In other words, only parts of the L1 grammar are available. Within four of these five position (the exception being the first), UG is active and available in some form to adults second language learners.

2.3 Complements/Adjuncts in Grammaticality

2.3.1 Assumptions

It is commonly assumed in the linguistics literature that multiple *wh*-questions that contain two complements *wh*-phrases are grammatical, whereas those involving an argument *wh*-phrase in subject position and adverbial adjunct *wh*-phrases are not always grammatical. Although there are some differences in

implementation, the standard account in the Principles and Parameters (P&P) framework relies on the Empty Category Principle (ECP) and on the fact that arguments (complements) are lexically governed but adjuncts are not (Huang, 1982; Lasnik & Saito, 1984; Haegeman, 1994).

(4) The Empty Category Principle (ECP):

$[_{\beta}\ ^{e}]$ must be properly governed.

(Chomsky, 1981)

(5) Proper Government:

α properly governs β if and only if

α governs β and

α is either X°(i.e., V, N, A, P) or NP_i, where $\beta = NP_i$

(Riemsdijk/Williams, 1986)

In this ECP-based approach, it is generally assumed that in English the trace of the subject *wh*-word is antecedent-governed from the Spec of CP at LF. Let us consider the sentences in (6):

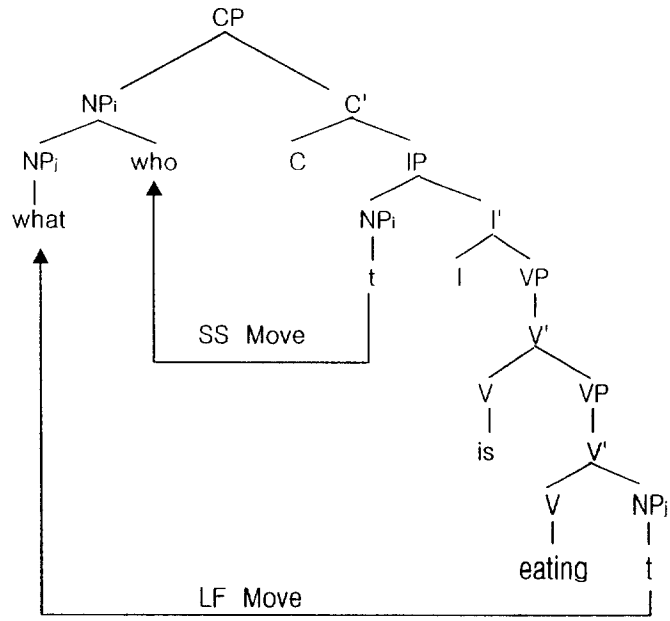
(6) a. Who is eating what?

b. Nwu-ka mwuess-ul mekko-iss-ni?
who-nom what-acc eat progress-Q

The subject *wh*-phrase moves to the Spec of CP first, where its index percolates to the Spec of CP. Therefore, the Spec of CP is indexed with the subject trace, and is unavailable to antecedent-govern other *wh*-traces. When *wh*-phrases are moved to adjoin to the Spec of CP in LF, their indices do not percolate, as is shown in (7):

(7) a. *Who is eating what?*

b.



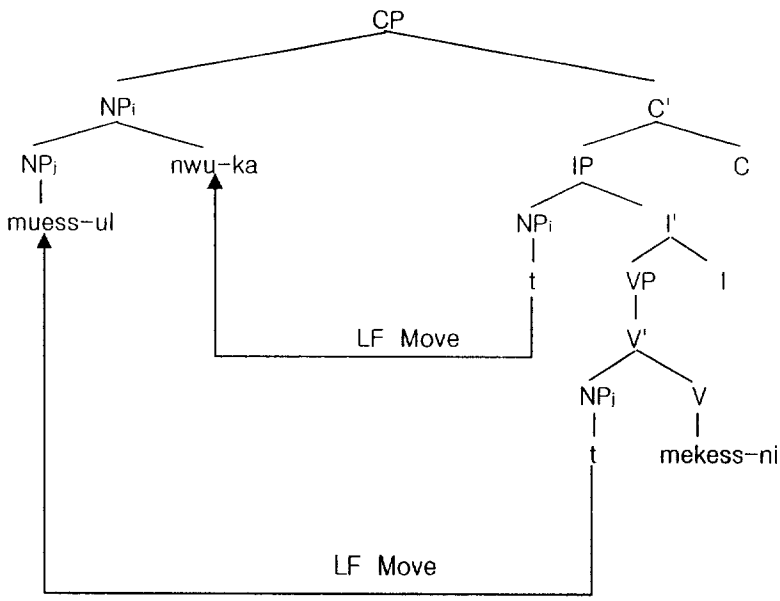
In (7b), the trace of *what* is lexically governed by the verb *eat* (the verb c-commands the trace and assigns a theme role to *what*). Recall that, *what* is a subcategorized complement of the

verb and is in a lexically governed position, so that even if it cannot be antecedent-governed from Spec of CP, it complies with the ECP.

However, In Korean, Chinese, and Japanese, since there is no SS *wh*-movement, the two *wh*-movements take place at LF. For instance, let us see (8) as following:

(8) a. *Nwu-ka muess-ul mekess-ni?*

b.



As is shown in (8b), if one of the two *wh*-words is an adjunct and the other is a subject, both must be antecedent-governed. This is because the verb cannot assign a theta-role to an adjunct and

therefore cannot theta-govern it, and the verb cannot theta-govern the subject, either, because the verb cannot c-command the subject even though it assigns a theta-role to the subject. In other words, the adjunct *wh*-phrases are not complements of the verbs, so their traces are not in lexically governed position; hence these multiple *wh*-questions violate the ECP. The traces cannot be antecedent-governed from the Spec of CP at LF, since this possibility is used up by the subject *wh*-phrase, thus the adjunct *wh*-phrase traces are not properly governed. For the reasons above, English multiple *wh*-question in which one of the two *wh*-words is an adjunct and the other a subject is ungrammatical on this assumption.

2.3.2 Characteristics of Adjuncts

It has been noted that among adjuncts there seem to be differences in the acceptability of multiple *wh*-questions containing adjuncts. Especially, adjuncts *where* and *when* seem to be more acceptable than adjuncts *how* and *why* in multiple *wh*-questions with subject *wh*-phrases (Huang, 1982; Aoun *et al.*, 1987). There are several approaches to account for this phenomenon. For example, Huang (1982) argues that the trace of *where* and *when* can be lexically governed by null preposition, whereas *how* and *why* are not.

Aoun *et al.* (1987), working in their Generalized Binding Theory, attribute the differences in acceptability to differences in the referentiality of *where/when* vs. *how/why*. They maintain that locational and temporal adjuncts are referential as suggested by the existence of pronoun that can be used coreferentially: *here, there, then, now*, whereas manner and reason adverbs are less likely to be referential and therefore have no pronouns analogous to *there* and *then* and the like.

Subject traces in English must be bound. Other *wh*-words can only appear with a subject *wh*-word when the traces of these other *wh*-words need to be bound. This is the case with the referential *wh*-phrases: direct object *what*, *where* and *when*. However, subject traces in a language like Korean need not be bound, and any *wh*-words can appear with subject *wh*-word.

