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ABSTRACT

What makes Heritage Language (HL) learners different from non-HL learners is the fact that HL learners possess both the linguistic characteristics of an L2 learner and of a native speaker. Like most HL learners, Korean HL learners have been known for their high command of listening comprehension, vocabulary and cultural knowledge. Yet, studies in the field of Korean language pedagogy have pointed out that HL learners also exhibit various significant weaknesses in other areas, such as productive skills and grammar competency, which tend to persist despite years of formal (college-level) instruction. As a result, identifying linguistic differences between HL and non-HL learners has been an ongoing and critical issue.

This dissertation thus employs a design that empirically investigates the differences in language transfer and strategy when processing Korean relative clauses by using a picture-selection task. With varying degrees of language exposure and use, learners who participated in this experiment (N=128) were categorized into five sub-groups based on their first language (L1): HL learners who reported (i) Korean as L1; (ii) both Korean & English as L1; (iii) English as L1; and non-HL learners who reported (iv) English as L1; (v) Japanese as L1. The results revealed that the L1 variable was crucial in determining the variability of both HL and non-HL learners. Furthermore, findings showed each sub-group of HL and non-HL learners to be employing different processing transfer and strategies, which in turn shed light on pedagogical and theoretical issues on language acquisition as well as on domains of psycholinguistics.
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<table>
<thead>
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACC</td>
<td>accusative case</td>
</tr>
<tr>
<td>DAT</td>
<td>dative case</td>
</tr>
<tr>
<td>GEN</td>
<td>genitive particle</td>
</tr>
<tr>
<td>HT</td>
<td>honorific title</td>
</tr>
<tr>
<td>INT</td>
<td>intimate speech level or suffix</td>
</tr>
<tr>
<td>NOM</td>
<td>nominative case</td>
</tr>
<tr>
<td>POL</td>
<td>polite speech level, suffix, or particle</td>
</tr>
<tr>
<td>PST</td>
<td>past tense and perfect aspect suffix</td>
</tr>
<tr>
<td>RL</td>
<td>relativizer (or adnominal modifier) suffix</td>
</tr>
<tr>
<td>SH</td>
<td>subject honorific suffix</td>
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CHAPTER 1
INTRODUCTION

As the United States has assimilated large numbers of immigrants coming from different parts of the world throughout history, foreign-language teachers are often faced with the challenge of teaching the later generations of immigrants their own heritage languages (HL). HL learners enroll in beginning, intermediate, and advanced college courses to fulfill language requirements, among other motivations, and may often become the largest group in the classroom. This is apparent in Asian language departments, particularly in Korean language classes, in which HL learners often dominate the enrollment. Due to the HL experience and complex socio-psychological issues, it has been argued by language teachers and researchers that HL learners possess distinctive language behaviors and needs that are clearly different from those of non-HL learners (Choi, 1999; H. Kim, 2002; King, 1998; C. Lee, 2000; S. Sohn, 1995).

For instance, based on their observation of HL learners, Campbell and Rosenthal (2000), describe them to have (i) almost native-like pronunciation, (ii) a high command of grammar, (iii) extensive vocabulary that is limited to social-interactional domains, and (iv) relatively good control of sociolinguistic rules (p 167). Consequently, HL learners have recently been receiving attention as a potential national resource for their acquired proficiency through conferences (e.g., Heritage Language Research Priorities Conference, NCOLCTL Conferences, National Conferences on Heritage Languages in America), and initiatives (e.g., Heritage Language Initiative jointly launched by National Foreign Language Center and Center for Applied Linguistics). Although there may be
some truth to these assumptions about HL learners, to date, there are still too few empirical studies examining precisely how and why they diverge in their language behaviors from those of the non-HL learners. Thus, the primary goals of this dissertation are to first provide empirical evidence to ascertain whether HL learners are processing differently from non-HL learners, how they differ in the use of processing strategy, and then to identify sociolinguistic factors that are responsible for the linguistic characteristics and sentence processing of HL learners that diverge from those of non-HL learners.

Like most HL learners, Korean HL learners have been known to have a head start in their listening comprehension skills and cultural knowledge. Yet, HL learners also exhibit various and significant weaknesses in other areas, such as productive skills and grammar competency, which tend to persist despite years of formal (college-level) instruction. As a result, in KFL (Korean as a foreign language) studies, identifying the differences between HL and non-HL learners has been an ongoing and critical issue. In the efforts to characterize the linguistic and learner profiles of Korean heritage and non-heritage learners, such studies have attempted to find linguistic differences in areas such as morpho-syntactic cues (e.g. case particles), pragmatics (e.g. honorific system), and inflection, etc. These studies, however, have mostly been descriptive, intuitive, and hypothetical in nature and to date there are no studies that systematically probe the interlanguage differences and similarities between HL and non-HL learners. The present study thus employs a research design that empirically investigates the differences in language transfer and strategy use of HL and non-HL learners when processing Korean sentences.
By using a picture-selection task to assess comprehension of Korean relative clauses, the experimental study tested how well HL and non-HL learners utilize case-marker cues. Moreover, through an analysis of the different types of errors made by the learners, we are able to see what strategy learners are using. One of the methodological problems that are apparent in much KFL research is the failure to identify sub-groups of HL learners of Korean on the assumption that HL learners are simply those whose parents or parent is Korean. However, with a range of varying degrees of language exposure and use, HL learners come to class with diverse experiences and exhibit characteristics of heterogeneity. Thus, HL learners who participated in this experiment were categorized into one of the three sub-groups based on their the first language they used with their parents at an early age (ages 0-5 years). The results revealed that this L1 variable was crucial in determining the variability of not only HL learners but also of the non-HL learners. Furthermore, findings in this study revealed each sub-group to be employing different processing transfer and strategies, which in turn has direct implications not only for pedagogy, but also in the domains of psycholinguistics in general, bilingualism, language acquisition and fossilization.

The dissertation is organized as follows. A literature review and background assessment of Korean and other HL learners will be given in Chapter 2. This chapter will address some of the background and methodological issues surrounding the study of the acquisition of Korean as a second language, as well as socio-psychological issues of second generation Korean-Americans. To provide a rationale for the process of identifying a target structure for the experiment, Chapter 3 will discuss the inherent differences in syntactic properties between Korean and English from the perspective of
discussing the reasons and sources of difficulty in learning Korean for English speakers. In addition, this chapter will also review the basic syntactic structure of the Korean relative clause, which will be relevant to the experiment. Chapter 4 will discuss the literature on L1, L2, and bilingual sentence processing to point out how processing strategies are language specific. The aim of this chapter will be to explain how native speakers of a head-final language (e.g. Korean and Japanese) process native sentences that differ from those of head-initial (e.g. English) monolinguals. This in turn, will give aid to hypothesizing how HL learners may process Korean sentences considering the significant input of two inherently different languages. The three background chapters raise a number of concerns that are taken up in the experimental chapter that follow. Thus, in Chapter 5, an overview of the research design, construction of testing materials and conditions, and procedure, followed by the results of the data analysis of processing difference between HL learners and non-HL learners will be presented and discussed. Finally, the set of findings will be evaluated as a whole in Chapter 6, where I review how the evidence and results presented in this study provide research and pedagogy implications for future investigations into HL learners.
CHAPTER 2

HERITAGE LANGUAGE LEARNERS OF KOREAN

2.1 Introduction

According to Valdés (2000), the term HL learners refers to students who are: (i) raised in a home where a non-English language is spoken; (ii) speak or simply understand the heritage language; (iii) English-dominant bilinguals that are bilingual to some degree in their HL; and (iv) those who received little or no formal instruction in the HL, and are thus literate only in the majority language (i.e. English). The distinction between an HL learner and a foreign language learner is that the former has acquired (to varying degrees) the language at home prior to formal instruction while the latter primarily learns the language in a classroom setting.

In the research on HL learners, there is a challenge to not only identify general factors that define the HL learner across languages, but to also produce a more refined description for each specific heritage language based on various factors such as the socio-cultural environment, immigration history of its speakers, and the inherent language properties that would contribute to the HL learner's linguistic profile. The purpose of this chapter is to review existing studies that have endeavored to define and identify the linguistic profiles of Korean HL learners. First, a summary of the general socio-linguistic background of Korean HL learners will be presented, followed by a review of survey studies on the socio-cultural & socio-psychological issues of HL learners, the nature of their language use, language exposure, and motivation. The aim for this section is to examine how HL learners are defined in each study and to see what can be inferred from
information they reveal about the nature of the language use and exposure of HL learners. Furthermore, the problem(s) of research methodology will be addressed by reviewing empirical studies on HL learners that attempt to identify distinct linguistic attributes between HL and non-HL learners.

2.2 Background

Due to the relatively recent history of Korean immigration in America, the HL and native culture still play a crucial role in the lives of Korean-Americans. In the hope of passing the essence of their Korean cultural heritage onto the second generation, the first generation of Korean Americans have been actively involved in the maintenance and development of their children's HL and native culture. For example, Korean communities such as churches have established Heritage language schools (e.g. Weekend Community Schools), ethnic associations, newspapers, and professional organizations to promote heritage culture and language.

Despite their efforts, a shift to the dominant language (i.e. English) is evident among second generation Korean Americans (Cho & Krashen, 1998). For instance, studies have shown that HL loss begins to occur soon after immigrant children start socializing with other children who are speakers of the dominant language (Cummins, 1993). Consequently, these children begin to be assimilated to American culture, which causes them to lose their heritage culture and language. However, as they mature and develop an awareness of their ethnicity in the American society, Korean Americans begin to have a renewed interest in the language and culture of their parents (e.g. H. Kim,
2002). With a persistent substantial number of 1.5\textsuperscript{1} and second generation Korean learners in Korean language classes in post-secondary institutions, language teachers are faced with the challenge of assessing, teaching, and facilitating HL learners with a curriculum designed for non-HL learners. From the experiences of these teachers, it has been argued and emphasized that HL learners possess distinctive language behaviors, needs, and motivations that are patently different from those of non-HL learners (Choi, 1999; H. Kim, 2002; King, 1998; C. Lee, 2000; S. Sohn, 1995).

2.3 Language Use, Exposure & Motivation

Previous HL research has shown that a strong link exists between HL learning and socio-cultural factors such as identity formation and ethnic attachment (e.g. Kondo-Brown, 2004a). In a paper by Hong & Min (1999), a questionnaire was administered to 237 Korean-American adolescents to describe the cultural, social, and psychological dimensions of ethnic attachment in correlation to the use of Korean language. In this study, second-generation Korean adolescents were defined as those Korean-born children who came to the US at the age of five or before as well as those who were born in the US or a third country (p. 166).

Moreover, the dependent variable to indicate their cultural ethnic attachment was the respondent’s fluency and frequency of their Korean language use. For fluency, a majority of the participants self-rated their Korean to be good or fair (and lower). As for their reporting on frequency, they indicated that when speaking to their parents, English was used more often than Korean (or both English and Korean). Based on these results,

\textsuperscript{1}Generally, 1.5 generation Korean-American refers to those who were born in Korea but have immigrated to the US at an early age, while 2\textsuperscript{nd} generation Korean-Americans refer to those who were born in the US.
the authors conclude that according to their use of language these adolescents have
achieved a high level of cultural assimilation (i.e. American culture) and a rather low
level of cultural ethnic attachment (i.e. Korean culture). Furthermore, through t-tests,
Hong & Min found four out of six variables (gender; birthplace; area of residence;
frequency of attending church) that are correlated with the respondents’ use of the
Korean language.

Aside from Hong & Min’s point on the level of ethnic attachment of Korean
Americans, this study reveals much about the nature of language use in the homes of
Korean Americans. First, in the self-report on the degree of fluency in Korean, a small
number of participants chose the extreme ratings (‘fluent’ or ‘not at all’), while the
majority of participants reported their Korean to be ‘good,’ ‘fair,’ or ‘poor.’ This
diversity of fluency implies that for the most part, second generation Korean Americans
have acquired the language to varying degrees despite consistent exposure to Korean via
parents, church, and other sources. Secondly, the Korean American adolescents showed a
preference for English when speaking to their parents. This finding thus reveals that a
dual language communication exists, in which the parents speak to their children in
Korean (due to their low proficiency in English) while their children speak to them in
English. This type of communicative interaction between HL learners and their parents
affects their language behavior and may account for the notable imbalance of high
(almost native-like) listening skills and low speaking skills.

Research has shown that HL development can be an important part of identity
formation and can help one retain a strong sense of belonging to one's own ethnic group
(Cho, Cho, & Tse, 1997; Tse, 1998). A questionnaire & interview case study by Cho
(2000) examined how the HL competence of second-generation Korean Americans (N=114) affects the social interactions and relationships within their ethnic community. The participants were recruited from Korean language classes, churches, and personal acquaintances and were defined as second generation Korean Americans by having immigrated to the US before school age, or by having been born in the US. Moreover, based on the self-assessment of their HL, the participants were classified in one of the three categories: Weak, Average, and Strong HL competence.

The Korean Americans who had a Strong HL competence reported a number of socio-cultural advantages, as well as personal and societal benefits. In addition, they showed a strong ethnic identity and had a greater understanding and knowledge of cultural values, ethics, and manners, which further enhanced their interactions with HL speakers. On the other hand, those with weak HL competence indicated themselves to have had such socio-cultural disadvantages as difficulty of interaction with the HL community, their parents, and peers who possess a good command of the language. These communication hindrances caused some to feel rejected by the HL community and at times led to individuals turning away from the community, which may have eventually affected their identity formation as Korean Americans. From this, one can begin to understand the type of motivation that HL learners may have when they enroll in universities to learn Korean.

A language motivation study by Choi (1999), confirms the previous study by illustrating that Korean language has taken on a special significance as a symbol of cultural and ethnic identity to the HL learners at American universities. HL learners were defined as ‘those who immigrated (age of arrival range: 1-15) or whose parents
immigrated to the US and who have some background knowledge about Korea and the Korean language through their family and community.’ (p. 404). The questionnaire survey showed that one of the strong motivations for learning Korean is the maintenance and the improvement of the HL. Data from the follow-up interview showed indications similar to the result of the survey. For instance, an HL learner indicated that, to them, losing their heritage language meant losing their roots. In response to that, Choi proposes to incorporate more history and culture into classroom materials to fulfill the HL learner’s desire to enhance and retain their ethnic identity. Furthermore, the author points out a more significant issue in Korean language programs, which is dealing with the differing degrees and areas of proficiency that HL learners exhibit. Studies providing a more systematic way of placing HL learners, who bring in a wide range of proficiency, at appropriate levels are necessary for the sake of enhancing Korean programs, as is future research in Korean instructed SLA.

In maintaining and finding their ethnic identity between the two language communities, many factors, such as peers, society, family, education, and personal subjectivity, influence the motivational process. In another questionnaire survey study (H. Kim, 2002), HL learners reported to have more integrative motivation than instrumental motivation. That is, similar to findings in Choi (1999), the participants indicated maintenance and improvement of their HL as the driving motivation for learning Korean. In particular, communicating with parents and wanting to know more about Korean culture, people, and history were the second most reported reason for studying Korean. Throughout this survey, there were indications that Korean heritage learners feel frustrated and disheartened by the realization that they aren’t able to
communicate with their parents. Thus, although maintaining and improving their mother tongue is important to them, many Korean HL learners come into college classes with the hope of some day communicating effectively with their parents.