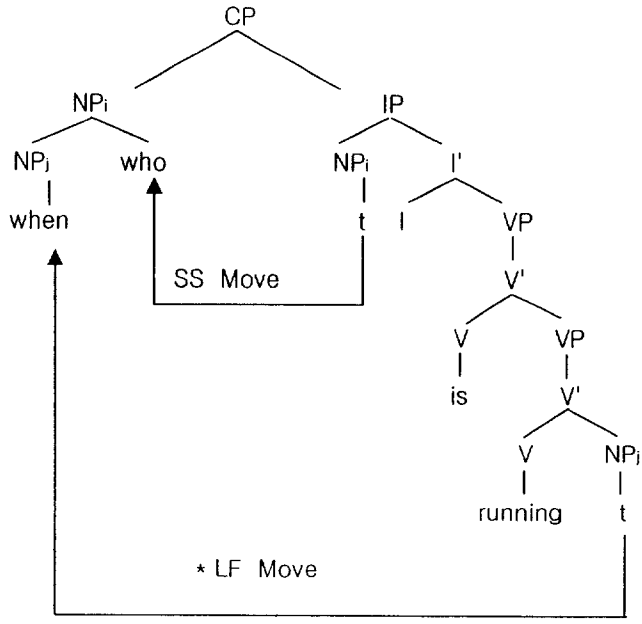
In contrast, there can be a different opinion. Let us consider the following example:

(9) a. * *Who is running when?*

The ungrammaticality of this sentence can be accounted for, by assuming that LF movement of a syntactically unmoved *wh*-phrase (*when* in (9), for example) in English. This is carried out by placing the *wh*-phrase within the Spec of CP which is adjoining it

to the *wh*-phrase that has already moved there to create a generalized quantifier in the sense of (May, 1985 and Chomsky, 1995.

(9) b.



Following Aoun *et al.* (1981), there is a rule that identifiers, by way of index percolation, the Spec of CP with the higher *wh*-phrase: thus the generalized quantifier *when-who* bear the index of *who*, the first element that moved to the Spec of CP position. In (9b), *who* moves at SS whereas *when* moves at LF. Thanks to index percolation, the higher NP *who* (NP_i) can antecedent-govern the trace in the Spec of IP position, but it cannot antecedent-govern NP_j in modifier of the verb position (it

bears a different index from NP_j). The trace of *when* cannot be lexically governed by the verb, either, because the verb does not assign a theta-role to *when* which is an adjunct. In sum, the trace of *when* is neither antecedent-governed nor lexically governed, and resulting in a violation of the ECP.

Kuno and Takami (1993) attributes the special characteristics of *how* and *why* in part to functional or discourse-based effects. They propose that syntax requires *why* and *how* to be base-generated left-most in questions. This by itself directly rules out **Who came why?* and **Who came how?*. The syntax might, in principle, permit structures like **Why who came?* (or **Why did who come?*). However, sentences like these are ruled out by a functionally based Sorting Key Hypothesis, which requires that the surface order of *wh*-words reflects the way information is categorized, the left-most *wh*-word functioning as the sorting key of a list. Since we do not usually categorize answers by reasons or means, then neither *why* nor *how* will, in general, be acceptable as a left-most *wh*-word in a multiple *wh*-question. A parallel explanation can be given for the ungrammaticality of any multiple *wh*-questions with *why* or *how* preceding *what* or *who* (**Why did you buy what?* etc).

In Japanese, *naze* (why) and *donoyooni* (how) must be base-generated at the left edge of the sentence, but they can be

reordered by scrambling the subject *wh*-word over *why* or *how* from *Naze dare-ga kita no?* 'Why who came?' to *Dare-ga naze kita no?* 'Who why came?' (Yoshinaga, 1999).

In Korean, the adjuncts *oay* (why) and *ettekkey* (how) can also be base-generated at the left edge of the sentence and reordered by scrambling like Japanese from *Oay nwu-ka oass-ni ?* 'Why who came?' to *Nwu-ka oay oass-ni ?* 'Who why came?'. In this way, Korean and Japanese scrambling can bring these examples in line with the Sorting Key Hypothesis.

In Hornstein (1995), he argues within the minimalist framework that English *why* is base-generated in Spec of CP (adopting the proposal of Rizzi, 1990), but this syntactic position conflicts with the fact that *why* cannot function as the generator of the list associated with multiple *wh*-questions. Although Korean *oay* 'why' or Japanese *naze* 'why' likewise cannot function as the generator, it is not located in Spec of CP (Watanabe, 1994).

Certain aspects of this proposal are clearly reminiscent of that of Kuno and Takami, but differences of framework make them difficult to compare directly.

Reinhart (1994), in her minimalist treatment of *wh*-in-situ, also speculates that adjuncts might have to be base-generated in Spec of CP, while complements would not be. This difference in 'basic position' between adjuncts and complements again resembles Kuno

and Takami's account, and also corresponds to earlier proposals of Reinhart.

In Korean, on the other hand, traces in subject position are lexically governed in some way depending on the analysis, either by nominative *-ka* or perhaps by I (Infl) (Kim, 1995). This allows the Spec of CP to be available to antecedent-govern phrases in lexically ungoverned position; specifically adjuncts. Thus, examples like those in (10) do not violate the ECP.

(10) a. [CP [IP Nwu-ka oay wulress-ni]?

b. [CP [Nwu_i oay_j] [IP t_i :-ka t_j wulress-ni]?

As a result, the split in grammaticality at the adjunct-complement divide, which is present in English, does not exist in Korean.

CHAPTER 3 Survey and Results

3.1 Research Questions and Hypothesis

Research Questions

The purpose of the experiment in this thesis is to investigate to what extent Korean learners of English approximate English native speakers in the acceptability of the six different multiple *wh*-questions. Research questions are presented as follows:

Research question 1

How do native speakers of English distinguish among these six different types of English multiple wh-questions in their acceptability judgments?

Native speakers of English should distinguish among these types of English multiple *wh*-questions. More precisely, if the standard assumption that was referred to in Chapter 2 is correct, those with subject *wh*-phrases and subcategorized complement *wh*-phrases should be rated as acceptable, whereas others are not. If Huang (1982), Aoun *et al.* (1987), and Kuno & Takami (1993) are correct, those with subject *who* and *how* or *why* would be ungrammatical.

Research question 2

Do native speakers of Korean accept all these six different types of multiple wh-questions in Korean?

If linguistic theoretical accounts are correct, native speakers of Korean should accept all six different types of Korean multiple *wh*-questions.

Research question 3

Do Korean learners of English (Korean high school students) behave like English native speakers in rating the acceptability of English multiple wh-questions?

If adult learners are guided by UG, they are expected to behave like English speakers in their acceptability judgments. Otherwise, there should be a difference in acceptability.

Hypothesis for Research Questions

If Korean learners of English want to be completely successful, they must possess the full knowledge of the target language. But they are accessible to only a subset of multiple *wh*-questions that are available in their native language. Since multiple *wh*-questions

are virtually not presented in the classroom at all, the predominant source of information must be naturalistic input. Yet, such positive input does not include any obvious indication of the ungrammaticality of the sentences. Thus, as is often pointed out in the literature on language acquisition, if knowledge of the grammaticality distinctions among such types is attained, this knowledge must derive from the innate language acquisition device of UG. UG is clearly precisely designed to develop exactly the properties on which the possibilities for multiple *wh*-questions depend, and it must be the case that it does so on the basis of readily available input.

One view of Second Language Acquisition would suggest that the mechanism that guides child language acquisition is not available to adult language acquisition or interfered with by other factors. If UG does not guide adult language learning as it does child language development, then success in these areas should not be achieved.

Other view of SLA holds that adult SLA and child language development are the same in being guided by UG. This is sometimes called the full-access hypothesis. Under this view, one would predict that naturalistic second language (L2) positive evidence must also be able to result in successful learning by adults in these cases (Epstein *et al.*, 1996). The 'full-access' view,

thus, leads to the expectation of successful learning of these UG-governed aspects of the target language by adult L2 learners possibly from quite early stages of acquisition, so that it is certainly to be anticipated that Korean natives will behave native-like performance. Variants of the full-access view suggest that the initial state for SLA is the L1 grammar. If this is the case, then SLA will differ from child language development in ways which are partly the result of this initial transfer (Schwartz and Sprouse, 1996; Eubank, 1996).

Even though there are some subtle differences among the theories, we initially consider on the contrast, between such theories, and the full-access view.

3.2 Survey

3.2.1 Subjects and Materials

Subjects

A total of 120 Korean speaking high school students participated in the experiment: there were 71 males and 49 females in the subjects, ranging in age from 16 to 19. Most of these subjects began learning English at the age of 11 (many of them began learning English before 11), and had studied English for 6 to 9

years. Nobody had ever lived in English speaking countries. The subjects were attending high schools around Nam-gu area, in Busan, Korea, and were within top 5% in their schools. Consequently it is plausible to assume that their English proficiency is relatively high among Korean students. The subjects were divided into three groups according to their grade (e.g., 1st, 2nd, 3rd grade). In addition, a special group of students who was organized, took the results of intermediate mark in the classes to compare with the upper level groups referred to as above.

Materials

There were two translation equivalent versions of the questionnaires, one in English and the other in Korean, were used. The questionnaires consisted of a page of instructions followed by three pages of test materials. The instructions were written in the subjects' native language (Korean) on the first page. However, the test materials were presented in the standard script of English and Korean. The questionnaire's test materials were presented in English on the second page and the translation equivalent materials to English questionnaire were presented in Korean on the third page. Then, the English test materials were presented again on the final page to detect any particular influence of the first language on the target language in rating the grammatical acceptability of

English multiple *wh*-questions. There were thirteen test items of six types of multiple *wh*-questions and seven simple *wh*-questions in the questionnaire in order to prevent the subjects from finding out the examiner's purpose on the questionnaire.

Examples of the six types of multiple *wh*-questions as well as the seven simple *wh*-questions used in the study are given in (11):

(11) a. Test items (multiple *wh*-questions)

Type	Example
complement *what*	Who bought what?
complement *where*	Who went where?
adjunct *where*	Who swam where?
adjunct *when*	Who traveled when?
adjunct *how*	Who came how?
adjunct *why*	Who died why?

b. Test items (simple *wh*-questions)

Type	Example
who type	Who watched TV?
what type	What did Jone order?
where (complement)	Where did Keith enter?
where (adjunct)	Where did Tom play?
when type	When did Mary graduate?
how type	How did Jim speak?
why type	Why did Bill get tired?

3.2.2 Procedures and Analyses

Procedures

The questionnaires were distributed to the subjects during the spring semester of 2004. The subjects were asked to rate the grammatical acceptability of the multiple *wh*-questions which were presented in the questionnaire written in English and Korean. A seven-point rating scale was used, ranging from -3 (completely impossible) to +3 (completely possible) on each test material. The subjects could choose the point 0 when they had ambiguous feelings about the grammaticality of the test materials. They could also mark a circle on the point of +1 or +2 according to their intuition for the grammaticality, when they were sure that a test material was more acceptable than the point of 0. They, of course, could make a circle the point -2 or -1, when a test material was less acceptable than 0. The results of English native speakers' (EE) were cited from Yoshinaga (1999).

Korean speakers completely filled out both English and Korean questionnaires. They took the questionnaire written in English first, then they took the questionnaire written in Korean, in order to avoid any direct carry-over from Korean judgments to English, and finally, they took the questionnaire written in English again so as to see any influence of Korean judgments as an L1 on English.

Analyses

All the hypotheses essentially are concerned with the way that judgments of different example types will cluster, and with the relative sizes of the differences among those clusters. The analyses were performed on each set of native-language data (English) and the non-native language data (Korean). In addition, to address hypotheses 1 and 2, a one-factor repeated-measures analysis of variance (ANOVA) was performed for each set of native language data (the results of the questionnaire which were written in Korean and English). The one within-subjects factor was sentence type (who-what, who-whereC, who-whereA, who-when, who-how, and who-why). For testing hypothesis 3, a two-factor repeated-measures ANOVA was performed to determine the significance of the overall differences between English native speakers' performance and Korean subjects' performance in judgments of English multiple *wh*-questions.

3.3 Results

3.3.1 Native data

The results as bellow indicate that the effect of sentence type is statistically significant for English reflecting the fact that there is a

clear decline of the acceptability from *what* type to *why* type as shown in Table 1 (EE) and Figure 1 (EE).

Table 1. Descriptive statistics for ratings of the six multiple *wh*-question types by native English and Korean for each language

	Native English speakers (EE)			Native Korean speakers (KK)		
	Count	Mean	SD	Count	Mean	SD
what	30	2.044	1.325	60	2.067	1.345
whereC	30	1.967	1.445	60	1.817	1.542
whereA	30	1.683	1.734	60	2.067	1.345
when	30	0.842	1.974	60	1.692	1.746
how	30	-0.367	1.912	60	2.100	1.285
why	30	-1.150	1.873	60	1.997	1.425

Note: EE=English native speakers' judging for English examples; KK-I=Korean native speakers' judging for Korean multiple *wh*-questions which are equivalent meaning to those of English. SD= the standard deviation. The source of EE: Yoshinaga (1999).

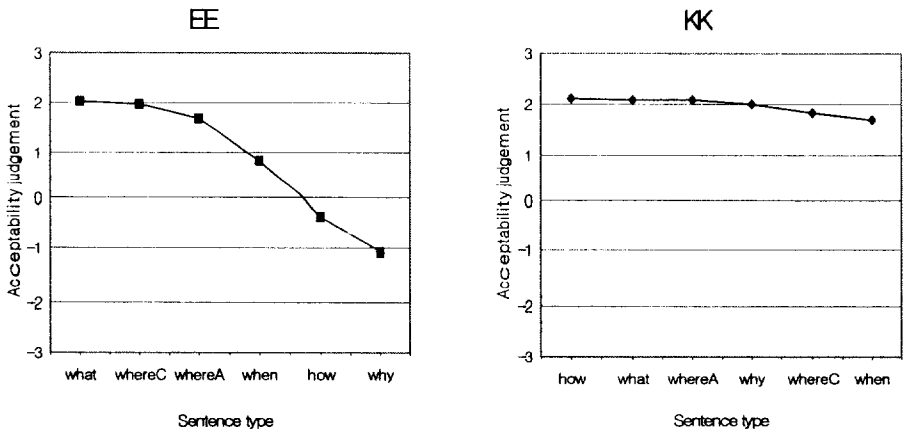


Figure 1. Mean differences among six types of multiple *wh*- questions in Korean and English rated by both native speakers

The effect of sentence type is also statistically significant for Korean reflecting the fact that a different tendency in the acceptability of sentences is seen in a different way for English. Although the slope of KK is much flatter than the one in English, all sentence types are quite high in their acceptability ratings, and even the lowest type *when* was over 'point 1.6' as also shown in Table 1 (KK) and Figure 1 (KK).

If we take consideration of the positive values as being acceptable and negative values as being unacceptable, the results indicate that for English, the *what* type and the *whereC* type are nearly perfect; the *whereA* type is clearly on the acceptable side; and the *when* type, though lower, is also on the acceptable side. However, the *how* type is close to under the border line and the *why* type is also on the unacceptable side in EE. For Korean, every type is very close to completely possible, with means never lower than just a small amount below 1.5 in KK.

With these results, it is certain that we have to consider the difference between EE and KK since a property of L1 can be influenced to L2. In other words, when Korean students are judging the grammatical acceptability of English examples (KE), KE can be affected by a similar influence into judging the grammatical acceptability of English multiple *wh*-questions by the high ratings of the acceptability of Korean multiple *wh*-questions (KK).

3.3.2 English Multiple *Wh*-questions

Pre-Korean questionnaire

The Korean learners of English rated the six types of English multiple *wh*-questions differently from English native speakers, as reflected in the fact that there was a significant main effect for both language groups and sentence types. More specifically, English native speakers made rather sharp distinctions among the six types of English multiple *wh*-questions, whereas Korean learners of English rated all types as unacceptable. As Figure 2 shows, the slope of mean ratings by native speakers of English (EE) is sharp, whereas that of Korean learners of English (KE-B: ratings before Korean questionnaire) is very flat and low.

Table 2. Descriptive statistics for ratings of English multiple *wh*-questions by Korean students (KE-B) in comparison to English native speakers' ratings (EE)

	English (EE)			Korean (KE-B)		
	Count	Mean	SD	Count	Mean	SD
who-what	30	2.044	1.325	60	-0.392	1.458
who-whereC	30	1.967	1.445	60	-0.825	1.130
who-whereA	30	1.683	1.734	60	-0.908	1.282
who-when	30	0.842	1.974	60	-1.108	1.426
who-how	30	-0.367	1.912	60	-1.000	1.499
who-why	30	-1.150	1.873	60	-0.728	1.414

Note: KE-B=Judgment of Korean learners of English for English examples before Korean questionnaire.
SD=the standard deviation.