One of the objectives in H. Kim’s (2002) study was to identify the different sub-groups of HL learners. Four groups of HL learners have been identified based on the parental variable: (i) second generation with both Korean-speaking parents; (ii) Half Korean with Korean-speaking mother; (iii) Quarter Korean with second-generation half Korean American parent; and (iv) Adopted Koreans with both non-Korean speaking parents. As for language use, approximately 34% reported that their L1 was Korean, another 34% reported English as their L1, and 29% reported having both languages as their L1. Consequently, learners experienced a variety of language exposure and use, which may account for the wide ranges of proficiency and background that HL learners bring into class.

Additionally, according to the survey by the four HL learner groups, the principal source of language exposure and use is at home, particularly with the parents. Furthermore, the survey shows that the primary language used with the father is English, while a mixture of both Korean and English is used with the mother. This finding must be interpreted cautiously since a fair number of participants had a non-Korean father. However, other studies in the past have also shown that mothers tend to play a more significant role in the learner’s language behavior and in maintaining the HL (Kondo, 1997; Kondo-Brown 2001). Other sources of HL exposure include: visits to Korea, Saturday weekend schools, Korean popular culture (e.g. Korean TV dramas; popular music), and church.
In sum, HL learners of Korean were defined either as those who are born in the US (or a third country), those who immigrated to the US before the age of 5 or before the years of school attendance, or those simply possessing background knowledge of the language and culture through the family and the community. As for the language experience of HL learners of Korean, from the studies discussed above, the following can be inferred: (i) they have had significant amount of exposure to Korean language and culture from home (e.g. since birth), and therefore are most heavily exposed to the spoken form; (ii) they engage in ‘dual’ language communication (e.g. language input in Korean and output in English) when speaking to a native speaker (e.g. parents), and thus are highly developed in their listening skills, but not in spoken skills; and (iii) they exhibit an integrative motivation for improving their language skills to better communicate with their parents.

Overall, these survey studies suggest that linguistic sub-groups of HL learners may exist depending on the factors of language exposure, fluency, frequency, and what individuals report to be their L1. Although no empirical evidence was supplied in these studies, the results also seem to further point out that such variables may be factors influencing HL learners’ language development. Therefore, it may be said that such information should be considered in experimental studies in order to identify what language background variables correlate with language proficiency. Now we turn to the discussion of studies that are ostensibly devoted to the issue of linguistic characteristics of HL learners.
2.4 Linguistic Profiles of Korean HL Learners

In the recent decade or so, teachers and scholars of Korean language have been drawing attention to the observation of distinctive language behaviors and linguistic needs that are clearly different from those of non-HL learners, as based on assumptions about the HL language experience and complex socio-psychological issues of HL learners (Choi, 1999; H. Kim, 2002; King, 1998; C. Lee, 2000; S. Sohn, 1995). For instance, King (1998) argues that Korean language programs in North America attempt to teach two curricula at once, Korean as a Foreign Language (KFL) and Korean as a Heritage Language (KHL), and consequently fail to meet the needs of both populations. Thus, in order to satisfy both, the author emphasizes the importance of more resources in developing a two-track curriculum. With the generalization of Korean HL learners being ‘receptive learners,’ separate courses are beginning to be implemented in a few Korean language programs.

During 1995-1996, a case study was conducted at UCLA of new heritage courses (N=2,800) in which a dual-track curriculum was then implemented (S. Sohn, 1997). Based on a survey questionnaire that inspected the different needs of HL and non-HL learners (i.e. self assessment and self-reported needs: e.g. “What aspects of the Korean language would you most like to improve?”), S. Sohn reported that, for HL learners, the requisite for learning to read comes first, followed by writing, speaking, and listening. Moreover, the results of a pilot test in Korean Language for SAT II, which was given nationwide in 1996 (N=1,567), was used as further confirmation that listening skills are most developed among HL learners. With the generalization of Korean HL learners being ‘receptive learners,’ separate courses such as ‘Basic Writing for Korean Heritage
Learners' were developed and implemented. According to S. Sohn, the separate curriculum at UCLA turned out to be a success for the following reasons: (i) it provided an optimal learning opportunity for each group, which prompted more motivation; (ii) the retention & continuation rates (in enrollment) among non-HL learners increased; (iii) an improvement on proficiency levels for both groups was observed; and (iv) there was substantial increase in enrollment since the start of dual-track system.

Due to the practical difficulty of adopting a dual track curriculum for most institutions, owing to the small number of student size and the program, Choi (1999) gives an alternative solution for HL learners. Based on the results of a questionnaire-survey and an interview, the author suggests more individualized tutoring and explicit grammar instruction for HL learners in areas such as orthography of Korean, standard grammar and syntax, and vocabulary beyond the realms of home. These reports by King (1998), S. Sohn (1997) and Choi (1999) and their resultant pedagogical implications, however, are general speculations based on the teachers' experience or students' self-report or self-assessment of their motivation, language usage, and Korean linguistic ability, and thus, they can only be suggestive.

Despite the lack of evidence of linguistic differences, it is rather apparent from various perspectives and observations that at least two distinct groups of learners, HL and non-HL, exist in Korean language programs. As discussed above, the type and amount of language exposure and usage of the HL may explain why HL learners exhibit different language needs from those of non-HL learners. The next issue to address would then be to explore how the two groups differ in various aspects of the language, such as productive & receptive skills, grammar competency, and pragmatic skills, etc. Therefore,
two general types of studies have been done: (i) those investigating whether or not a linguistic difference exists between HL and non-HL learners; and (ii) those examining the characteristics of HL learners.

One of the general beliefs among teachers and students in Korean language classes is that HL students usually have a considerable ‘head start’ and certain advantages compared to non-HL learners due to their significant exposure to Korean at home. So, besides their highly acquired listening skill, do HL learners have an advantage in other linguistic features, such as morpho-syntax of the language? That is, how do HL learners contrast with non-HL learners when it comes to structures or modalities that are not salient in the language input? In order to test if HL learners do have advantages over non-HL learners, two empirical studies have been conducted (J. Kim, 2001; O'Grady, et.al., 2001).

J. Kim (2001) compared the degree of negative L1 transfer shown by HL learners and non-HL learners to find out whether HL learners have an advantage in overcoming the interference from their L1 (English). Two aspects of grammar, for which English and Korean hold different parametric values, were chosen as the target structure: (i) the null-subject (Pro-drop parameter), and (ii) wh-movement construction. For each grammar structure, two types of written-production tasks (total of four) were given to learners of Korean in the beginning level (HL learners = 5, non-HL learners = 4) at Washington University in St. Louis. Four production tasks were given to elicit how learners perceive and produce the target structures. The participants were asked to (i) construct wh-questions using all the vocabulary words given to them (Task 1); (ii) construct wh-questions using a given conversational situation and picture stimulus (Task 2); (iii) first
compose a paragraph about their daily schedule and then write a story based on a series of pictures depicting the daily activities of a woman (Task 3); and finally, (iv) to write an answer (provided by a picture) based on a corresponding picture depicting a telephone dialogue context in which person 'A' asks a question to person 'B' (e.g. *Chulsoo-ka mwe haeyo?* 'What is Chulsoo doing?') (Task 4).

For the *wh*-question production tasks, two patterns were identified: (i) *Wh-S-(X)-V* pattern (*edi bappun namca-ka ka-yo?* 'where does the busy man go?'), which shows the transfer of an L1 parametric value, and (ii) *S-(X)-Wh-(X)-V* (*bappun namca-ka edi ka-yo?* 'where does the busy man go?'), which is a typical Korean word order. Both the HL (74.1%) and non-HL learners (67.2%) predominantly employed the second pattern (*S-(X)-Wh-(X)-V*), showing no significant transfer of L1 parametric values. As for the production of null-subjects, it was apparent that both groups adopted the null subjects with no significant difference: HL learners (82%); non-HL learners (73%). Hence, the author concludes that HL learners do not have an advantage over non-HL learners in acquisition of parametric values in that the degree of L1 (English) interference in the L2 acquisition is similar. However, due to an inadequate number of participants for both groups (HL=5, non-HL=4), the results should be interpreted cautiously. Additionally, the language background information provided could be considered too scarce, in that such factors as the different degrees of bilingualism of HL learners were not considered or reported. In other words, without sufficient information on the language background of both HL (and non-HL learners), the results cannot be generalized for all HL learners. Also, the choice of such a simple construction for the experiment and the fact that the syntactical differences (e.g. word order) of Korean sentences are usually heavily
emphasized in the first semester of most Korean language programs, may have mitigated against L1 interference on the part of the non-HL learners. It would be interesting to test other proficiency levels or after each semester to see if there are any differences in the developmental patterns of each group.

Another study by O'Grady, et al. (2001) investigated the acquisition of relative clauses by HL (n=16) and non-HL (n=45) learners enrolled in second- and fourth- semester Korean language courses. A picture selection task was given to assess learners' processing of Korean relative clauses, which consisted of five direct object relative clauses, 5 subject relative clauses and 9 relative clause patterns not relevant to the research question. The results illustrated that both groups find subject relative clauses easier to comprehend than direct object relatives. From this, the authors suggest that the key determinant of relative clause difficulty is the depth of the embedding of the gap, that is, its structural distance from the head noun with which it is associated (p. 354). Findings again showed that HL learners were not significantly different, implying that they do not have a 'head start' in learning Korean relative clauses compared to non-HL learners.

According to the two studies by J. Kim and O'Grady et.al. discussed above, it can be surmised that HL learners' advantages in receptive skills, pronunciation, and vocabulary do not necessarily extend to the morphology and syntax of the language. Some questions of relevance to this include: If HL learners are not processing morphological and syntactic cues, then by what means do they comprehend linguistic input? What strategies do they employ when processing a syntactic structure? What are the factors that cause them to be more like an L2 learner and what factors causes them to be more like a native speaker?
Contrary to O'Grady et al. and J. Kim's findings, an exploratory study by Au & Romo (1997) suggests that experience with or exposure to the heritage language during childhood gave HL learners an advantage not only in phonological perception, but also in terms of morpho-syntax intuition. Eighteen college students in the first-year Korean course at UCLA were tested in phonological perception (tensed vs. lax consonant sounds) and morpho-syntax intuition (subject vs. object case marker) according to the rationale that young children acquire these language components more easily than adult learners. An interesting aspect of this study is that based on the language background questionnaire, five main groups were identified according to the degree of productive & receptive skills and exposure: (i) Fluent speakers (spoke Korean regularly since childhood); (ii) Limited speakers (spoke Korean only during childhood); (iii) Addressees (had been spoken to in Korean since childhood); (iv) Overhearers (only overheard Korean regularly since childhood); and (v) First time learners (had no exposure until college Korean class). The main findings showed that the re-learners (Groups 1-3) generally performed better than the first-time learners in both phonology perception and intuitions about morpho-syntax (i.e. case markers). It is worth noting here that in addition to the Korean subjects, the authors also tested 31 first-time and re-learners (i.e. HL learners) of Spanish and reported similar findings. These studies with contrasting results indicate that more research in HL learners’ acquisition of syntax (and morpho-syntax) should be done on a larger scale to identify the linguistic weaknesses of HL learners.

J. Lee (2000) attempted to investigate error types in spoken and written language made by 150 intermediate learners of Korean, with 93% being HL learners, at the University of Michigan. Out of many error category types identified, the author reported
that the most common, frequent errors are particle-related, such as omission and incorrect use of particles. Other error types included those related to connectives, delimiters, predicates, etc. Due to the dominant number of HL learner participants, the author further distinguishes the HL learners based on the degree of language use with the parents. For instance, 3% of the HL learners reported that the primary language is Korean, 92% reported that the parents predominantly speak Korean to them while they respond in English, and the remaining 3% stated that although the parents use Korean with each other, English is used primarily to communicate between child and parents. Even though errors were not quantified or correlated with the participants’ background, the author also provides a general observation that an overwhelming percentage of HL learners cannot correctly produce the HL despite the significant HL input from their parents.

Due to the apparent difficulty of learning Korean particles, a study by E. Kim (2002) examined how well Korean particles are learned and perceived by HL learners of Korean in the Beginning and Intermediate level. The participants, “who grew up in Korean speaking families” (p. 168) (Beginning N=24; Intermediate N=24) were tested through a text revision task in which the sentences were manipulated to contain various particle-related errors. Results showed that HL learners had difficulty revising particle features that were different from those of English grammar, such as the locative particles -ey and -eyse. For instance, while the students easily detected errors related to subject or the direct object particles, they had difficulty noticing between the two locative particles in which -ey is used with static and goal-oriented verbs, and -eyse is used with dynamic verbs. Interestingly, the results revealed that HL learners have interference from their dominant language, which is English. The question then is: to what extent does English
transfer occur in HL learners? When do they make use of English language strategies? And, if there are any differences, how do they differ from non-HL learners? Comparable data on non-HL learners may have offered an insight into the linguistic difference of case-marker acquisition between HL and non-HL learners.

In H. Kim (2001), an attempt was made to find the common errors of HL learners, if any, in Korean spoken and written production, and to see how the errors differ from those of non-heritage learners. Error types of HL learners identified include: (i) negative transfers from the intimate speech style in Korean, which is a speech level commonly used by parents to a child; (ii) spelling out colloquial pronunciation in written language (e.g. writing as it sounds); (iii) repeated use of a particular clausal connective; and (iv) inconsistent use of particles, and overuse of subject marker -ka. Common errors of non-HL learners were more characteristic of a typical L2 learner, such as lexical errors, pronunciation errors, and overgeneralization of grammatical form.

Based on the analysis, H. Kim suggested that one source of errors by HL learners may be the extent of exposure to one type of speech level. According to H. Sohn (1999), there are six different speech levels in the Korean language, among which usage depends on the relative relationship of the speaker and the interlocutor in terms of age, status, situation, or intimacy. HL learners are mostly, if not only, exposed to the intimate speech style, which is commonly used between parents and children. Furthermore, in the study, HL learners are referred to as “Korean Americans whose mother or both parents are native Korean immigrants to the US,” and “those who have been significantly exposed to natural input in which Korean was spoken by their parents and/or other native speakers of Korean.” (p. 260). Thus, some of the errors found in HL learners’ language production
could imply that they result from transference from the spoken and colloquial register of Korean rather than interference from English as suggested in the study by E. Kim (2002). From this, one can begin to see that HL learners may exhibit a variety of transfer in their interlanguage.

If the source of negative transfer comes from the type of language exposure, then case particle-related errors could also be accounted for by the overwhelming exposure to spoken registers HL learners receive at home, in which case-drop is common in Korean spoken language. In other words, because HL learners don’t receive adequate input of case marker usage, they have the habit of omitting case markers in their production and ignoring case markers in their reception, and thus have difficulties in grasping the concept of their function. In general, due to their particular language experience, the errors and difficulties of HL learners commonly derive from an input flood of only colloquial Korean.

Sociolinguistic and/or pragmatic aspects of the Korean language are often mentioned as one of the hardest areas for KFL students to master. The core of the difficulty lies in the complexity of Korean honorifics, which basically refers to the socially appropriate use of the language based on the relationship among the speaker, the listener, and the referent. Such a relationship is in turn affected by the varying degrees of relative power, solidarity, and formality of the interlocutor and the speaker (J. Lee, 1995). Moreover, this difficulty is confounded by the different speech styles of Korean from among which the speaker should choose appropriately depending on the situation (Choo, 1999). As discussed above, since HL learners are not exposed to a variety of speech
levels, this may be an indication that HL learners, like non-HL learners, will also find pragmatic skill, such as the honorific system, difficult to acquire.