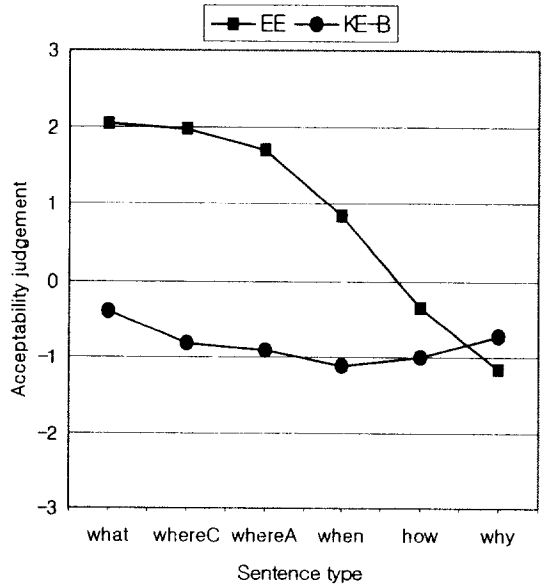


Figure 2. Mean differences among six types of multiple *wh*-questions in English rated by Korean learners of English before Korean questionnaire (KE-B) in comparison to English natives

The result of Korean learners of English (KE-B) is not implausible at all, since none of the Korean subjects had lived in any English speaking countries and none of them had been exposed to the English multiple *wh*-questions.

As depicted in Figure 3, the mean ratings by English native speakers are quite spread out along the 7-pont rating scale. In contrast, the mean ratings by Korean learners of English are clustered around between zero (0) and -1.1, without a significant variation among the six types of English multiple *wh*-questions.

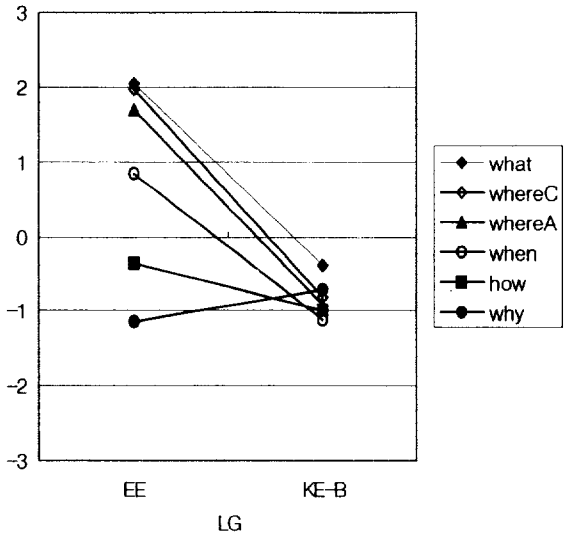


Figure 3. Vertical view of the mean ratings of the Figure 2

As we can see that mean ratings for Korean in Figure 3, even though the ratings of *what* type is a little bit high, they are still not as high as those of English native speakers, nor as high as the Korean natives' own mean ratings of Korean multiple *wh*-questions. In fact, all their mean ratings are lower than zero; in other words, basically all types are rejècted as unacceptable.

Post-Korean questionnaire

All Korean speakers filled out both English and Korean questionnaires. According to the designed standard procedure, the Korean subjects took the English questionnaire at first, and then

they took the Korean questionnaire which was equivalent to the English questionnaire to avoid any direct carry-over from Korean judgments to English. After that, they again took the English questionnaire to investigate any direct influence of Korean judgments on English.

The following results show the differences of the ratings between before taking Korean questionnaire (KE-B) and after taking Korean questionnaire (KE-A) in comparison to English.

Table 3. Descriptive statistics for ratings of English multiple *Wh*-questions by Korean students (KE-A) in comparison to English native speakers' ratings (EE)

	English (EE)			Korean (KE-A)		
	Count	Mean	SD	Count	Mean	SD
who-what	30	2.044	1.325	60	0.600	1.603
who-whereC	30	1.967	1.445	60	0.425	1.352
who-whereA	30	1.683	1.734	60	0.200	1.502
who-when	30	0.842	1.974	60	-0.100	1.672
who-how	30	-0.367	1.912	60	-0.258	1.481
who-why	30	-1.150	1.873	60	-0.589	1.571

Note: KE-A=Judgment of Korean learners of English for English examples after Korean questionnaire.

All ratings of KE-A (Figure 4) are higher than KE-B (Figure 2). Even though the extent of the difference in acceptability of English multiple *wh*-questions between KE-B and KE-A is not very far, its importance is, in fact, precisely significant.

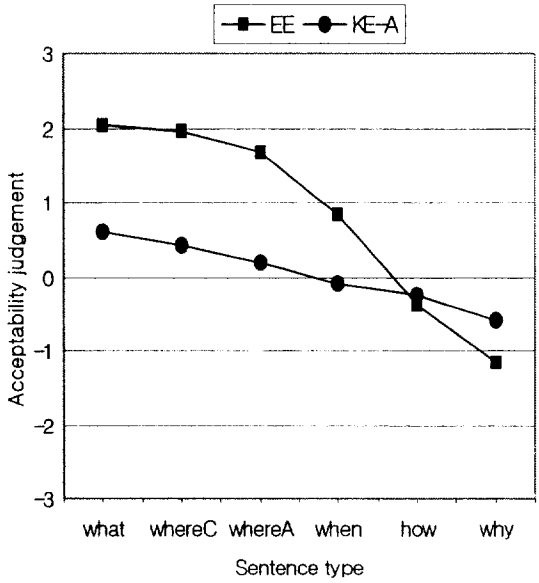


Figure 4. Mean differences among six type of multiple *wh*-questions in English rated by Korean learners of English after Korean questionnaire (KE-A) in comparison to English natives

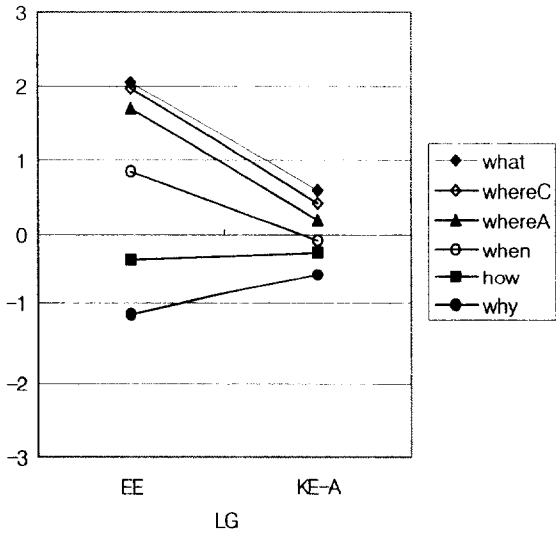


Figure 5. Vertical view of the mean ratings of the Figure 4

In Figure 4 and 5, it is observed that the judgment of adjunct *why* types of Korean learners of English is higher than that of English native speakers, even if it is on the unacceptable side.

Figure 6 shows that there seem to be several factors which influence on rating the grammatical acceptability of multiple *wh*-questions in English. In particular, the ratings of adjunct *why* is precisely interesting in that the ratings of *why* are mostly unchanged on both cases when Korean students are judging the rate before Korean questionnaire and after Korean questionnaire.

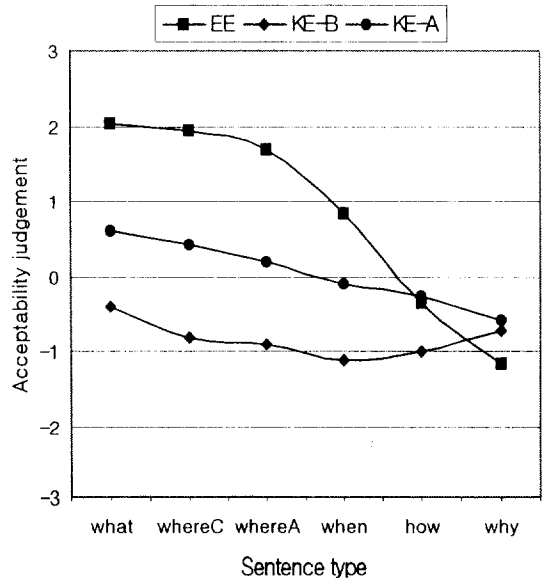


Figure 6. Mean differences among six type of multiple *wh*-questions in English rated by Korean native speakers before Korean questionnaire (KE-B) and after Korean questionnaire (KE-A) in comparison to English natives

In Figure 6, the ratings by Korean learners of English (KE-A) are clustered around the area between +1 and -1. The types of *what*, *whereC*, and *whereA* are on the acceptable side, whereas the adjuncts *when*, *how*, and *why* types are on the unacceptable side. Though the rating of adjunct *when* in KE-A is different from that of EE, it does not raise any problem, because the adjunct *when* is ungrammatical in English (Huang, 1982: 554 ff). In other words, the LF movement of a syntactically unmoved *wh*-phrase in English is carried out by placing the *wh*-phrase within the Spec of CP, which is adjoining it to the *wh*-phrase that has already moved there to create a generalized quantifier. If it is the case, it is expected that the result of the adjunct *when* rated on unacceptable side by Korean students (KE-A) seems to be correct.

3.3.3 The Ratings of Simple *Wh*-questions

Given the results above, it can be observed that Korean learners of English rejected all types of multiple *wh*-questions in English at first. Even though the results taken after Korean questionnaire were higher than the first one, the range was still closed to around zero. As shown in Table 4 and Figure 7, however, Korean learners of English rated simple *wh*-questions as close to acceptable as did the native speakers of English.

Table 4. Descriptive statistics for ratings of the seven simple *wh*-question types in English and Korean by English native speakers and Korean native speakers

	Native English speakers (EE)			Native Korean speakers (KK)		
	Count	Mean	SD	Count	Mean	SD
who	30	2.900	0.403	60	2.333	1.341
what	30	3.000	0.000	60	2.500	1.089
whereC	30	2.567	0.971	60	2.200	1.572
whereA	30	3.000	0.000	60	2.345	1.302
when	30	3.000	0.000	60	2.183	1.489
how	30	2.897	0.409	60	2.371	1.285
why	30	2.867	0.434	60	2.283	1.387

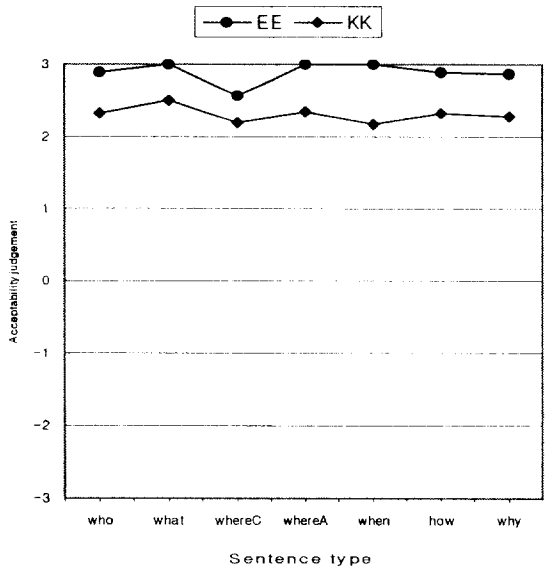


Figure 7. Mean differences among the seven type of simple *wh*-questions in Korean and English by native Korean speakers (KK) and native English speakers (EE)

Although there is a little gap in the acceptability of English simple *wh*-questions between native English and native Korean,

Korean learners of English rated English simple *wh*-questions (KE-A: after Korean questionnaire) as close to quite acceptable as did the native speakers of English. This result seems to indicate that it is important to be exposed to English learning environment for the students learning English as a foreign language.

Table 5. Descriptive statistics for ratings of the seven simple *wh*-question types by Korean learners of English before Korean questionnaire and after Korean questionnaire

	Korean learners of English (KE-B)			Korean learners of English (KE-A)		
	Count	Mean	SD	Count	Mean	SD
who	60	1.800	1.400	60	2.050	1.357
what	60	1.550	1.770	60	2.117	1.218
whereC	60	1.717	1.670	60	1.700	1.649
whereA	60	1.917	1.369	60	2.250	1.088
when	60	1.500	1.639	60	2.100	1.325
how	60	1.567	1.499	60	1.833	1.448
why	60	1.500	1.789	60	1.683	1.851

Figure8 shows that the judgments of Korean learners of English for English simple *wh*-questions (KE-A) are quite similar to English natives. The judgments of KE-A is close to those of KK in Figure 7. In other words, KE-A seems to be affected from the result of KK in Figure 7.

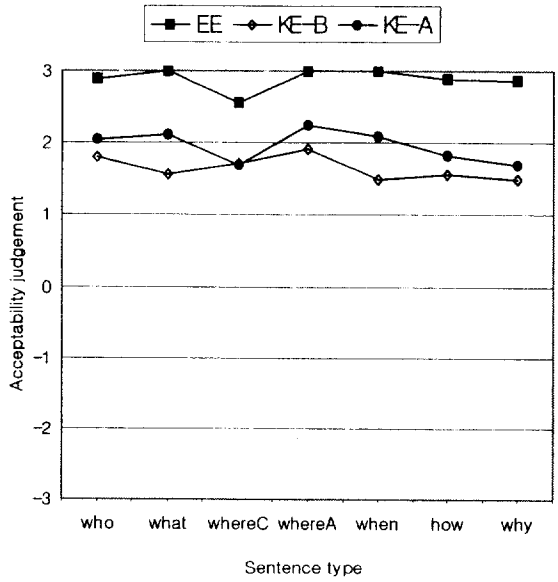


Figure8. Mean differences of seven type of English simple w*h*-questions rated by Korean learners of English, before Korean questionnaire (KE-B) and after Korean questionnaire (KE-A) in comparison to English native speakers

In comparison to Figure 6, Figure 8 now indicates that the length of exposure to a target language seems to be an important factor in rating the acceptability of the given structure of the target language.

CHAPTER 4 Analyses and their Implication

4.1 General Consideration

In this section, I will discuss the results in relation to the three questions stated in chapter 2, repeated here:

Research question 1

How do native speakers of English distinguish among these six different types of English multiple wh-questions in their acceptability judgments?

Although the native speakers' results are generally in conformity with the existing syntactic accounts, there are certain details of the statistical results which do not fall out directly from the theory. The English *what*-type questions and those with subcategorized *where*-phrases (*whereC*) are rated about 2 or higher by native speakers of English. *When* and *whereA* fall lower on the scale, but still in the positive range. *Why* and *how* are both below the zero line. The differences between the adjacent means of *whereC* and *whereA* are not statistically significant, even though the overall ratings for adjuncts are clearly lower than complements. It is suspected here that there is an overlay of

functional considerations on grammaticality.

One might possibly has expected the ratings for the *why* and *how* cases to be lower, given their theoretical ungrammaticality under all views. One possible reason for this slightly better than expected acceptability may relate to the functionally based List Requirement Hypothesis, proposed by Kuno and Takami (1993). They argue that the acceptability of multiple *wh*-questions must be accounted for by interactions of functional factors like the List Requirement Hypothesis and syntactic factors.