To date, there have been several studies examining this issue. Wang (1995), for example, was interested in the relationship between the performance of HL learners (intermediate and above-level) in Korean honorifics and their parents' use of language at home. In this study, HL learners were operationalized as those who are from Korean families in which Korean is spoken by the parents. No other information regarding the nature of communication was provided. The research showed that most of the participants had difficulty in using the honorifics system, i.e., honorific verbs, nouns, and suffixes. According to Wang, most Korean HL learners seem to have a grasp of the concept of honorifics as they grow up in Korean families, but due to the different degrees of input and parental awareness of the issue, they fail to acquire the correct use Korean honorifics.

In a study on advanced level learners of Korean, Y. Lee, H. Kim, D. Kong, J. Hong, and M. Long (2003), made an attempt to identify the linguistic profile of HL and non-HL learners of Korean based on oral (i.e. guided narrative task) and written (i.e. multiple choice grammar test) performances. Even though no correlation was reported, a language questionnaire was also used to investigate the type of Korean language learning experience (e.g. home exposure, formal instruction from Korea, study abroad, or college courses, etc.) for HL and non-HL learners at the advanced level. Also, among the HL learners, three sub-groups (Most Advanced, More Advanced, and Least Advanced) were classified based on their written scores in order to identify common and different linguistic characteristics among the three groups of advanced HL learners.
The authors reported the following findings: (i) advanced learners of Korean found collocation pairs, idiomatic expressions, and passive constructions to be most difficult; (ii) HL learners outperformed the non-HL learners in all areas; (iii) HL learners found the connectives to be easy while non-HL learners found them to be difficult; and (iv) within HL learners, the higher the proficiency, the easier they found honorifics. This empirical study by Y. Lee, et al. was significant for exploring the distinctions within each group in both written and oral dimensions, particularly among the HL learners. Moreover, by testing various areas of syntactic, semantic, and pragmatic aspect of the language (e.g. idiomatic expression, connectives, honorific, etc), they were able to detect which forms HL and non-HL learners find difficult or easy. Such findings may contribute to the area of assessment, especially the development of placement tests. For instance, based on the results, it can be assumed that a good command of honorific use can be a strong indicator of a high degree of proficiency. Also, separate pedagogical implications can be made for HL and non-HL learners when teaching grammar structures such as Korean connectives. Such distinctions in linguistic profiles may have crucial implications for teaching, curricula design, and assessment. However, more sizeable groups (HL learners=23; non-HL=4), especially the non-HL learners, must be studied in order to make generalizations for each group.

From the studies discussed above, it is clear that the field requires considerably more empirical evidence and more control on language background variables for any of the generalizations to be validated. Thus, in Korean HL research studies, there is an urgency to determine how HL learners should be operationalized by exploring which language background variables can best predict the learner's performances. That is, due
to linguistic variations within HL learners, it is essential to identify the sub-groups rather than assuming HL learners to be a homogeneous group. In an empirical study by Kanno, et al. (to appear), differences in the learning experiences of five groups of advanced learners of Japanese were identified: naturalistic learners, classroom learners, and three groups of HL learners with different types of HL exposure to instruction. The five groups, including the three HL groups, exhibited different profiles, suggesting a need for curricular adjustments for each learner type. Although this study was on a small-scale, it provides some evidence that HL learners also vary in linguistic profile depending on their language experiences (e.g. formal versus informal instruction) outside of home.

A recent study by Kondo-Brown (2004b) examined what considerations are necessary for developing appropriate placement procedures for Japanese programs where many incoming students come from diverse HL backgrounds. In doing so, a correlational study was done to identify which background variables best predict the variability of a student’s performances on four kinds of Japanese placement tests (three multiple choice tests and a written performance test). Out of the possible HL variables, four variables are investigated: parental language variable - students with or without Japanese-speaking parent(s); instruction variable; living-in-Japan variable; and Korean/Chinese background variable. The results of the study showed strongest correlation with the parental language variable and the placement tests. Further results also indicated that the existing placement instruments appeared to be most effective in separating incoming students of Japanese without a Japanese parent into different proficiency levels. The author thus concludes that the same placement procedure may not be effective for discriminating proficiency levels of HL students. Therefore, the findings from this study also confirm the assumptions (e.g.
King, 1998) that the curricular designs, textbooks, placement criteria, etc. applied in KFL programs are primarily designed for non-HL learners, which may not suitable for HL learners.

Due to the variation existing among HL learners, it is vital to identify the HL variable(s) based on individuals’ language backgrounds and experiences that may account for their language performance. In particular, since HL learners receive the most input from their parents, parental information seems to be a promising variable to examine. However, as reported in J. Lee (2000) and H. Kim (2002), it may be more beneficial to distinguish HL learners based on not only the existence of Korean-speaking parents, but also the primary language (English, Korean, or both) used as L1 and the nature of how they have communicated to each other. As Kanno, et al. pointed out, prior learning experience (e.g. formal versus informal instruction) may also be valuable information for identifying subgroups of HL learners. Other areas of language background variables that may be useful indicators are frequency of language use inside and outside of home, familiarity and exposure of different speech registers, number of visits to the HL country; and fluency of productive skills. Furthermore, socio-cultural variables could also be considered, such as degree of ethnic identity, motivation and attitude for learning, socio-economical status of parents, etc. Thus, for future studies in KFL and Korean SLA, correlational studies between language background and linguistic performance may be useful in accurately defining HL learners of Korean.
2.5 Conclusion

So, do HL learners have a ‘head start’ in learning Korean? According to the studies above, it is apparent that HL learners do indeed have a head start in listening skills. However, the studies discussed above do begin to suggest that HL learners do not necessarily have a head start in grammar (e.g. J. Kim, 2001; O’Grady et al., 2000), productive (or written) skills (e.g. Hahn, 1998), or pragmatic skills (e.g. Wang, 1995). In spite of HL learners’ significant amount of language exposure from home, why do they exhibit various and significant weaknesses that hinder them from improving in their HL from language classes? One possible explanation for why they fail to advance (even when compared to non-HL learners) may be their native-like listening skills and extensive vocabulary that they have developed through time, which may be sufficient in comprehending meaning. According to Long (1997), learners who have the tendency to focus on meaning, and not form, do not simply notice, in Schmidt’s sense (e.g. Schmidt, 1990) items from the input as well as output. That is, while non-HL learners have to pay attention to form in order to obtain meaning, for HL learners the meaning gets processed so quickly that they ignore (especially non-salient) grammatical forms, such as case markers, inflections, etc. Accordingly, HL learners are unable to learn the correct grammatical forms due to their failure to notice the linguistic items of the input and their inability to break their habit of not noticing the gap in their language output.

Nonetheless, many of the studies discussed in this chapter exhibit some of the common research limitations which include: (i) a small or inadequate number of participants; (ii) the failure to recognize heterogeneity among HL learners; (iii) the establishment of findings on a single proficiency level; and/or (iv) the use of deficient
methods of data collection or analysis. This may account for some of the findings that showed no significant differences in acquisition between HL and non-HL learners. In other words, we are still in a position requiring more rigorous studies that systematically investigate profiles and linguistic characteristics (e.g. weaknesses, strengths, needs) of KFL learners.
CHAPTER 3
KOREAN AS A SECOND LANGUAGE

3.1 Introduction

According to the U.S. Foreign Service Institute (FSI), the Korean language has been classified as "Category 4" (together with Chinese, Japanese, and Arabic), the most difficult group of languages to learn for adult English speakers. With the contrasting linguistic and pragmatic differences between Korean and English, a great deal of difficulty occurs in learning Korean because it requires the learner to seek out entirely new conceptual or discourse distinctions that are ignored in the first language (i.e. English), but which are crucial in the new language. Discussing this issue, H. Sohn (2002) points out that from his experience, English-speaking learners seem to find Korean more difficult to learn than even Japanese and Chinese. Thus, he attempts to identify linguistic, sociolinguistic, and cultural features that may be the cause of difficulty in learning Korean.

H-M. Sohn suggests three general interrelated sources of difficulty: (i) the inherent linguistic complexity of Korean; (ii) interlingual differences between English & Korean; and (iii) cross-cultural differences between the two societies. From this, the author further points out eight main features of Korean that may be sources of difficulty for English speakers to learn Korean (p 21):

1. (a) No genetic and typological relationship with English
(b) Highly diversified and differentiated Sino-Korean words; extremely polysemous native words; no cognates with English
c. Unique and complex sound patterns
d. Two writing systems: (i) **hankul** with its morphophonemic spelling conventions and (ii) **hanja**, the Chinese script
e. Typical agglutinative morphology with a very high degree of inflectional complexity
f. An SOV syntax that is a reversal of the English structure and word order
g. The complex honorific system that is alien to Americans
h. The cultural perspectives and practices underlying communicative patterns that are diametrically different from those of Americans.

Thus, H. Sohn concludes that the vast typological distance and the lack of genetic relationship between the two languages, along with sociolinguistic, and cultural differences, frequently hinders and interferes with the learning process of Korean as a second language. From the many differences between English and Korean, the syntactic properties of Korean are considered to be one of the more challenging new categories for an English speaking L2 learner to acquire. This is suggestive from syntactic errors (as opposed to lexical, pragmatic, etc. errors), which are the very frequent, varied, and extensive among English speaking learners of Korean (e.g. H. Sohn, 1986).

In order to identify the linguistic profile of HL learners and non-HL learners, it would be critical to first understand the difference (and similarity) of inherent linguistic features between both the target language (Korean) and the L1 (English). This chapter will thus compare the syntactic structures between Korean and English, while Chapter 4 will compare the L1 processing between the two languages with the objective of identifying target structures that may predict the source of difficulty for second language acquisition. Thus, the aim of this chapter is to provide an overview of the syntactic and grammatical characteristics of Korean that are inherently different from those of English, such as word order, case particles, and the nature of a pro-drop language. Also, for the
purpose of the present study, the latter part of this chapter presents a basic grammatical sketch of Korean relative clauses in order to begin addressing the issue of their processing difficulty for English-speaking HL and non-HL learners of Korean.

3.2 Syntactic Properties of Korean

3.2.1 Word order

As discussed in H. Sohn (2002), one of the sources of error in second language acquisition may be due to the difference in the basic word order of the two languages. That is to say, Korean is typologically a head-final or an SOY language, while English is a head-initial or SVO language. In an SOV language, a predicate (verb or adjective) comes at the end of the sentence or a clause, while all other elements such as subject and object must come before the predicate. This is illustrated in the examples below:

(2) Basic word order for English
Mary reads a book. [S V O]

(3) Basic word order for Korean
Mary-ka chaek-ul ilkeyo. [S O V]
Mary-NOM book-ACC read-POL
‘Mary reads a book’

In addition, although the subject has the tendency to appear first in a sentence (when it’s not omitted), it and the other major constituents preceding the predicate may be scrambled rather freely in syntactic ordering for emphatic or other figurative purposes as long as the predicate retains the final position.
Thus, while in English the verb’s pivotal role is assigning thematic roles to noun phrases (NP), Korean depends on overt case markings. In other words, for native Korean speakers, grammatical functions are determined primarily by case particles and only secondarily by word order whereas in English, word order is essential.

Another syntactic difference in the Korean language is that the structure is postpositional and agglutinative in nature. That is, while grammatical structures in English tend to be prepositional, as seen in the examples above, in a head final language such as Korean, case, conjunctive, and delimiter particles always occur after the elements (e.g. nouns) they are associated with. For instance, in Korean, all particles come after a noun or a noun phrase (NP), titles (e.g. Professor, President, etc.) follow names, an auxiliary predicate follows the main predicate, tense-aspect and modality elements follow the verbal stem in the form of inflectional suffixes, and various sentence or clause types are expressed by a sentence or clause ender which is suffixed to the predicate. Thus, Korean has a great number of postpositional case and delimiter particles as well as predicate suffixes that account for various functions in syntax and in semantics.
3.2.2 Case marking

As discussed above, since scrambling of the NPs is allowed in Korean, for native speakers case particle information is crucial in comprehending and processing the language. Case markers show the grammatical relation that a noun has in relation to its predicate, another noun, a clause, or a discourse. Korean nominal expressions often take a grammatical case such as nominative -ka, accusative –ul/lul, dative -eykey, static & directional locative -ey, dynamic, source, & goal locative -eyse, and instrument –(u)lo. Even though the Korean case particles generally correspond to English prepositions and Korean delimiter particles to English adverbs, the case particles do not always match up with English forms, meanings, and functions.

According to H. Sohn (1999), there are two types of case in Korean language: syntactic case and semantic case. Syntactic case includes the nominative (-i/ka), accusative (-ul/lul) and genitive cases (-uy), and they fulfill the most productive grammatical functions. Observe the following example.

(5) Mary-ka John-uy chaek-ul ilkeyo. (as subject)
Mary-NOM John-GEN book-ACC read-POL
‘Mary reads John’s book.’

As in sentence (5), the nominative case most frequently functions as the subject of a predicate (i.e. Mary), the accusative case behaves as the direct object (i.e. book) of a transitive verb, and the genitive case indicates the semantic relations with regard to the
head (i.e. John's book), such as possession, relationship, authorship, origin, location, and reference.

The second type of cases, known as semantic cases, mainly express the semantic function of the NP, such as dative, goal, locative, source, directional, instrument, or function. Dative (to), static locative (at, in, on), and goal (to) cases are represented with the same set of particles: -eykey, -hanthey, -ey, and -kkey, in that they share the semantic component of 'goal.' Hence, these three particles are sometimes termed goal-oriented locative particles. (H. Sohn, 1999) Like the three cases mentioned above, dynamic locative (at, in, on) and source (from) cases also share a set of particles: -eykeyse, -hantheyse, -eyse. The dynamic locative occurs with active verbs (e.g. mokta 'to eat', cata 'to sleep') while the source case occurs with movement verbs (e.g. kata 'go', ota 'come') and thus, these two cases share the semantic component of 'source.' (H. Sohn, 1999)

The rest of the three cases, directional (towards, to, for), instrumental (with, of, by in), and function (as, for, in the capacity of, in terms of) share the same particle -(u)lo. Other case markers in Korean are the ablative particle (-puthe 'from') and comitative particles (-wa/kwa, -hako, -lang/ilang), which has the function of connecting two nominals. The connective case shares the same set of particles as those of the comitative case plus the disjunctive particle -na/ina which connect nominals with the meaning of 'and' or 'or.' The comparative particle -pota is used to compare something or someone in the sense of 'more/less than' and for selection in the sense of 'rather than.'

As mentioned, the case particles do not always correspond to precise English forms, meanings, and functions. That is, with Korean being agglutinative in nature, stacking of case particles is allowed.
In sentence (6), a series of case particles can all be associated with just one nominal. However, not all particles have active case functions in a given sentence, in that the nominative particle -ka is correlated to the predicate as its subject, while the locative particle -eyse and ablative particle -puthe do not. Furthermore, the relationship between case relation and grammar relations is not one-to-one. As exemplified by sentence (7), multiple nominative and accusative constructions is also permitted and commonly used in Korean.

![Sentence (7)](image)

From the discussion and examples above, one can begin to see the difficulty in learning Korean as an English speaker.

3.2.3 Argument and Case drops in Korean

Korean is known as a pro-drop language. Hence, when any nominal construction or sentential element is contextually or situationally recoverable, it is commonly omitted...
unless the NP is to be particularly delimited, focused, or topicalized. Observe the following examples below:

(8) a. Mary-ka chaek-ul ilkeyo.  
Mary-NOM book-ACC read-POL  
‘Mary reads a book.’

b. [e] chaek-ul ilkeyo.  
‘[I/you/he/she/they] reads a book’

c. Mary-ka [e] ilkeyo.  
‘Mary reads [it]’

d. [e] [e] ilkeyo  
‘[I/you/he/she/they] reads [it]’

Moreover, in Korean there are no dummy elements that are comparable to the English *it* or *there*, whose purpose is to show grammatical functions. See the following example (9):

(9) ha1.ape-nim-i kulisy-ess-e.yo?  
grandfather-HT-NOM draw-SH-PST-POL  
‘Did grandfather draw [it/ the painting]?’  
[H. Sohn, 1999:267]

In example (9), the object ‘it’ is omitted with the assumption that ‘it’ is a picture based on the given context. That is, by the verb ‘to draw,’ it can be easily assumed that the speaker is referring to a painting. The pro-drop nature of Korean sentences is therefore an intricate and challenging new category for L2 learners of Korean, especially when the
recoverable context or situation isn’t as apparent due to the learner’s lack of comprehension and/or cultural understanding.

In addition to the complicated use of case particles in Korean, nominative, accusative, dative, static locative, goal, and genitive particles are frequently omitted in sentences due to their predictability from the syntactic structure, word order and the nature of the predicate used. Case-drops occur most frequently in colloquial speech among various discourse contexts. Thus, based on the complex nature of case marker use in Korean, L2 learners of Korean have tremendous difficulty in accurately using and understanding the system, especially in the initial stage of learning. That is to say, with their prior acquisition and knowledge of the L1 (i.e. English) as a basis, the learner may attempt to identify the grammatical functions of the NPs prior to the predicate based on English word order (subject, then object). However, as mentioned above, the fact that many sentences in Korean are scrambled, and that subjects are frequently dropped, the learners often find the application of L1 knowledge to L2 acquisition to be unreliable and inadequate, resulting in negative transfer.

3.3 Basic properties of Korean relative clauses

Korean relative clauses are considered to be one of the most difficult patterns for English speaking L2 learners to acquire for various reasons. First, because Korean is a head-final and left-branching language, the relative clauses (along with all modifier constructions) precede the head noun, whereas in English the noun that determines the

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2 See H. Sohn (1999) for extensive discussion of different types of Korean relative clauses and their properties.
referent of the gap always occurs first. This is demonstrated below (the head of the relative clause is underlined):

(10) Korean & English relative clause structure

[Minsu-ga _ ilk-nun] chaek
Minsu-NOM read-RL book

‘the book [that Minsu is reading_]’ (postnominal)

Secondly, in a Korean relative clause, one must rely on the case marking of the nouns present in the relative clause in order to determine the position of the gap. The relative clauses in (11) show examples of the relativization of the subject versus the direct object position.

(11) a. Subject-gap relative clause

[_ namca-lul po-nun] yeca
man-ACC see-RL woman
‘the woman who sees the man’

b. Direct object-gap relative clause

[namca-ka _ po-nun] yeca
man-NOM see-RL woman
‘the woman who the man sees’

As seen in 11a and 11b, in distinguishing between different relative clause constructions (e.g. relativization of the subject, direct object, or indirect object, etc.), an L2 learner must rely on the case marking (i.e. –lul or –ka) of the noun (i.e. namca) present in the relative clauses. For instance, the subject gap (11a) is identified by the presence of the
accusative-marked subject, (*namca-lul*) and the direct object gap (11b) is identified from the presence of the nominative-marked subject (*namca-ka*).

The comprehension of Korean relative clauses entails additional complications for L2 learners. In Korean there is no relative pronoun equivalent to English ones such as *who, whose, whom, which,* or *that.* Instead, before encountering the head of a relative clause, a learner must first recognize the relativizer suffix *-un, -nun, (u)l,* or *-ten* which indicates the tense and modality of the clause. The six different relativizer suffixes for the verb predicates are illustrated here:

(12) **Verb Predicates** (H. Sohn, 1999)
- a. *-nun* (indicative non-past): e.g. *ka-nun salam* ‘the person who is going’
- b. *-(u)n* (indicative past): *ka-n salam* ‘the person who went’
- c. *-te-n* (retrospective non-past) *ka-te-n salam* ‘the person who used to go’
- d. *-ess/ass-te-n* (retrospective past): *ka-ss te-n salam* ‘the person who had gone’
- e. *-(u)l* (prospective non-past): *ka-l salam* ‘the person who will go’
- f. *-ess/ass-ul* (prospective past): *ka-ss ul salam* ‘the person who would’ve gone.’

For the adjective predicate, the retrospective and prospective suffixes are the same as the verb predicate. However, as for the indicative suffix, there is no past form and the non-past suffix is *-(u)n* (as opposed to *-nun*).

Hence, for an English-speaking L2 learner of Korean to process a relative clause, one must first be familiar with the word order and the postpositional structure (e.g. position of the head of the clause), case markers, and the relativized morphological form of a verb or an adjective.
3.4 Conclusion

This chapter outlined basic syntactic properties of Korean that are distinctly different and distant from languages such as English. As H. Sohn (2002) pointed out, these properties may be one of the sources of difficulty in learning Korean for English-speaking learners. In the case for HL learners, due to a significant exposure from home, Korean is not an entirely new second language. However, several studies on HL learners seem to suggest that they don’t necessarily have a head start in morpho-syntactic aspects of the language. This then naturally raises the question of whether HL learners experience similar difficulties as non-HL learners do in acquiring Korean as a second language. If so, to what extent are the sources of difficulty suggested above relevant to HL learners? When learning Korean, in which aspect are HL learners more like an L2 learner and in which way are they more like native speakers of Korean? These are some general research questions that the present study is concerned with, and thus the issue of sentence processing in L1 and L2 is reviewed extensively in the next chapter.
CHAPTER 4
L1 & L2 SENTENCE PROCESSING IN KOREAN

4.1 Introduction

In order to address the universality of processing in human language, it is vital to examine and apply various languages to a given parsing model. In the literature on psycholinguistics, previous models and theories of sentence processing (e.g. parallel models, serial models, delay models, etc.), have been developed. However, models of parsing theory that are based on English pose problems for the analysis of languages with contrasting syntactic properties from English, such as Korean. As discussed in the previous chapter, Korean is a head-final language, left-branching, has subject-object-verb (SOV) word order, and allows scrambling and null pronouns (pro-drop). On the other hand, English is a head-initial, primarily right branching language, has SVO word order, and prohibits scrambling and null arguments. Thus, existing parsing models have been tested and challenged with languages with contrasting syntactic characteristics from those of English, such as Korean and Japanese.

Although the goal of such studies has been to come up with a universal parsing model that can account for all languages, they also provide important insights into processing characteristics that are unique to each language. In other words, while the fundamental characteristic of the human parser is assumed to be the same, the actual route or process of creating a hierarchical mental representation out of the language input differs depending on the given language. For instance, due to the inherent grammatical distance between Korean and English, it can be supposed that native speakers of Korean
rely on different grammatical information (e.g. case markers) than native speakers of English when comprehending or interpreting a sentence.

From the perspective of second language acquisition, identifying these processing differences between the target language and the learner’s L1 is important in that it gives insights as to where the source of difficulty may exist when learning a second language. Therefore, this chapter will first review the psycholinguistic literature on both L1 and L2 sentence processing, then discuss the different types of language transfer that exist in L2 learners as well as in bilingual speakers. Finally, I will give a summary of relative clause studies that examine the processing transfer and strategies of learners of Korean and Japanese.

4.2 L1 Sentence Processing: Incremental Processing and Use of Case

Various models and solutions have been proposed to account for head-final languages like Korean. For instance, the delay model (Gorrell, 1995) proposes that in sentence processing, the parser defers decisions until disambiguating information is available to minimize misanalysis. Another model that resembles the delay model is the head-driven model (Pritchett, 1988, 1992), which proposes that parsing decisions are made when certain information such as the grammatical head is available. However, if the parser is non-committal, and decisions are postponed until disambiguating information becomes available, it runs the risk of a severe delay and memory overload, especially in complex sentence structures. Hence, the incremental model (Inoue and Fodor, 1995) suggests that head-final sentences are processed incrementally without delay. That is to say, contrary to previous models, the parser does not postpone decisions
about the structure of a phrase until the head of the phrase is processed. Moreover, it assumes that most revision or reanalysis can be corrected without much disruption and thus claims that they are almost cost-free. Despite the massive ambiguity found in Korean sentences, studies have shown that native speakers process sentences on-line, and have expectations about how they will continue, indicating that they immediately form a hypothesis about the incoming sentence structure (e.g. Koh, 1997; Y. Kim, 1999). Therefore, when it comes to parsing models, the incremental model is the most promising candidate for both types of languages, (e.g. English and Korean) due to its general applicability.

As discussed earlier, another characteristic of Korean that distinguishes it from English is the overt usage of case and delimiter particles, which are bound to nominal expressions (NP) to indicate the grammatical relationship that an argument has in relation to its predicate, another noun, a clause, or a discourse. Therefore, it is suggested by many psycholinguists that for languages such as Korean and Japanese, the information of particles attached to NPs might be an important source for generating a hypothesis of a syntactic structure before predicates. In recent studies, attempts have been made to show evidence of incremental processing by investigating how case information is used and how it interacts with other sources of information when comprehending sentences.

For instance, an eye-movement study by Koh (1997) demonstrates that the parser does not delay attachment of noun phrases until the head is encountered, but rather allots the minimal required structure incrementally. Two parsing theories were tested: a lexically based theory (Pritchett, 1988, 1991), which assumes that lexical information such as head information guides initial parsing, (i.e. head-driven model) and the garden-
path theory (Frazier & Rayner, 1982), which assumes that incoming material is immediately attached to a phrase regardless of whether the head of the phrase has been received.

Experimental sentences, which included a structure of NP-Nom NP-Dat NP-Nom with either a dative or simple transitive verb, were given to 16 Korean native speakers. In these sentences, the dative NP was temporarily ambiguous in that it may be attached either to the main verb or the relative verb and becomes disambiguated at the matrix verb. According to the lexically based theory, when the processor encounters the main verb as the dative verb, a reanalysis will take place since the dative NP will initially attach itself to the first received verb, which is the verb of a relative clause. By contrast, the garden-path theory predicts that the processing difficulty will occur if the main verb is transitive, which forces the dative NP to be attached to the relative verb, assuming that the dative NP will have already been attached in the clause posited when the first nominative NP is read. To address this hypothesis, another purpose of the study is to identify the syntactic representation that is constructed before the main verb (dative or transitive) is encountered.

Although Koh’s results did not fully support either of the theories, there was more support for the garden-path theory where the dative ambiguous condition was read faster than the transitive-ambiguous condition. The longer processing time in the transitive-ambiguous condition indicates that there is a reanalysis or a mild garden path effect, which gives evidence that upon encountering the case markers that are attached to the first few NPs, the parser begins to map out a structure without any delay. In other words, the findings of Koh’s study show that local grammatical cues, such as the dative particle...
attached to NPs and its interaction with the main verb, are rich sources of information for syntactic analysis in Korean.

Similarly, Y.Kim (1999) investigated the use of case marking information on Korean sentence processing. By a self-paced, word-by-word, reading task, the author sought to see whether the on-line parser is affected by the manipulation of two case particles: the nominative case marker 

\(-i/ka\) and the Korean delimiter (or topic marker) 

\(-un/nun\). Typologically, 

\(-i/ka\) marks the subject, while 

\(-(n)un\) marks the topic of the sentence. The motivation for choosing the topic delimiter 

\(-(n)un\) is due to its subtle difference but interchangeable use with the nominative case particle. In other words, when 

\-(n)un\ appears in the subject position with a topic sense, its meaning can hardly be distinguished from the neutral meaning of the nominative case particle 

\(-i/ka\). However, the topic delimiter is known for its widespread functions (e.g. presupposition, assertion, implication, contrast, etc.), making it difficult for researchers to determine its true meaning and function. Hence, among the delimiters, the topic marker 

\-(n)un\, especially in comparison to the nominative marker 

\(i/ka\), has been most extensively discussed in the Korean linguistics literature.

The second purpose of Y. Kim’s study was to evaluate the usefulness of the Ranked Flagged Serial Parser (RFSP) model proposed by Inoue and Fodor (1995). In this model, as sentences are processed incrementally, the parser makes a record of what alternative analysis exist (flagging) and how highly the alternative is valued (confidence ranking or rating). Based on the ranking, the highest ranked alternative is parsed first and the decision is made with the confidence ranking proportional to the type of information the parser received concerning the structural choice and the necessity of reanalysis. Y.
Kim (1999) attempts to operationalize the RFSP model by systematically numbering the confidence rating (1-5) to generate predictions of word-by-word parsing and reparsing loads of different case particles (-\(i/ka\) vs. -\((n)un\)), relative clause vs. coordinate clause structures, and SOV vs. OSV word order.

In Experiment 1 of Y. Kim’s study, the different case markings on the first NP with either the subject marking -\(i/ka\) or the topic marking -\((n)un\) were examined. Furthermore, the case markers were tested on two types of sentences with center-embedded relative clause (-\(n/un/nun\)) and coordinate clause (-\(ko\)) were evaluated. Since -\((n)un\) is rarely used in relative clauses, the author predicts that it may induce some expectation about the incoming structure, suggesting that the topic marker may be less ambiguous than the nominative marker. As predicted, the results showed that reanalysis was easier in the topic marker-\((n)un\) condition than the nominative marker -\(i/ka\) condition. In other words, the simple change of a particle in a relative clause sentence produced different patterns of reading times. However, in the coordinate structure, the change of particle did not significantly affect the reading time patterns. This result may imply that processing time of case information depends on the type of clauses employed in the sentence. Thus, the author further investigates the effect of case markers with relative clause structures.

In Experiment 2, center-embedded relative structures that have NP-\(ka\) NP-\(ka\), and Verb sequence were compared to those relative structure sentences of NP-\(nun\), NP-\(ka\), and Verb sequence. In addition, SOV (canonical) and OSV (scrambled) word orders were compared. In this experiment, there was a significant difference between the SOV and OSV structures, where the canonical order (SOV) showed shorter reading times than its
counterpart. As for the comparison of the particles, although the difference did not reach significance, the \(-i/ka\) condition had a shorter reading time than the \(-(n)un\) condition, which contradicted the previous finding.

Despite the fact that Y. Kim's study showed evidence that the parser was sensitive to a variety of case-marked arguments based on overall reading time patterns, the results were rather conflicting according to its condition. For instance, in Experiment 1, the effect of case markers was only shown in the relative clause structure, while no significance was shown in the coordinate clause structure. This can be explained by the difference in property or degree of complexity of the clause-enders (i.e. relative clause, coordinate clause) in relation to the verb arguments. As Y. Kim points out, the coordinate clause, which functions like the English 'and', may be less ambiguous in parsing the NPs and thus have a higher confidence ranking for continuing to process the initial construction. For the relative clause-enders, however, there is more ambiguity and complexity in that there are eight different types of relative clauses, which will allow different processing loads in each case. Thus, in designing an experiment, one should be careful in choosing a target structure that would be justifiable.