The List Requirement Hypothesis is that a clear list of items that correspond to each of the multiple *wh*-expressions of a question must be predetermined for such a question to be acceptable. Some such overlay of functional considerations on grammaticality might also account for the fact that other aspect of the ratings is not a perfect reflection of theoretical syntax. For example, although adjuncts *where* and *when* are both intermediate acceptability and are rated in a unitary fashion by all the grammatical theories under review, *whereA* is still somewhat more acceptable than *when*. Also, it is possible that *what* is slightly more acceptable than *whereC*, though the difference here is not statistically significant in this sample, and the examples are grouped closely in the cluster analysis. Perhaps, in general, the list of items that link persons with things are easier to imagine than the lists which link persons

with places, and these are easier to imagine than the lists that link persons with times, manners or reasons. This effect might tend to lower the case of *whereC* relative to *what* and to blur the distinction between two *wheres*. Indeed, although the rating for *whereA* is lower than that of *whereC* as predicted, the difference does not reach statistical significance.

Research Question 2

Do native speakers of Korean accept all of these six different types of multiple wh-questions in Korean?

In the results, native speakers of Korean accepted all six different types of Korean multiple *wh*-questions, conforming to theoretical grammaticality. Even the lowest mean ratings of the six types are above the rate of 1.6.

Research Question 3

Do Korean learners of English behave like English native speakers in rating of the acceptability of English multiple wh-questions?

The results indicate that Korean learners of English rate the acceptability of English multiple *wh*-questions significantly

differently from native speakers of English. The ratings of KE-A, *what* type are high, although not as high as those of native English speakers, nor their own ratings for the translation equivalents in Korean. Indeed, the ratings of *what* type of KE-A are clustered around 0.6 and *whereC*, *whereA* are barely clustered on the acceptable side, whereas the rest are clustered on the unacceptable side (from -0.1 to -0.6). In the result of the first questionnaire (KE-B), all of the ratings which were judged by Korean subjects are on the unacceptable side.

4.2 The Role of UG

4.2.1 Nonavailability of UG: Fundamental Difference Hypothesis

The Fundamental Difference Hypothesis assumes that second language acquisition is not guided by UG in the same way as child language acquisition is guided, but rather takes place on the basis of learners' pattern accumulation (Bley-Vroman 1990). In this view, the role of input in the target language is important in that mere exposure to the target language is not enough. Thus, in the course of language acquisition the learners add specific structures as they notice and add patterns to their developing pattern stores in a conservative manner.

If language learning is taking place under conditions where the target language input is limited, we could expect learners to be very conservative and to reject all multiple *wh*-questions. Furthermore, if particular structures are more frequent in one language, it is possible that the learners of that language could approximate native-like competence more easily than learners of a language in which the relevant structures are less frequent in the input.

To my knowledge, there is no research on the question of the relative frequency of multiple *wh*-questions in Korean and English. The very fact that a wider range of multiple *wh*-question types are grammatical in Korean than in English would lead one to expect that multiple *wh*-questions would be more frequent in Korean. Given the possibility of this frequency differential, the learners of English might have a greater chance of encountering the target structures, which could increase cases of relevant noticing, and thus might enhance chances or approximating native like behavior.

4.2.2 Availability of UG: Full Access Hypothesis

The Full Access Hypothesis states that adult language acquisition is guided by the same mechanism guiding first language development in children, and those parameters can be reset in

second language acquisition (Flynn, 1996). According to Yoshinaga (1999), she found that although the performance of English speaking learners of Japanese was similar to native speakers in the acceptability of multiple *wh*-questions in English, their performance could be taken as a successful parameter resetting, as expected by this view (Full Access Hypothesis). However, Japanese speaking learners of English did not exhibit successful resetting, and this must somehow be explained.

The full access view recognizes the fact that learners seem to need some time for learning even if parameter resetting might be instantaneous (Flynn, 1996: 151). Hence, one might be able to claim that parameter resetting from the Korean option to the English option is more time consuming. However, there is currently no independent evidence for this proposal.

It might worth noticing here that even very high proficient Japanese speaking learners of English were different from native speakers of English in a similar study of multiple *wh*-questions reported in Biey-Vroman & Yoshinaga (2000). As they point out, it appears unlikely that such high proficient learners had not yet encountered sufficient triggering input for parameter resetting to take place. This seems to make the full access account hard to sustain.

On the other hand, even though Korean speaking learners of

English do not exhibit successful resetting precisely in judging for English multiple *wh*-questions, as we saw in the Figure 6, the ratings of KE-A are somewhat similar to those of EE. In other words, UG is active and available not fully but partly in some form to adult second language learners.

4.3 Exposure to L2 and Influence of L1

The exposure of learners to a target language is an important factor in shaping the target language system. The results of this study point to the possibility that learning the in-situ option (i.e., Korean, Japanese) is simply easier for speakers of languages that require one *wh*-word to appear in sentence- initial position (English speakers) than is learning the latter option (i.e., English) for in-situ language speakers.

If this is the case, then a parallel study with learners of English whose native language is like English with respect to *wh*-word fronting as well as in terms of the set of permitted multiple *wh*-questions should show native like judgement in the rating of English multiple *wh*-questions. If, on the other hand, conservatism alone is the proper explanation for the performance of Korean learners of English, then those learners of English should also reject all English multiple *wh*-questions.

Perhaps a study with learners of English whose native language

requires fronting of one *wh*-word but permits all type of multiple *wh*-questions as Korean does would be even better for testing conservatism. If such subjects reflect all multiple *wh*-questions in spite of the fact that their native language requires fronting one *wh*-word (as in English) and allow the same set of multiple *wh*-questions as Korean, we would have stronger supporting evidence in favor of conservatism.

The idea above could draw from both structural factors and consideration of exposure to the target forms. Because of their experience with their native language, speakers of both Korean and English know that human languages allow multiple *wh*-questions. Second language in the target language learners are virtually never exposed to multiple *wh*-questions in the target language. Thus, although they may assume that the target language permits such structures, they do not know what form they should take. For Korean speakers learning English, this creates a problem since the only *wh*-questions they have been exposed to in significant numbers are simple *wh*-questions in which exactly one *wh*-phrase appears in a sentence initial position. This blocks the formation of multiple *wh*-questions since on the basis of structures they have seen so far, they believe that no *wh*-word can remains in-situ.

It should be noted that on this account Korean learners of English are conservative. They would not want to take any risk,

leaving a *wh*-word in-situ in the *wh*-questions.

This account predicts that all learners of English whose native language adopt the in-situ strategy would disfavor multiple *wh*-questions in English. When the target language is Korean, on the other hand, learners should show native-like behavior in judging multiple *wh*-questions regardless of their native language if they follow the in-situ strategy.

CHAPTER 5 Conclusion

This thesis examined the similarity and difference of the acceptability of multiple *wh*-questions between English and Korean. By doing so, several theories of language acquisition were examined with respect to the definition of multiple *wh*-questions, UG access hypotheses, and assumptions of complements/adjuncts. Some crucial hypotheses for research questions were addressed concerning the survey procedures and the results of subjects which contained natives' data of Korean and English, the data of English multiple *wh*-questions, and the data of simple *wh*-questions of both languages. The Korean subjects were divided into six groups to investigate the effects of the L1 on recognizing the different types of construction in question.

Based on the degree of influence of UG, it is assumed that UG is available in the course of acquiring a second language. This was supported by the differences among KE-B, KE-A and EE. In particular, there occurred a significant difference between KE-B and KE-A such that KE-A ratings became much higher than KE-B. The ratings of *what*, *whereC*, and *whereA* types were shifted from unacceptable side to acceptable side. The result of KE-A is evidence of the influence of the first language. Even though the ratings of KE-A and EE look quite different, the slopes of the

figures are in a similar pattern. Given all these observations we can reach the conclusion that Partial Transfer of L1/Partial Access of UG is a more adequate analysis than Full Transfer of L1 or Full Access of UG to account for the acquisition of English multiple *wh*-questions for Korean speakers.

Appendix

The items of the questionnaire written in English:

1. Who ate what?	(-3, -2, -1, 0, +1, +2, +3)
2. What did John order?	(-3, -2, -1, 0, +1, +2, +3)
3. Who went where?	(-3, -2, -1, 0, +1, +2, +3)
4. Where did Keith enter?	(-3, -2, -1, 0, +1, +2, +3)
5. Who swam where?	(-3, -2, -1, 0, +1, +2, +3)
6. When did Tom play?	(-3, -2, -1, 0, +1, +2, +3)
7. Who traveled when?	(-3, -2, -1, 0, +1, +2, +3)
8. When did Mary graduate?	(-3, -2, -1, 0, +1, +2, +3)
9. Who answered how?	(-3, -2, -1, 0, +1, +2, +3)
10. How did Jim speak?	(-3, -2, -1, 0, +1, +2, +3)
11. Who came why?	(-3, -2, -1, 0, +1, +2, +3)
12. Why did Bill get tired?	(-3, -2, -1, 0, +1, +2, +3)
13. Who bought what?	(-3, -2, -1, 0, +1, +2, +3)
14. Who send where?	(-3, -2, -1, 0, +1, +2, +3)
15. Who is watching TV?	(-3, -2, -1, 0, +1, +2, +3)
16. Who came why?	(-3, -2, -1, 0, +1, +2, +3)
17. Who read the book where?	(-3, -2, -1, 0, +1, +2, +3)
18. Who met when?	(-3, -2, -1, 0, +1, +2, +3)
19. Who died how?	(-3, -2, -1, 0, +1, +2, +3)
20. Who cried why?	(-3, -2, -1, 0, +1, +2, +3)

The items of the questionnaire written in Korean:

1. 누가 무었을 먹었니? (-3, -2, -1, 0, +1, +2, +3)
2. 철수가 무었을 주문했니? (-3, -2, -1, 0, +1, +2, +3)
3. 누가 어디로 갔니? (-3, -2, -1, 0, +1, +2, +3)
4. 영희가 어디로 들어갔니? (-3, -2, -1, 0, +1, +2, +3)
5. 누가 어디에서 수영했니? (-3, -2, -1, 0, +1, +2, +3)
6. 민수가 언제 놀았니? (-3, -2, -1, 0, +1, +2, +3)
7. 누가 언제 여행했니? (-3, -2, -1, 0, +1, +2, +3)
8. 메리가 언제 졸업했니? (-3, -2, -1, 0, +1, +2, +3)
9. 누가 어떻게 대답했니? (-3, -2, -1, 0, +1, +2, +3)
10. 철수가 어떻게 말했니? (-3, -2, -1, 0, +1, +2, +3)
11. 누가 왜 왔니? (-3, -2, -1, 0, +1, +2, +3)
12. 영자는 왜 피곤했을까? (-3, -2, -1, 0, +1, +2, +3)
13. 누가 무었을 구입했니? (-3, -2, -1, 0, +1, +2, +3)
14. 누가 어디로 보내졌니? (-3, -2, -1, 0, +1, +2, +3)
15. 누가 TV를 보고 있니? (-3, -2, -1, 0, +1, +2, +3)
16. 누가 왜 왔니? (-3, -2, -1, 0, +1, +2, +3)
17. 누가 어디에서 그 책을 읽었니? (-3, -2, -1, 0, +1, +2, +3)
18. 누가 언제 만났니? (-3, -2, -1, 0, +1, +2, +3)
19. 누가 어떻게 죽었니? (-3, -2, -1, 0, +1, +2, +3)
20. 누가 왜 울었니? (-3, -2, -1, 0, +1, +2, +3)

Table 6. Descriptive statistics for ratings of the six sentence types of multiple *wh*-questions by native speakers both English (EE) and Korean (KK-I)

	Native English speakers (EE)			Native Korean speakers (KK-I)		
	Count	Mean	SD	Count	Mean	SD
who-what	30	2.044	1.325	60	2.083	1.345
who-whereC	30	1.967	1.445	60	1.325	1.542
who-whereA	30	1.683	1.734	60	1.267	1.345
who-when	30	0.842	1.974	60	1.092	1.746
who-how	30	-0.367	1.912	60	1.008	1.785
who-why	30	-1.150	1.873	60	1.172	1.625

Note: EE=English native speakers' judgments for English examples; KK-I=Korean native speakers' (Intermediate level) judging for Korean multiple *wh*-questions which are equivalent meaning to those of English. The source of EE: Yoshinaga (1999)

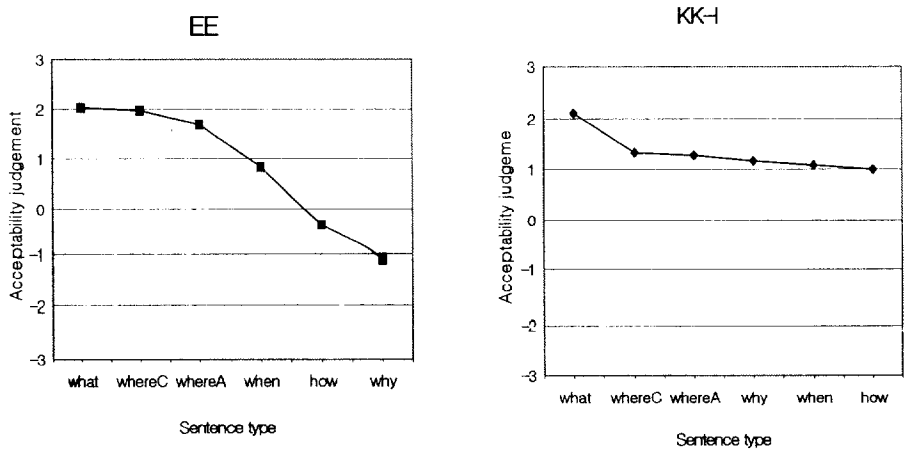


Figure 9. Mean differences among six types of multiple *wh*-questions in English and Korean by native speakers (EE vs. KK-I) KK-I=Intermediate level of Korean students' judgments

Table 7. Descriptive statistics for English learners' ratings (KE-B-I) in comparison to English natives' ratings (EE)

	English (EE)			Korean (KE-B-I)		
	Count	Mean	SD	Count	Mean	SD
who-what	30	2.044	1.325	60	-0.517	1.509
who-whereC	30	1.967	1.445	60	-0.542	1.487
who-whereA	30	1.683	1.734	60	-0.617	1.379
who-when	30	0.842	1.974	60	-0.858	1.620
who-how	30	-0.367	1.912	60	-0.417	1.508
who-why	30	-1.150	1.873	60	-0.394	1.599

Note: KE-B-I=Judgment of Korean learners of English (Intermediate level) for English multiple *wh*-questions before Korean questionnaire (KE-B)

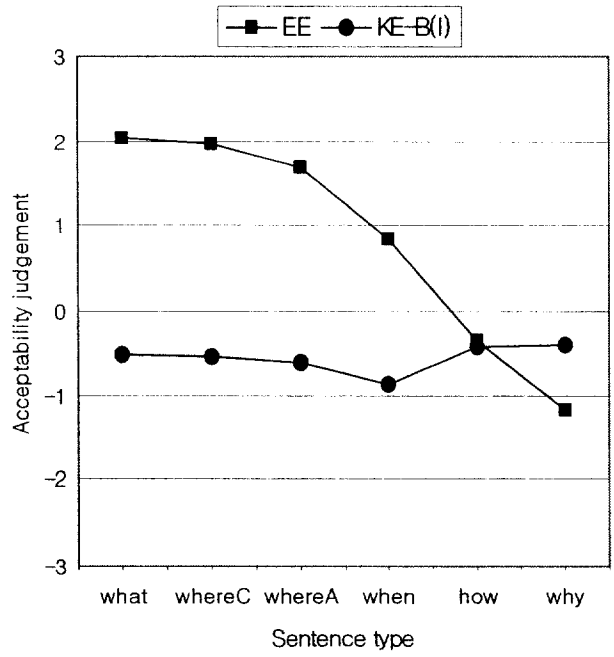


Figure 10. Mean differences among six types of English multiple *wh*-questions by Korean learners of English (Intermediate levels' result before Korean questionnaire) in comparison to English native speakers

Table 8. Descriptive statistics for English learners' rating (KE-A-I) in comparison to English natives' ratings (EE)