Furthermore, in the second experiment, the reverse effect of Experiment 1 occurred in which the \(-(n)un\) particle condition increased the reading time. This implies that it may not be the property of the case particle itself that effects processing, but rather the combination and interaction between the grammatical or semantic information and the structural characteristics of the whole sentence. Thus, the author suggests that we should not only examine grammatical or thematic/semantic functions of the particles themselves, but also consider their parsing functions in the context of a given sentence.
structure (Y. Kim, 1999: 709). Although conflicting findings were given, Y. Kim’s study shows (i) a strong indication that case information is used incrementally; (ii) that the inherent properties of case particles may result in different processing loads; and more importantly, (iii) the interaction of case information with other syntactic properties (e.g. connectives) accounts for differences in processing.

As mentioned earlier, Korean has a large number of postpositional case and delimiter particles and predicate suffixes that are accountable for a wide variety of syntactic and semantic functions. Moreover, scrambling is allowed rather freely among pre-predicate nominal elements due to the productive use of case particles (H. Sohn, 1999). From the point of view that Korean has a configurational structure (e.g. Saito, 1985), as opposed to a flat structure (e.g. Hale, 1980), scrambled sentences increase the ambiguity and processing difficulty when compared to the canonical word order (e.g. subject-object-verb). Thus, in an incremental model, where a node may be created without waiting for the grammatical head, it is predicted that there will be a cost in scrambling. Studies in scrambling can give insight as to how and to what extent case information is used. However, contrary to speculation that scrambling may be costly, conflicting results have been found in studies on scrambling.

For example, in Yamashita’s (1997) study on Japanese, word order was not found to have an effect in either of the two self-paced experiments and a lexical decision task. That is, in sentences with ditransitive verbs, there was no significant difference in the reading times between the canonical word order [NP-NOM NP-DAT NP-ACC V] sentence and any of the scrambled sentences [NP-DAT [NP-NOM NP-ACC V]]; or [NP-ACC [NP-NOM NP-DAT V]]; [NP-DAT NP-ACC [NP-NOM V]]. In Experiment 2 of
Yamashita’s study, employing the lexical decision task, canonical sentence fragments and non-canonical, scrambled sentence fragments were compared. The results showed that although there was a main effect of verb type (ditransive vs. transitive), there was no main effect caused by word order. Thus, Yamashita concludes that the parser is indifferent to the word order in that it utilizes the case information regardless of the order of the case-marked arguments.

The outcome of the Experiment 1 and 2 in Yamashita (1997) led to the question of whether the difference in case markers plays a role in processing. A self-paced reading task was also employed in the third experiment of the study to investigate how arguments with different case particles influence the on-line processing. There was a total of three conditions:

A. [NP-NOM NP-DAT [NP-NOM NP-ACC V] V]  
   (canonical order for subordinate structure)

B. [NP-NOM NP-DAT [NP-ACC NP-NOM V] V]  
   (scrambled subordinate object)

C. [NP-DAT NP-NOM [NP-ACC NP-NOM V] V]  
   (matrix indirect object and subordinate object scrambled).

Based on the first two experiments that showed that scrambling is cost-free, conditions B and C should not be expected to differ since all three arguments are marked by nominative, dative or accusative cases. However for condition A, the author predicted a longer processing time at the second nominative position, due to two nominative case-marked arguments in the first three arguments, which would signal the existence of another clause.
The results showed significantly longer reading times in condition A at the second NP-NOM position when compared (to the third NP position) in conditions B and C. In other words, despite the canonical order of the sentences in condition A, it had a longer reading time than the scrambled sentences (conditions B & C). Yamashita notes that there are ways of accounting for the longer reading times for condition A: the appearance of the same case particle and the inherent property of the nominative marker –ga. One characteristic of –ga is that it marks the first case (in a canonical sentence) or it has the tendency to bring about exhaustive reading of the attached argument. Thus, the repetition of the nominative -ga case marker signals the parser to create a new clause before finishing the first one. Considering that the longer reading time indicates that there is a processing effort at the nominative case marked argument, this is strong evidence that case information is utilized very rapidly and incrementally.

As Yamashita (1997) indicated, if the parser was sensitive to the variety of case-marked arguments, then technically, in a scrambled sentence, the marked order of NPs should be detectable by the overt case marker before the verb is reached. Mazuka, Itoh, & Kondo (2002) sought to examine how native speakers utilize case and word order information in on-line comprehension of a scrambled sentence. Despite the fact that the previous experimental study by Yamashita showed no effect of word order (i.e. scrambling), the aim of Mazuka, et al.’s study was to investigate whether or not scrambled word order is associated with any cost for on-line comprehension of Japanese. A few modifications of Yamashita (1997) were incorporated into this study for a more controlled experiment. For instance, in Yamashita’s study, ditransitive verbs were used which obscured the effect of word order change. In Japanese, the dative marker –ni does
not have a particular position in a sentence that is unmarked. Thus, word orders
\textit{ga}(NOM)-\textit{ni}(DAT)-\textit{o}(ACC) and \textit{ga-o-ni} are sometimes both considered to be canonical
(Miyagawa, 1997). In Mazuka, et al. (2002), transitive verbs with only nominative and
accusative marked NPs were used. Also, other experimental methods, such as
questionnaires, an eye-movement monitoring method, and a self-paced method were
applied to detect the subtle processing costs associated with scrambled word order.

Contrary to Yamashita (1997), the data from these three methods of testing
showed that scrambled sentences are indeed more costly to comprehend than canonical
sentences. Five types of sentences were tested:

A. Canonical simple sentence: [NP-ga NP-o V]
B. Scrambled simple sentence: [NP-o NP-ga V]
C. Canonical sentence with a center-embedding:
   \quad NP-ga [Modifier phrase] NP-o V
D. Scrambled sentence with a center-embedding:
   \quad NP-o [Modifier phrase] NP-ga V
E. Scrambled sentence with a modifier phrase on the scrambled NP:
   \quad [Modifier phrase] NP-o NP-ga V.

The results from the off-line questionnaire studies and the eye-movement study showed
that native speakers found scrambled sentences (both simple and center-embedded) to be
more difficult and misleading than their canonical counterpart. Furthermore, the
scrambled left-branching sentences (condition E) were found to be easier than their
center-embedded counterparts. In the self-paced study, only a slight difference between
canonical and scrambled sentences was found among simple construction sentences. As
the authors suspected, this indicates that there is a subtle processing cost associated with scrambled word order in simple structures.

According to the on-line studies, Mazuka, et al. found that the locus of the increased processing cost is at the second argument position of the scrambled sentences. If parsing decisions are to be delayed until the head, there should be no difference in the processing time of the arguments prior to the verb. In particular, the nominative marked NP of the scrambled sentence was exceptionally difficult. On the other hand, the accusative marked NP, which was fronted in the scrambled sentence, did not take a longer time to process. From this, the authors further speculate that the nominative case marker is inherently more difficult to process than other case markers. The increased processing cost of the nominative marker when encountered out of its ordinary position has been observed in other studies (e.g. Yamashita, 1997; Miyamoto and Takahashi, 2002; Y. Kim, 1999).

Another self-paced reading task study by Miyamoto and Takahashi (2002) further supports the view that the processing of scrambled sentences requires longer reading time than processing canonical sentences. Based on findings from previous studies (Yamashita, 1997; Mazuka, et al., 2002), a couple of modifications were made in this study. First, complex sentences, which would increase the memory load, were used in order to avoid using simple structures that may be processed too rapidly in a self-paced reading task. Another construction that was different from the previous experiments was that the scrambling occurred inside the VP, avoiding the reading time differences caused by the detection of clause boundaries. Despite the low comprehension performance of the participants, the results provided evidence that scrambling is indeed costly. The authors
concluded that the sources of processing difficulty in scrambling can be explained by the following assumptions: (i) readers compute gaps for scrambled constituents in sentences with non-canonical word order; (ii) the positing of a gap leads to processing slow-downs; and (iii) the slow-down is affected by the amount of working memory that readers have available during parsing and consequently by the distance between the gap and its antecedent.

From the studies on scrambling discussed above, it is clear that the findings are most consistent with the incremental parsing model. That is to say, native speakers of Korean and Japanese immediately begin creating a structural representation for NPs before the verb is read based on various sources of information such as plausibility, lexical, and semantic properties, word order, and in particular, case marking information. Furthermore, the various sources of case information interact with each other in order to lead the parser to an accurate analysis. For instance, in a sequence NP-NOM NP-ACC, the processor initially associates the two NPs in a simple transitive construction. However, when an NP-dative is followed, there is the preference for a ditransitive clause to be built (Yamashita, 1997) causing a reanalysis of the initial construction. Moreover, it also becomes apparent to the parser that the accusative NP was scrambled within the ditransitive clause in which its gap can be posited immediately after the dative NP (Miyamoto & Takahashi, 2002).

As suggested earlier, the experimental results from the studies above seem to propose that there may be a hierarchy according to which some case markers require longer processing time than others. Particularly, the nominative marker appeared to take the longest to be processed compared to other case markers, such as the accusative.
Likewise, in Miyamoto & Takahashi (2002), the dative NP in the scrambled condition was read more slowly than the accusative NP in the canonical condition. More research investigating the relationship between the intrinsic properties of the case markers and its processing time should be done.

Consequently, the use of case marker information is examined in Miyamoto (2002). Three self-paced reading experiments were reported suggesting that case markers determine how NPs are to be associated together within an on-line interpretation of the sentence. That is, in the experiments, whenever an NP could not be a co-argument of the preceding NP, a slow-down occurred. The author interpreted the slow-down as a case of a clause boundary being posited in order to indicate that the two NPs are going to be associated with different verbs. The aim of this paper was to show that NPs in Japanese are incrementally associated according to their case markers anticipating the verbs to come.

In Japanese, a clause may not contain more than one accusative NP. This would indicate that when two successive accusative NPs are encountered, a reader should slow down at the second accusative NP in order to create a clause boundary between the two NPs. Thus, in Experiment 1 of Miyamoto (2002), three types of sentences were compared:

A. Ambiguous relative clause:

Adv NP-NOM NP-DAT NP-ACC V N-ACC Adv V

B. Double accusative sentence:

Adv NP-NOM NP-ACC NP-ACC V NP-DAT Adv V
C. Scrambled double-accusative sentence:

Adv NP-ACC NP-NOM NP-ACC V NP-DAT Adv V

For condition A, the author predicted the head noun of the relative clause (point of disambiguation) will have processing costs, whereas for conditions B & C, a slow-down was expected at the second accusative NP. The purpose of this experiment was to verify whether the two accusative NPs in the double accusative sentence and in the scrambled double accusative sentence define a clause boundary early on before the encounter of the relative clause head. As the author predicted, the notion that readers were constructing clausal structures and boundaries based on case markers of the NPs was confirmed.

From this, Experiments 2 and 3 of this study sought to explore how case markers and other information determine clause boundaries. In particular, the experiments tested the hypothesis that sentences that entail the early positing of clause boundaries, directed by case markers (e.g. two nominative marked NPs), avoid a slow-down at the relative clause head. Thus, the surface structures of the five conditions were tested:

A. Subject reanalysis (SR): NP-NOM [NP-ACC Adv V] NP-DAT V


E. Scrambled control for SOR:

NP-ACC NP-NOM [NP-NOM Adv V] NP-DAT V

At the second NP, the control for the SR was significantly slower than each of the other four conditions. In particular, it was significantly slower than the scrambled control for the SOR. At the third position, the two controls for the SOR were slower than the other
three conditions. In addition, the canonical control for the SOR was significantly slower than its scrambled counterpart. However, contrary to expectations, no difference was found at the relative clause head among the five conditions.

Experiment 3 of Miyamoto (2002), which is a second version of Experiment 2, was conducted so that the main-clause subject (first NP), which was marked with the nominative -ga in the previous experiment, was topicalized with the topic marker -wa. The rationale was that although both the topic and subject marker commonly mark the subject in Japanese (as in Korean), the topic marked NPs (usually) cannot be the subject of embedded clauses. This may decrease the initial ambiguity in that the NP-wa of the first NP position would imply that it is a part of the matrix verb, whereas the nominative-marked NPs tend to be interpreted as the subject of the first upcoming verb. The results from Experiment 3 supported the proposal that early positing of a clause boundary in the two controls for the SOR makes the processing of the relative clause head easier in these sentences when compared with the SOR.

The results from the three experiments in Miyamoto (2002) again strongly support the idea that the NPs marked with case markers are associated incrementally with each other prior to the processing of the verbs. Differing from the results of Yamashita (1997), more evidence of the costs of scrambling was also provided. More importantly, Miyamoto concluded that aside from other information, case information seems to be the single most crucial piece of information used in this process in that it dictates how NPs are to be associated together and where clause boundaries should be posited.

Together with the previous empirical studies discussed in this paper, it is clear that (i) head final languages are processed incrementally without delay even before the
final verb is encountered, (ii) that case markers definitely influence the incremental processing by indicating grammatical functions, clause boundaries, scrambling, etc., and (iii) the properties of different case markers or interaction of case markers may have different effects in processing. It is also apparent that complex and scrambled structures rely on overt case markers and are used as flags to determine the grammatical relation to the head.

However, in various discourse contexts in Korean and Japanese, especially in colloquial speech, nominative, accusative, dative, static locative, goal, and genitive particles are frequently omitted in sentences due to their predictability from the syntactic structure, word order, context, and the nature of the predicate used. If case markers are an important source of information in Korean sentence processing, then how can case-drops be accounted for? In what structures or situation do native speakers rely on case information and in what situations do case-drops occur? What is the default analysis when case particles are dropped? For instance, it may be inferred that case drops are possible when the structures are simple and canonical sentences. On the other hand, when processing complex and scrambled structures, native speakers will rely on overt case markers and use them as flags to determine the grammatical relation to the head. Thus, in order to determine the extent of the use and reliance on case information by native speakers, future research should include frequency studies of spoken data and discourse analysis to investigate how sentences without case particles are processed. Such studies will give a more complete picture of the case information used in processing and analyzing Korean sentences.
4.3 L2 Sentence Processing

4.3.1 Competition Model Studies

In the effort to achieve a better understanding of the factors affecting second language acquisition, numerous cross linguistic investigations on processing have been conducted within the framework of Bates and MacWhinney’s Competition Model (MacWhinney, 1987; MacWhinney & Bates, 1989) to examine how L1 and L2 speakers of a given language use surface cues such as word order, animacy, case marker, verb agreement, etc. The major findings on adult L1 sentence processing are that surface cue strengths are language-specific in that, across languages, a cue that is strong in one language may be weak in another. For instance, when comparing processing strategies employed by English, Italian, and German monolinguals (MacWhinney, Bates, and Kliegle, 1984), English monolinguals had a tendency to rely most on the word order cue, while Italian monolinguals depended on the verb agreement cues, and German monolinguals relied on a combination of animacy and verb-agreement. Thus, according to the Competition Model, language development and acquisition (L1 and L2) are in essence the process of adjusting and developing sensitivity to various types of cues in interpreting the meaning of a sentence or phrase.

In this vein, questions concerning second language learning have centered on whether and how a learner’s first language may have influence on their acquisition of an L2. Given that the learner comes to a class with a well-organized neurolinguistic system of their L1 (e.g. English), L2 learners initially rely on their L1 when learning a new L2 structure, a system that has no separate conceptual structure. In recent years, a number of studies in bilingual and L2 sentence processing have shown that language transfer and
processing strategies of L1 occur throughout the acquisition of L2. This finding has been supported through various studies with L2 learners of Chinese (Liu, Bates, & Li, 1992, Su, 2001), Dutch (McDonald, 1987), English (Gass, 1987; Harrington, 1987; Hernandez, Bates, & Avila, 1994; Kilborn, 1989), and Japanese (Sasaki, 1991, 1994).