	English (EE)			Korean (KE-A-I)		
	Count	Mean	SD	Count	Mean	SD
who-what	30	2.044	1.325	60	0.183	1.565
who-whereC	30	1.967	1.445	60	-0.033	1.471
who-whereA	30	1.683	1.734	60	0.050	1.552
who-when	30	0.842	1.974	60	-0.183	1.563
who-how	30	-0.367	1.912	60	-0.050	1.595
who-why	30	-1.150	1.873	60	0.083	1.487

Note: KE-A-I=Judgment of Korean learners of English (Intermediate level) for English multiple *wh*-questions after Korean questionnaire (KE-A)

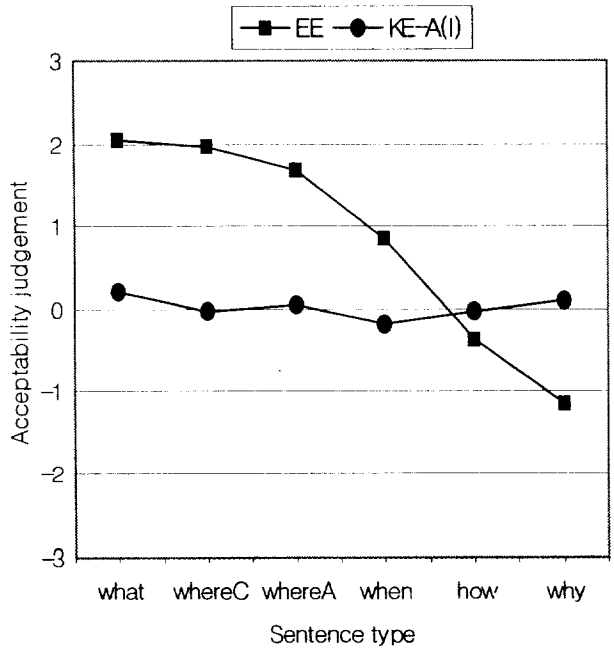


Figure 11. Mean differences among six types of English multiple *wh*-questions by Korean learners of English (Intermediate levels' results after Korean questionnaire) in comparison to English native speakers

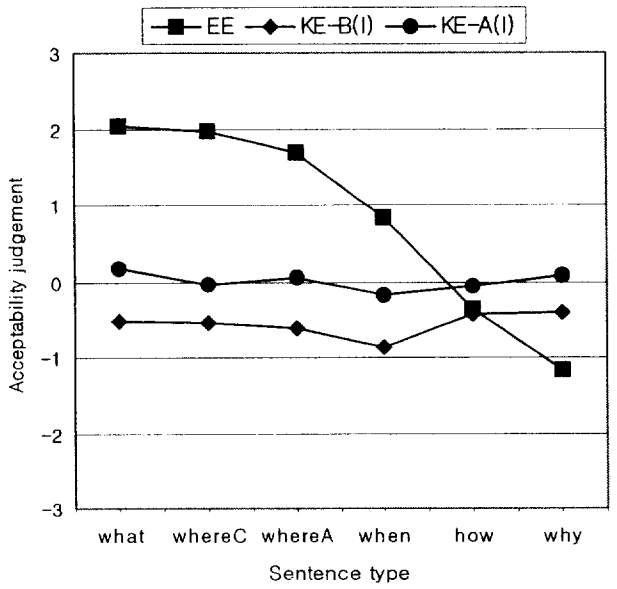


Figure 12. Mean differences among six types of English multiple *wh*-questions by Intermediate level of Korean learners of English before Korean questionnaire (KE-B) and after Korean questionnaire (KE-A) in comparison to English native speakers

Table 9. Descriptive statistics for ratings of the simple *wh*-questions in English and Korean by native speakers (EE vs. KK-I) for each language

	Native English speakers (EE)			Native Korean speakers (KK-I)		
	Count	Mean	SD	Count	Mean	SD
who	30	2.900	0.403	60	2.600	0.777
what	30	3.000	0.000	60	2.333	1.014
whereC	30	2.567	0.971	60	1.900	1.726
whereA	30	3.000	0.000	60	2.450	1.143
when	30	3.000	0.000	60	2.033	1.470
how	30	2.897	0.409	60	2.150	1.488
why	30	2.867	0.434	60	1.633	1.680

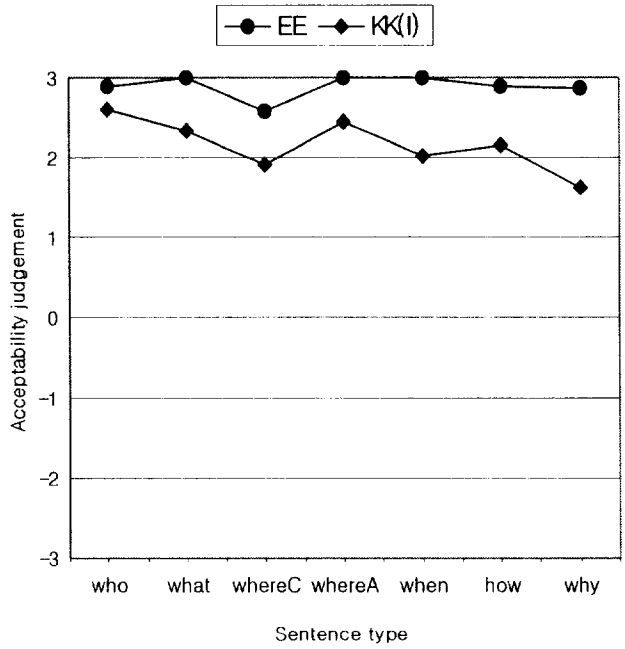


Figure 13. Mean differences among seven types of simple *wh*-questions in English and Korean by native speakers

Table 10. Descriptive statistics for ratings of English simple *wh*-questions by Intermediate level of Korean learners of English (before Korean questionnaire and after Korean questionnaire)

	Korean learners of English (KE-B-I)			Korean learners of English (KE-A-I)		
	Count	Mean	SD	Count	Mean	SD
who	60	1.283	1.743	60	2.217	1.142
what	60	1.217	1.670	60	1.950	1.204
whereC	60	1.617	1.448	60	1.883	1.659
whereA	60	1.533	1.666	60	2.067	1.270
when	60	1.633	1.669	60	1.950	1.318
how	60	0.900	1.898	60	2.183	1.167
why	60	1.433	1.695	60	2.050	1.195

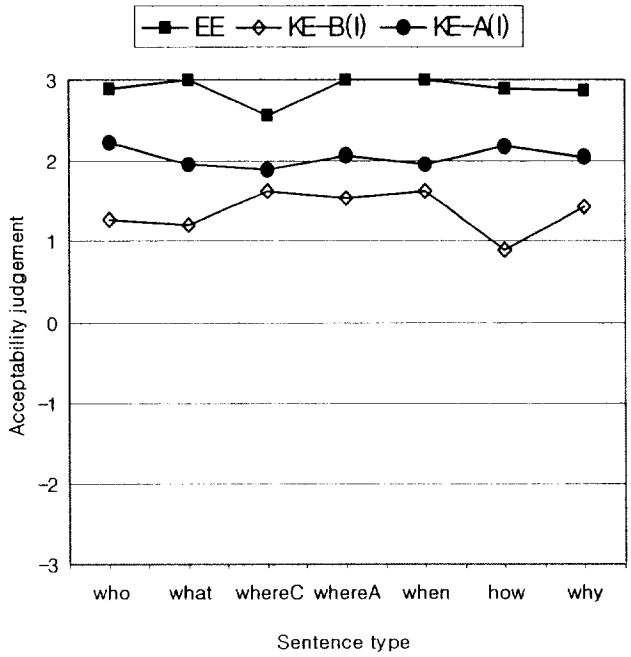


Figure 14. Mean ratings of English simple *wh*-questions by Intermediate level of Korean learners of English in comparison to English native speakers (before Korean questionnaire and after Korean questionnaire)

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