According to MacWhinney (2002), learning morpho-syntax, as opposed to other areas such as phonology, lexicon, orthography, syntax, and pragmatics, is very different in that it is typically impossible to transfer from L1 to L2 (with the exception of closely related languages, e.g. Japanese & Korean). That is, although L1 negative transfer of the other areas is apparent in learners’ errors, in the acquiring of morpho-syntax, no transfer occurs because there is no basis for any transfer. This means that an English-speaking learner of Korean has to develop an entirely new category, which will result in longer time for acquisition to occur and present more obstacles in the learning process.

Consequently, many Korean L2 error analysis studies have indicated that out of all error types, case particle errors are one of the more prevalent types of errors. (J. Lee, 1995; H. Kim, 2001; E. Kim, 2002; H. Sohn, 1986; etc.) For example, H. Sohn (1986) points out that the extensive confusion between nominative and accusative markers by L2 learners may be accounted for by two factors: (i) the fact that English doesn’t have any marker except for word order, and (ii) English speakers’ weak sensitivity to the transitive and intransitive distinction. In yet another study on advanced L2 learners, Hahn (1998) reported confusion between the topic marker –(n)un and subject marker –i/ka. In the same way, Hahn (1998) also suggests that the confusion and difficulty arises out of the nature of L1, English, where there aren’t overt markers to distinguish topics from subjects.
As mentioned, one of the important findings from these Competition Model experiments is that in different languages, distinct cue dominance patterns are found. In English, for instance, the dominant cue for subject identification is preverbal positioning word order. In other words, many L2 processing studies have shown that English speakers rely most on word order when identifying grammatical functions and roles, while other languages like Japanese, Hungarian, and German rely on case marker cues. Based on such findings, one can assume that in learning a second language, the degree of difficulty can be predicted on the similarity or difference of the dominant language strategies of the two languages. For instance, in Harrington (1987), the Japanese EFL learners had difficulty in assimilating the English word order cues when comprehending English sentences. This result suggests that native speakers of a less word-order centered language, such as Japanese and Korean, have difficulty in acquiring the language strategy of English (e.g. word order). It also indicates that Japanese and Korean speakers have reliance on surface cues other than word order, such as case marker cues.

A study on English-speaking L2 learners of Japanese (Sasaki, 1994), showed that the participants resorted primarily to identifying word-order cues in the beginning stages of their learning. However, the reliance on case-marking cues increased as the length of L2 learning time increased. This finding was also evident in McDonald & Heilenman (1992), in which even with the presence of case inflections, which provide a valid cue in Dutch competition sentences, Dutch EFL learners gradually shifted from a case-inflection to a word-order based strategy as their L2 proficiency increased. Hence, although Korean may be a difficult language to learn for English-speakers, with consistent input flood of
the target language to provide counterevidence against the L1 schema, learners will begin to adjust and rely on the dominant cues of Korean in the course of their acquisition.

4.4 Bilingual Sentence Processing

In cross-linguistic studies on sentence processing, the Competition Model demonstrated that sentence processing varies depending on one’s L1. These studies lead to interesting predictions with regard to the nature of sentence processing in bilingual individuals who speak two or more languages of markedly different language types. According to Liu, Bates & Li (1992), four logical strategies may be used when processing both L1 & L2: (i) differentiation, in which the listener uses separate strategies for each language, equivalent to the strategies of monolinguals; (ii) forward transfer, a process whereby L1 strategies for sentence decoding are transferred to L2; (iii) backward transfer, a process whereby L2 strategies are used for sentence processing in L1; and (iv) amalgamation, a process whereby a single strategy is used for both languages. The basic findings reported were that forward and amalgamation transfers (esp. forward transfer) exist in most bilinguals, but differentiation and backward transfers appear to be fairly rare (for review, see Liu, et al., 1992). However, factors such as the degree of bilingualism may have influence on not only the direction and strength of transfer, but also on the type of transfer.

In order to examine the relationship between the age of exposure to English and the degree of transfers and strategies of bilinguals using the Competition Model, Liu, et al. (1992) compared different groups of English-Chinese & Chinese-English bilinguals and monolinguals. The early infant bilinguals were native Chinese speakers, born in the US
and exposed to English before the age of four; the early child bilinguals were native Chinese speakers who arrived in the US between 6-10 years; the adolescent bilingual group were native Chinese speakers who arrived between 12-16 years; and the two groups of adulthood bilinguals were native Chinese speakers and native English speakers exposed to the L2 after the age of 20. The results showed that transfer of sentence processing occurs in all groups: both groups of adulthood bilinguals showed forward transfer in their L2; early childhood bilinguals showed differentiation strategies and behaved like monolinguals in both languages; early infant bilinguals showed backward transfer and used English strategies when processing both English and in Chinese; and adolescent bilinguals also showed backward transfer.

This study shed some light on the way age of onset might interact with processing, in which they interpret the backward transfer in early bilinguals as an indication of loss of a sensitivity to aspects of L1. Thus, according to this study, one can expect to see backward transfer from HL learners (assuming their L1 is the heritage language), which in other words means that HL learners of Korean will process sentences differently from non-HL learners. The question, then, is to what extent would they have backward transfer? What other types of transfer will exist in HL learners that would be different from those of non-HL learners? What factor(s) determines and affects each type of transfer?

One of the criticisms of the framework of transfer under the Competition Model is "that the L1/L2 distinction is called upon to distinguish two directions of transfer, which provides adequate terminology for the phenomenon, but which is clearly too simplistic." (Fernandez, 2003: 79). Fernandez further points out the complexity of the language
environment in which the cause for transfer of strategies from one language to another may not only be the order of acquisition, but rather factors such as the frequency of language use, language dominance, or the nature of the two languages involved. As a result, in her investigation of sentence processing differences between monolinguals and bilinguals of Spanish and English, evidence showed that bilinguals have language independent preferences determined by language dominance. In other words, while monolinguals replicated the standard cross-linguistic differences, bilinguals process stimuli in either of their languages according to the general preferences of monolinguals of their dominant language. It is apparent that other factors such as the learner’s nature of the use and exposure to the HL and the nature of socio-psychological aspects must be taken into consideration in studying bilingual processing.

Yet another criticism of Competition Model studies is that they merely examine the simple surface structures of language, such as word order, case markers, animacy, etc., and fail to expand beyond to other aspects of language (see Gibson, 1992, for relevant discussion). Moreover, the test items employed in the studies are too simplistic (2 Nouns and 1 Verb construction) and therefore unnatural and ungrammatical. In other words, natural language usually possesses more complex constructions, which entail language processing to rely on various sources and cues to accurately comprehend a sentence.

This is apparent in Sasaki (1994) where the processing strategies between Japanese/English and English/Japanese bilinguals responding to English and Japanese stimuli were compared. Under Competition Model analysis, case marking is an important cue in Japanese while word order cue is more important in English. The results, however, showed that while native Japanese speakers learning English transferred their L1
strategies into L2, the native English speakers learning Japanese adjusted their cue reliance for each language, paying closer attention to word order cues in English and to case marker cues in Japanese. Sasaki interprets his findings by proposing that since learners of Japanese are exclusively taught to rely heavily on case-based strategies, they were influenced to rely on case markers relatively early in their learning process, in order to make semantic sense of input in Japanese. In other words, since the use of overt case markers is explicitly taught and emphasized in beginning Japanese language classes, with such a simplistic input structure (2 Nouns, 1 Verb) of Japanese, learners of Japanese can easily adapt to rely on case marker cues.

Therefore, to avoid such problems, studies on the acquisition of more intricate syntax constructions such as the relative clause can give deeper insight to the difficulties of learners and their language transfer. In the following section, research in the L2 processing literature concerned with details of the language processing of relative clauses in Japanese and Korean will be discussed.

4.5 Processing relative clauses in L2

Due to their inherent structural difference and difficulties, several processing studies employed relative clauses to investigate the strategies and language transfer of English speaking L2 learners of Korean and Japanese. (Kanno, 2001; O'Grady, et.al., 2003). Studies in the field of L2 syntax have shown that English subject relative clauses are easier to produce and understand than are direct object relative clauses (Doughty, 1991; Hamilton, 1994; Wolf-Quintero, 1992; etc.). In order to examine whether this preference should be attributed to structural factors or to a linear distance effect, the two
studies investigated the interpretation of Korean (or Japanese) subject and direct object relative clauses by English-speaking learners of Korean (or Japanese), in which the subject gaps in relative clauses are more distant from the head than are object gaps.

(13) a. Subject relative
    \[\text{\_namca-lul cohaha-nun} \ yeca\]
    man-ACC like-RL woman
    ‘the woman who likes the man’

b. Direct object relative
    \[\text{namca-ka \_ cohahan-nun} \ yeca\]
    man-NOM like-RC woman
    ‘the woman who the man likes’

Through a picture selection comprehension task, these studies examined and discussed the learners’ ability to process morpho-syntactic cues (i.e. case particle) critical for accurately interpreting two different types of relative clause structures. Findings in both studies were similar in that it was clear that English-speaking learners of Japanese and Korean are significantly better at understanding subject-gap relative clauses than direct object-gap relative clauses. From these results, the papers suggested that structural distance is the principal determinant of difficulty in these constructions.

Furthermore, when the two studies looked at the nature of errors, two types were identified. The first type of error (Reversal Error) involved the interpretation of the subject in the relative clause as the direct object and vice versa. From this finding, one can conclude that L2 learners experience difficulty in processing case markers. In examining three different levels (201, 202, 301) of students, Kanno (2001) also concluded that English speaking JFL learners are not good at utilizing case markings.
even in the most advanced group. This is more evidence that case marker use in languages such as Korean and Japanese is difficult to process and acquire. The second error type (Head Error) involved a misidentification of the noun serving as the head of the relative clause. Hence the head errors suggested that English-speaking learners are imposing English word-order strategy on the Korean complex sentences. By examining how learners process complex syntax structures such as relative clauses, the two studies discussed above revealed the source of difficulty and the language strategies used for understanding Korean sentences.

4.6 Conclusion

By describing the inherent linguistic and pragmatic differences between Korean and English, H. Sohn (2002) implies that the language that is typologically and genetically distant to the learner’s L1 will bring difficulties to processing and interfere in their acquisition. These assumptions are attested by various research results that provide insights into why English speakers have such difficulty in learning Korean. In error analysis studies, numerous error types were identified, in which syntactic errors involving case particle, verb inflection, complex embedded structures, etc. were the most frequent and extensive. In experiments under the Competition Model, it became clear that one source of difficulty lies in the learners’ reliance on dominant language strategies used in their L1. Thus, the conflict between English’s dominant SVO word order cue and the considerable dependency on case marker cues required for Korean results in negative transfer. Moreover, relative clause studies of Korean and Japanese gave further evidence
of language transfers, strategy discrepancies, and processing difficulty due to the structural differences between Korean and English.

The experiment to be presented here applies the issues discussed in the chapters above to the research design in order to identify the processing differences between HL and non-HL learners of Korean. In particular, this study will partially replicate previous studies (e.g. Kanno, 2001) that investigated and compared the processing strategies of learners of Korean in using morpho-syntactic (case marker) cues to comprehend Korean relative clause structures.

In identifying the variability of performance in HL learners, studies have shown that a relationship exists between variables such as parental language (Kondo-Brown, 2004b), type of instruction (Kanno et. al., to appear), and nature of communication (J. Lee, 2000), etc. Hence, through a thorough language background questionnaire, the present study will first determine which background variables best predict the variability of sentence processing in the HL and non-HL learners of Korean particularly in the study. Then, using the Korean relative clause as a target structure, the experiment will explore the extent to which HL learners’ processing is like a native speaker and the extent to which it is more like an L2 learner. Furthermore, by looking at the error analysis, the types of language transfers and strategies exhibited by HL learners that differ from those of non-HL learners will be examined and discussed.
CHAPTER 5
L2 PROCESSING OF KOREAN RELATIVE CLAUSES

5.1 Introduction

This chapter reports on L2 processing of Korean relative clauses to investigate the transfer and strategies used by HL and non-HL learners of Korean. The primary aim of the study was to collect empirical data to see whether HL learners process Korean sentences differently from non-HL learners. Studies on L1 and L2 sentence processing suggest that native speakers of head final languages (i.e. Korean and Japanese) heavily rely on case marker cues, while English speakers rely on word order cues to determine the grammatical role of argument NPs. HL learners can generally be described as those who are English dominant speakers with significant exposure to the heritage language as well as culture. The findings of the experiment of the present study suggest that HL learners employ different language strategies as a result of the amount and type of language experience.

Similar to Kanno (2001) and O’Grady, et.al. (2003), the present study assessed learners’ listening comprehension of Korean relative clauses using a picture-selection task. Consider the following two types of relative clauses:

(14)  a. Subject-gap relative clause
[ _ namca-\textit{tul} po-nun] yeca
\hspace{1cm} man-ACC see-RL woman
\hspace{1cm} ‘the woman who sees the man’

b. Direct object-gap relative clause
[ namca-\textit{ka} _ po-nun] yeca
\hspace{1cm} man-NOM see-RL woman
\hspace{1cm} ‘the woman who the man sees’
As discussed in the two chapters above, to distinguish between the two types of relative clauses, the listener is required to rely on the case marker cues. This experiment tested how well HL and non-HL learners of Korean use case marker cues when processing Korean sentences with relative clauses. By doing so, error analysis will reveal how the learners are processing the relative clauses structures. Additionally, to test a variety of subject- and object-gap relative clauses, the experiment also examined the effect of case marker drop, animacy cues and complex structures. If HL learners are more like native speakers of Korean, they should have good command of (+/-) case-marker cues and exhibit no English transfer when interpreting Korean sentences. On the other hand, if HL learners are more like English-speaking L2 learners, we should be able to observe their use of English word order strategy and/or their difficulty in utilizing case markers in their processing.

Before continuing to the details of the experiment, I will first describe the language backgrounds of the participants in respect to their use of and exposure to the target language as well as their L1. Based on this information, the process in determining variables used to assign subjects into one of the sub-groups of HL and non-HL learners is explained. Then the construct of the test conditions (experimental and filler items), and methods are presented, followed by the report of the results and data analysis of experimental and filler items. Finally, a discussion of the results will be presented.

5.2 Language Background Questionnaire

The learners of Korean who participated in this study were asked to provide information regarding their language background. Since large discrepancies exist among
HL learners, the present study is concerned with identifying the background variable (or variables) associated with the type of language transfer and strategy used by learners when processing L2 sentences. The questionnaire completed by the learners after the experiment had the objective of first identifying subgroups among HL learners (and non-HL learners, if any) and then to probe the linguistic profile of each subgroup identified. Thus, the questionnaire elicits information on three general areas of the learners' Korean language background: (i) amount and the nature of language exposure (e.g. L1, number of visits to the target country, previous formal instruction, etc.), (ii) frequency of language use (e.g. input and output with family & friends, email, internet, etc.), and self-evaluation of their Korean language skills (reading, writing, speaking, etc.). (See Appendix A for complete questionnaire)

The discussion in this section will begin by summarizing the rationale and criteria considered in defining HL learners using the demographic information (e.g., parental language) and the L1 reported by the learners. The latter part of the section will present the nature of the language exposure and use of each subgroup.

5.2.1 General Demographics

In the first section of the questionnaire, the participants (N=128) provided information about their age, sex, place of birth, and the ethnicity of their parents. From the data reported, the mean age of the participants was 22.12 (Range 18-47) of which 58.3% (N=74) of them were female and 41.7% (N=53) were male. Summary of the demographic information on the place of birth and the ethnicity of the learners’ parents is provided in Tables 1 and 2.
Table 1. Demographics: Place of birth

<table>
<thead>
<tr>
<th>Born in</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America (US, Canada)</td>
<td>105</td>
<td>82.0</td>
</tr>
<tr>
<td>Korea</td>
<td>11</td>
<td>8.6</td>
</tr>
<tr>
<td>Japan</td>
<td>8</td>
<td>6.3</td>
</tr>
<tr>
<td>China</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Germany</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Belarus</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>128</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Demographics: Parental information.

<table>
<thead>
<tr>
<th>Native Korean (speaking) Parents</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Parents</td>
<td>73</td>
<td>57.0</td>
</tr>
<tr>
<td>Mother only</td>
<td>13</td>
<td>10.2</td>
</tr>
<tr>
<td>Father only</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Non-Korean Parents</td>
<td>40</td>
<td>31.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>128</strong></td>
<td></td>
</tr>
</tbody>
</table>

As shown in Table 2, the participants were divided into HL versus non-HL learners based on the whether their parents (or parent) are native speakers of Korean. Table 1 shows that HL learners were more likely to have been born in the US and less likely to have spent time residing in the Korean language dominant areas. This means that HL learners have mainly received Korean language and cultural input from home, particularly from their parents and minimal input from outside of home. Although parental information is important, factors such as the values and beliefs of the immigrant parents regarding maintenance of the heritage language or the quality and quantity of interaction they had with their children may have influenced the degree of HL acquisition (or fossilization) of an HL learner. Thus, issues such as age of arrival or the age of
acquisition does not have much relevance, but rather the amount and type of exposure since birth is shown to be vital information in determining subgroups of HL learners.

### 5.2.2 Determining experimental groups

The research carried out for this study was designed to investigate the processing strategies and transfers used by HL and non-HL learners with different language profiles. Therefore, one goal of the study is to find out which language background characteristic would be the primary variable (in addition to the parental information variable) in differentiating the profiles among HL learner group. In the second section of the questionnaire, the participants were asked to report their first language (L1), which was described as the dominant language used with the parents from the ages of 0-5. The summary of the participants’ L1 is reported in Table 3.

<table>
<thead>
<tr>
<th>Table 3. First language used from ages 0-5.</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heritage Learners</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korean</td>
<td>38</td>
<td>29.7</td>
</tr>
<tr>
<td>Both Korean &amp; English</td>
<td>24</td>
<td>18.8</td>
</tr>
<tr>
<td>English</td>
<td>26</td>
<td>20.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>88</td>
<td></td>
</tr>
<tr>
<td><strong>Non-Heritage Learners</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>30</td>
<td>23.4</td>
</tr>
<tr>
<td>Chinese</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Russian</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Japanese</td>
<td>8</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

Based on the L1 information, the HL learner participants were classified into one of the three sub-groups: those who reported Korean as their L1 (HL KL1), both Korean and English as their L1 (HL BL1), and English as their L1 (HL EL1). For non-HL
learners, two sub-groups were identified based on the language they reported as their L1. The first sub-group included those whose L1 is English, Chinese and Russian (NHL SVO) and since Japanese and Korean share similar basic properties of syntax (e.g. word order, overt case markers), the learners who reported Japanese as their L1 (NHL SOV) were the second sub-group. The results of a one-way ANOVA showed the five sub-groups of HL and non-HL learners to be significantly different (F=23.79 (5, 128), p=.000) on the total mean accuracy score of the experimental items. Hence, the first language used between the participants and their parents determined the five experimental groups. Figure 1 shows a summary of mean accuracy for the experimental items of each L1 type group. This will be discussed in more detail in the Results section.

![Figure 1. Mean accuracy score of total experimental items.](image)
5.2.3 Language exposure

As discussed above, the type and amount of language exposure that HL learners receive and their use of the target language are characteristics that are worth documenting, especially since it may bear on whether the transfers and strategies used in sentence processing are dependent on one’s language experience. To begin with, the learners were asked to rate the degree of their exposure to Korean language and culture growing up, where 1 indicated “never,” 2 “rarely,” 3 “sometimes,” 4 “often,” 5 “always,” and 0 for “not applicable.” Table 4 summarizes the mean amount of exposure for the five groups. HL KL1 and HL BL1 learners show to have received a significant amount of exposure, while HL EL1 learners received a moderate amount of exposure. As expected, the non-HL learners have rarely if not never received any exposure to the language and/or culture.

Table 4. Exposure of Korean language and culture growing up

<table>
<thead>
<tr>
<th>Heritage Language Learners</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Korean as L1 (HL KL1)</td>
<td>4.17</td>
<td></td>
</tr>
<tr>
<td>Both Korean &amp; English as L1 (HL BL1)</td>
<td>4.33</td>
<td></td>
</tr>
<tr>
<td>English as L1 (HL EL1)</td>
<td>3.46</td>
<td></td>
</tr>
<tr>
<td>Non-Heritage Language Learners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English, Chinese, Russian (NHL SVO)</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>Japanese (NHL SOV)</td>
<td>0.50</td>
<td></td>
</tr>
</tbody>
</table>

Table 5. Exposure to target country

<table>
<thead>
<tr>
<th></th>
<th>HL Learners</th>
<th>Non-HL Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KL1</td>
<td>BL1</td>
</tr>
<tr>
<td>Lived in Korea</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Visited Korea</td>
<td>32</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

73
Considering that HL learners have been fairly well exposed to Korean language and culture, another concern of interest is to look at the type of exposure that they have received. Hence, the learners were asked about their exposure to the target country, i.e., length of residence or visits to Korea. As shown in Table 5, a small number of learners have resided in Korea (17%), of which the HL KL1 learners, (mostly those who were born in Korea) had the longest length of residence (mean length = 3.5 years). As for visiting the target country, however, 83% of the HL learners have visited Korea, while 33% of the non-HL learners have visited Korea. The factor of visit also differs, where HL learners go to Korea to visit family and relatives, while non-HL learners either go for study abroad, research, or travel.

The last type of exposure that was examined from the learners was whether or not they had formal Korean language instruction either in Korea or in the US prior to taking Korean language classes at a University. A summary report is provided in Table 6. It must be noted here that, for the purpose of controlling the instruction variable for the experiment, among HL learners who were born and resided in Korea, those who had entered primary school (age 7) and received formal instruction were excluded from the study. Thus, of the 17 HL learners who studied in Korea (mean length of instruction received = 3.5 months), 8 of them have either studied at the Kindergarten level or in the primary school setting for the duration of a summer. The rest of the learners had learned Korean language through study abroad programs offered by Korean universities.
In their effort to maintain the heritage language, the parents of learners often send their children to community language school, often known as Weekend or Saturday schools. These schools are often run by the community church or temple and are usually taught by members of the community. About 42% of HL learners have attended community schools, for an average of 2.7 years. What is interesting here is that, although there is no strong evidence, the data seem to suggest that among HL learners, the effort or personal values of the parent to maintain their children’s language and culture may be shown to play an important role in HL learner’s interlanguage. This question is not pursued in this study, but future research might take the type and amount of parent influence as a primary independent measure, to compare the sub-groups of HL learners.

### 5.2.4 Frequency of language use

This section reports on the frequency and nature of Korean language communication between learners and native speakers of Korean. Using the five-point scale for rating the frequency of Korean language use, where 1 indicated “never” and 5 “always” (and 0 as “not applicable”), participants were asked to provide an impression of
the relative frequency of their language use with immediate family, relatives, Korean friends, and Korean classmates. Within those categories, subjects further indicated how frequently they speak to native speakers in Korean (output) and how frequently they are spoken to in Korean (input). The figures in Table 7 suggest that HL and non-HL learners do not differ notably in their reported frequency of language use with Korean friends and classmates. In other words, while HL learners reported frequent language use with their family, outside of home they have the tendency to use English rather than Korean with their peers.

<table>
<thead>
<tr>
<th></th>
<th>HL Learners</th>
<th>Non-HL Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KL1</td>
<td>BL1</td>
</tr>
<tr>
<td>Friend</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>1.58</td>
<td>1.71</td>
</tr>
<tr>
<td>Input</td>
<td>1.47</td>
<td>1.79</td>
</tr>
<tr>
<td>Korean Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>3.03</td>
<td>3.29</td>
</tr>
<tr>
<td>Input</td>
<td>3.55</td>
<td>3.92</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>0.32</td>
<td>0.29</td>
</tr>
<tr>
<td>Input</td>
<td>0.32</td>
<td>0.33</td>
</tr>
<tr>
<td>Native</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>0.00</td>
<td>0.04</td>
</tr>
<tr>
<td>Input</td>
<td>0.00</td>
<td>0.04</td>
</tr>
</tbody>
</table>

A few interesting details emerge if we consider how the HL learners reported they interact with immediate family members (See Table 8). First, the frequency of Korean language use with siblings differs patently from that with the family members of the older generation (grandparents, parents, relatives). Furthermore, the data reported show that the frequency mean of the input is always higher than the output when communicating with the older generation. This indicates that a two-language communication occurs where HL
learners speak or respond in English while their family members speak to them in Korean. Based on this information, the general strengths and weaknesses of the receptive versus productive skills can be predicted.

Table 8. Mean rated frequency of language use with family members.

<table>
<thead>
<tr>
<th></th>
<th>KL1</th>
<th>BL1</th>
<th>EL1</th>
<th>SVO</th>
<th>SOV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grandparents</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>2.95</td>
<td>3.29</td>
<td>2.27</td>
<td>0.09</td>
<td>0.00</td>
</tr>
<tr>
<td>Input</td>
<td>3.29</td>
<td>3.79</td>
<td>3.04</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Mother</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>3.53</td>
<td>3.42</td>
<td>2.38</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Input</td>
<td>4.32</td>
<td>4.13</td>
<td>3.19</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Father</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>3.21</td>
<td>2.83</td>
<td>1.50</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Input</td>
<td>4.11</td>
<td>3.33</td>
<td>1.81</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Siblings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>1.21</td>
<td>1.13</td>
<td>0.50</td>
<td>0.09</td>
<td>0.00</td>
</tr>
<tr>
<td>Input</td>
<td>1.29</td>
<td>0.88</td>
<td>0.42</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Relatives</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>3.00</td>
<td>3.13</td>
<td>2.15</td>
<td>0.16</td>
<td>0.00</td>
</tr>
<tr>
<td>Input</td>
<td>3.18</td>
<td>3.42</td>
<td>2.38</td>
<td>0.16</td>
<td>0.00</td>
</tr>
</tbody>
</table>

5.2.5 Language confidence

To determine the language dominance of the participants, the last section of the background questionnaire asked the learners to report on how confident they feel about their language proficiency in English and Korean. They rated their ability using a five-point scale, where 1 indicated that they “Strongly Disagree” that they are confident and 5 indicated that they “Strongly Agree” that they are confident communicating through the language. The rating of their confidence level in English and Korean are shown in Table 9. With the exception of the Japanese native speakers (NHL SOV learners), the rest of the participants proved to be English dominant speakers. Moreover, HL KL1 and HL BL1 learners showed relatively moderate confidence in their Korean proficiency, while non-
HL learners reported to have low confidence in communicating using the Korean language.

Table 9. Mean of self-reported confidence in language

<table>
<thead>
<tr>
<th></th>
<th>HL Learners</th>
<th></th>
<th>Non-HL Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KL1</td>
<td>BL1</td>
<td>EL1</td>
</tr>
<tr>
<td>Korean</td>
<td>3.16</td>
<td>3.08</td>
<td>2.23</td>
</tr>
<tr>
<td>English</td>
<td>4.84</td>
<td>4.92</td>
<td>4.88</td>
</tr>
<tr>
<td>Other</td>
<td>3.20</td>
<td>2.25</td>
<td>3.00</td>
</tr>
</tbody>
</table>

In addition to rating their confidence level in the language, the questionnaire asked learners to report on their confidence level in each of the Korean language skills: oral comprehension, oral production, reading comprehension, written production, and use of different registers (honorific and casual). Again, the same five-point scale was used. As shown in Table 10, HL KL 1 and HL BL 1 show similar ratings in which they both feel most confident in their listening and speaking skills but least confident in grammar and writing skills. Interestingly enough, the HL EL 1 learners’ response were more similar to the NHL SVO learners, with both groups reporting reading to be easiest while use of pragmatics to be most challenging. From this, we can expect HL EL 1 learners to have traits that are more similar to non-HL learners (especially NHL SVO learners) than to the other sub-groups of HL learners.
Table 10. Mean of self-evaluation of Korean language skills

<table>
<thead>
<tr>
<th></th>
<th>HL Learners</th>
<th>Non-HL Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KL1</td>
<td>BL1</td>
</tr>
<tr>
<td>Speaking</td>
<td>3.21</td>
<td>3.21</td>
</tr>
<tr>
<td>Listening</td>
<td>3.74</td>
<td>3.50</td>
</tr>
<tr>
<td>Reading</td>
<td>2.89</td>
<td>3.21</td>
</tr>
<tr>
<td>Writing</td>
<td>2.24</td>
<td>2.58</td>
</tr>
<tr>
<td>Grammar</td>
<td>2.21</td>
<td>2.63</td>
</tr>
<tr>
<td>Pragmatic Honorific</td>
<td>2.79</td>
<td>3.08</td>
</tr>
<tr>
<td>Pragmatic Casual</td>
<td>3.08</td>
<td>3.21</td>
</tr>
</tbody>
</table>

* There were no Advanced level learner in this group and the results, therefore, are not comparable to the rest of the groups.

5.2.6 Summary: Language background of Learners of Korean

The preceding sections have described the linguistic background of the learners who participated in the experiments. The investigation began by discussing which variables may best predict the variability of the learners and found that the first language used by their parents strongly correlated with the learners' performance. As a result, the L1 variable identified three sub-groups of HL learners and two sub-groups of non-HL learners for the experiment. In looking into the type and amount of language exposure, the participants (except for the Japanese group) illustrated the fact that they were predominantly raised and educated in a society where English is the majority language. This was further confirmed in the latter section of the language background inquiry, where the same groups claimed English to be the language they are most confident in communicating. However, compared to non-HL learners, HL learners reported to have received significant amount of exposure of the target language and its culture through family, visiting Korea, and community weekend language schools.
The background questionnaire showed that both groups have a similar frequency of Korean language usage with Korean friends and classmates, and also illustrated that HL learners used Korean much more frequently with their older generation family members (e.g. grandparents, parents). Furthermore, the report on the frequency of language output and input in usage with the family members showed that HL learners use Korean much more receptively than productively. Consequently, HL learners reported that they are most confident in listening skills, while non-HL learners expressed confidence in their reading of Korean. One interesting finding from the self-evaluation of Korean language skills is that HL EL1 learners conveyed feelings more similar to NHL SVO learners than to the rest of the HL learners. This gives an indication that despite the type of exposure that the HL EL1 learners have received, they may use processing strategies similar to those of NHL SVO learners. The following section will report on the experiment, which examined the processing differences of the HL and non-HL learners described so far.

5.3 Experiment

A listening comprehension (picture-selection) test was designed to determine whether learners of Korean with different language history and exposure diverge in processing Korean relative clauses. Although studies have found that there is no significant linguistic difference between HL and non-HL learners of Korean for these structures (e.g. O’Grady, et al. 2001; J. T. Kim, 2001), the results of these studies are questionable considering that they lack a control of the language background variable of HL learners. Thus, upon identifying three sub-groups of HL learners and two sub-groups
of non-HL learners based on the language background questionnaire, the following research questions are addressed:

1. To what extent do HL learners & non-HL learners use case marker cues when processing Korean subject & object-gap relative clauses?
2. Do HL learners process relative clauses differently from non-HL learners in the following conditions: (i) +/- case markers; (ii) +/- animacy cues; and (iii) complex construction?
3. What kind of language transfer (e.g. forward, backward) would be found in HL & non-HL learners of Korean when processing Korean relative clauses?
4. Would L2 learners of Korean with different proficiency levels differ in their use of cues when processing Korean relative clauses?

The participants’ accuracy scores in the test should reflect how well they use the case marker cues for comprehending Korean sentences. Furthermore, an analysis of the type of errors that the learners exhibit should reveal which language transfer or strategy they are using.

5.3.1 Method

5.3.1.1 Participants

The participants (N=128) were those who were enrolled in beginning, intermediate, and advanced levels of Korean language classes offered at Rutgers University, Princeton University, University of Hawai‘i at Mānoa, Kapiolani Community College, and Northwestern University. With the exception of the Korean language program at Northwestern University, the rest of the programs employ the same Korean language textbook titled ‘Integrated Korean’ (KLEAR textbook series). In this textbook
series, relative clause is first introduced in the first semester (Lesson 8) of the beginning level and again at the intermediate level. Therefore, the experiment was conducted during the spring semester of 2004 to ensure that participants had been exposed to Korean relative clauses.

Six native speakers of Korean also participated as a control group. Also, there were originally 140 participants, of which the data from 12 participants were excluded due to the following reasons: (i) they had no formal instruction, thus were unable to identify level (N=4); (ii) they were beyond 400 level (N=3); or (iii) they provided incomplete data (N=5). Tables below show the distribution of participants by L1 type (Table 11) and by proficiency level (Table 12).

**Table 11. Participants by L1 type.**

<table>
<thead>
<tr>
<th>Type</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heritage Language Learners (HL)</td>
<td></td>
</tr>
<tr>
<td>Korean as L1 (HL KL1)</td>
<td>38</td>
</tr>
<tr>
<td>Both Korean &amp; English as L1 (HL BL1)</td>
<td>24</td>
</tr>
<tr>
<td>English as L1 (HL EL1)</td>
<td>26</td>
</tr>
<tr>
<td>Non-Heritage Language Learners (NHL)</td>
<td></td>
</tr>
<tr>
<td>SVO L1 (e.g. English, Chinese, Russian)</td>
<td>32</td>
</tr>
<tr>
<td>SOV L1 (Japanese)</td>
<td>8</td>
</tr>
<tr>
<td>Native Speakers (NS)</td>
<td>6</td>
</tr>
<tr>
<td>Total N</td>
<td>134</td>
</tr>
</tbody>
</table>

**Table 12. Participants by proficiency level**

<table>
<thead>
<tr>
<th>Level</th>
<th>Total N</th>
<th>HL KL1</th>
<th>HL BL1</th>
<th>HL EL1</th>
<th>NHL SVO</th>
<th>NHL SOV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>54</td>
<td>7</td>
<td>8</td>
<td>16</td>
<td>21</td>
<td>3</td>
</tr>
<tr>
<td>Intermediate</td>
<td>55</td>
<td>25</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Advanced</td>
<td>19</td>
<td>7</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
As it can be seen from Table 12, the number of participants is not distributed in a balanced way by L1 type and proficiency level. For example, there is a high proportion of HL EL1 and NHL SVO learners in the beginning level, and of HL KL1 in the intermediate level. Based on this, it is plausible that the significant difference between L1 type groups in the accuracy score come from the unbalanced distribution of the proficiency level rather than their L1 variable. A follow-up analysis was done on a more balanced distribution as shown in Table 13. The results of the two-way ANOVA still illustrated the L1 type groups to be significantly different \((F(4, 68)=11.637, \ p < .001)\) on their accuracy rate (Figure 2). See Appendix B for ANOVA summary tables and post-hoc test for accuracy rates with and without the NHL SOV group.

<table>
<thead>
<tr>
<th>Level</th>
<th>Total N</th>
<th>HL KL1</th>
<th>HL BL1</th>
<th>HL EL1</th>
<th>NHL SVO</th>
<th>NHL SOV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>31</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Intermediate</td>
<td>33</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Advanced</td>
<td>18</td>
<td>7</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

83
Figure 2. Mean accuracy score of L1 type and Level.

5.3.2 Materials

5.3.2.1 Experimental Items

Test items of four general experimental conditions were constructed in order to investigate the processing differences of HL and non-HL learners: (i) subject-gap versus object-gap; (ii) +/- case marker; (iii) +/- animacy cue; and (iv) simple versus complex structures. All lexical words (Nouns and Verbs) were taken from the first and second year Korean language textbooks (*Integrated Korean*). In identifying between subject-gap or object-gap relative clauses, the participants were required to be able to distinguish between nominative and accusative case particles. As discussed above, the aim of this
condition was to investigate how well learners use case marker cues when listening to Korean sentences.

Considering that case particles are often dropped in Korean spoken language, the study also examines the processing of relative clauses without case particles. Since HL learners have predominantly received spoken input of Korean, the purpose of including - Case marker sentences was to observe how similarly or differently HL learners (and non-HL learners) will interpret these relative clauses in comparison with native speakers. When the case marker is dropped in relative clauses, a native hearer would perceive the unmarked interpretation, which would be the subject-gap relative clause rather than the object-gap. An example of this condition is given in (15).

(15)  
a. Relative clause with case particle  
[ _ namca_\textit{\text{-lul}} po-nun] yeca  
man-ACC see-RL woman  
‘the woman who sees the man’

b. Relative clause without case particle  
[ _ namca-\textit{\text{-0}} po-nun] yeca  
man-\textit{\text{-0}} see-RL woman  
‘the woman who sees the man’ (unmarked interpretation)

One way for a relative clause without the case particle to be interpreted into object-gap, is when there is a mismatch of animacy between the head of the relative clause and its relativized NP. In other words, in the example below, even though there are no case particles, because the ‘woman’ is animate, and the ‘cake’ is inanimate, the NP itself allows one to infer whether it is the direct object or the subject without the case markers.
In studying the processing of animacy cues here, reversible and non-reversible relative clauses are used. In Kanno (2001), the term 'reversible' is defined as a relative clause in which lexical and pragmatic cues are not sufficient to determine the grammatical role of the argument NPs, thus requiring reliance on case markers (e.g. Animate-Animate nouns). On the other hand, the non-reversible relative clauses have strong animacy cues that may be easier to interpret than the case marker cues. In other words, despite the absence of the case marker cues, when the animacy cues are present (e.g. Animate-Inanimate nouns), one distinguishes between subject-gap or object-gap relative clauses. The objective of this condition is to examine how much animacy discrepancy aids the processing of Korean relative clauses and also to provide -case object-gap relative clauses.

The purpose for inclusion of the last condition of complex versus simple structures was to explore the effect of additional clauses preceding the relative clause. Thus, the complex structures had two conjunctives (-ko sipta + e/a se) added to the subject gap or object gap relative clause structure as illustrated below.

(17) yayki ha-ko sipese yeca-ka po-nun namca
    speak want- woman-NOM see-RL man
    ‘the man that the woman is looking at because she wants to talk to him’
The added clause provides contextual information that explains why he/she (in the picture) is doing what he/she is doing. Thus the complex structure will test to see whether the added (contextual) clause facilitates or hinders the processing of subject and object gap relative clause structures. Assuming that HL learners are context-dependent, despite the length & complexity of the input structure, it may aid them in processing the rest of the input, while for non-HL learners it may hinder their comprehension due to the higher complexity of the clause structure.

As a result, 8 experimental conditions, which are all relative clauses, (42 experimental items) were constructed. In order to distract the participants from identifying the target structure, an additional 42 items (7 filler conditions) of non-relative clause sentences were constructed for this study, making a total of 84 test items (See Appendix C for complete list of the items). Table 14 is the summary of each of the experimental test conditions.

Table 14. Experimental test conditions.

<table>
<thead>
<tr>
<th>Test Condition</th>
<th>Subject-gap RC</th>
<th>Object-gap RC</th>
<th>+/- Case</th>
<th>Animacy (Rev/Non-Rev)</th>
<th>Simple / Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (6)</td>
<td>Subject-gap RC</td>
<td></td>
<td></td>
<td>Reversible (AA)</td>
<td>Simple</td>
</tr>
<tr>
<td>B (6)</td>
<td>Object-gap RC</td>
<td></td>
<td>+ Case</td>
<td>Reversible (AA)</td>
<td>Simple</td>
</tr>
<tr>
<td>C (6)</td>
<td>Subject-gap RC</td>
<td></td>
<td>- Case</td>
<td>Reversible (AA)</td>
<td>Simple</td>
</tr>
<tr>
<td>D (3)</td>
<td>Object-gap RC</td>
<td></td>
<td></td>
<td>Non-Reversible</td>
<td>Simple</td>
</tr>
<tr>
<td>E (3)</td>
<td>Subject-gap RC</td>
<td></td>
<td>- Case</td>
<td>Non-Reversible</td>
<td>Simple</td>
</tr>
<tr>
<td>F (4)</td>
<td>Subject-gap RC</td>
<td></td>
<td>+ Case</td>
<td>Reversible (AA)</td>
<td>Complex</td>
</tr>
<tr>
<td>G (4)</td>
<td>Object-gap RC</td>
<td></td>
<td>+ Case</td>
<td>Reversible (AA)</td>
<td>Complex</td>
</tr>
<tr>
<td>H (4)</td>
<td>Subject-gap RC</td>
<td></td>
<td>- Case</td>
<td>Reversible (AA)</td>
<td>Complex</td>
</tr>
</tbody>
</table>
5.3.2.2 Filler Items

Filler conditions were chosen on the basis of inherent linguistic difficulties reported in previous studies of English-speaking learners of Korean. For example, the use of different registers, such as honorifics, and passive constructions are known to be the most difficult for learners of Korean. Hence, Conditions I and J tested the acquisition of honorifics & passive constructions on the parts of HL and non-HL learners.

Filler Conditions K & L tested other particles besides the nominative -i/ka and accusative -ul/lul case markers, which were tested in the experimental items. Thus, the locative particles & the delimiters were chosen to compare the processing of other case markers. Again, since particles are commonly dropped in spoken Korean, it would be interesting to see how sensitive HL learners are to different particles. With the exception of the goal-locative ‘to’ (i.e. hakkyo-ey kata/ hakkyo- Ø kata ‘I/he/she goes to school’), other locative particles (source, dynamic, static) are rarely or cannot be (according to my intuition) dropped in spoken speech. Hence, assuming that HL learners are predominantly exposed to spoken Korean, one may predict that they will do better with locative particles than with case particles since the latter are dropped more frequently than the former. In a recent study by E. Kim (2003), particle errors of HL and non-HL learners were analyzed. Although the findings showed that in general there was no significant difference between the two groups of learners, errors related to delimiter particles, (e.g. the contrastive function of –nun) were revealed to be considerably more frequent in HL learners than other types of particles.

Filler Condition M tested the receptive skills of the learners to distinguish between the sound patterns of the voiced, aspirated, and tensed consonants. Since
phonetic skill is acquired at an early age, HL learners are expected to perform more like
native speakers. Likewise, in order to examine the learners’ collocation skills, Condition
N tested their knowledge of mimetics. Finally, Condition O tested the participants’ ability
to distinguish the focus of the sentence, which is marked by the topic marker -nun. Below
is a summary of the Filler conditions (42 items). (See Appendix D for complete items)

<table>
<thead>
<tr>
<th>Table 15. Filler Conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conditions</strong></td>
</tr>
<tr>
<td>I (6) Honorific</td>
</tr>
<tr>
<td>K (6) Locative particles -ey, -eyse</td>
</tr>
<tr>
<td>L (6) Delimiters particles -nun, -man, -to</td>
</tr>
<tr>
<td>M (6) Voiced / Aspirated / Tensed Consonants</td>
</tr>
<tr>
<td>N (6) Mimetics</td>
</tr>
<tr>
<td>O (6) Subject/Object focus particle</td>
</tr>
</tbody>
</table>

5.3.3 Procedure

The experiment made use of a picture-selection task to assess comprehension of
the Korean relative clauses in the conditions described in the previous section. The
procedures were the same as those of O’Grady et. al. (2003) and Kanno (2001). First,
each participant was asked to read and sign a written consent form before starting the
experiment. The consent form stated the purpose of the research, what the participants
were expected to do, confidentiality of their data, their rights to withdraw at anytime,
contact information, benefits, and possible risks. The participant also received a copy of
the consent form.

Upon signing the consent form, participants were given a booklet that began with
the following written instructions (in English) (See Appendix E for sample page from test
booklet):

Each page of this booklet contains a series of three pictures. As you go to each
page, you will hear a tape-recorded voice describing a person/animal/thing in
one of the three pictures. Your job is to put a circle around the item described in
the sentence (Do NOT put the circle around the entire box).

Test sentences (84 test items) were pre-recorded in randomized order by the author and
played at the rate of about one every 7 seconds. Moreover, the relative clause structure
was embedded in a matrix clause to provide syntactic context for the noun phrase
containing the relative clause and thus being more a natural input. An example is given in
below.

(18) “namca-lul po-nun yeca, edi isseyo?”
man-ACC see-RL woman, where exist-POL?
‘Where is, the woman who sees the man?’

Figure 3 presents a sample page from the test booklet (See Appendix E for
sample picture for the test conditions). If the participant heard the subject-gap relative
clause as in (18) the correct answer would be to circle the woman in the upper left panel.
However, if the participant understood it incorrectly and circles the woman in the upper
right panel, then this would illustrate a Reversal error, which involves the interpretation
of the subject in the relative clause as the direct object. This error type will indicate that
the participant is not using the case marker cues. If the participant circles either of the

90
men in the upper panels, then this can be explained as a Head Error, where the participant has misidentified the noun that serves as head of the relative clause. This would suggest that learners are using their English word order in that they take the head to precede rather than follow the relative clause. Lastly, if the participant circles either the man or the woman in the lower panel (distracter panel), this would indicate that they are not comprehending or recognizing the input as a relative clause structure.

Figure 3. Sample page from the test booklet

5.3.4 Results

The data from 128 participants were used for the subsequent analysis. The experiment analyzes two aspects of the data. The first part evaluates the accuracy rates of each of the test conditions and compared the five experimental groups. The second
portion of the data examines the error types (Head error versus Reversal error) of the learners.

5.3.4.1 Accuracy Rates

Descriptive Analysis

As observed in Section 5.2.2 (Figure 1), the native speakers (control group) displayed no difficulty with the test items, responding correctly 96.6% of the time. As for the results of participants by L1 type, HL KL1 learners and NHL SOV learners outperformed the rest of the learner groups (67.3% and 70.5, respectively). On the other hand, NHL SVO learners had the lowest accuracy score (26.4%), followed by HL EL1 learners (42.3%), exhibiting their high degree of difficulty in comprehending Korean relative clauses. Overall, it appears that the variability of HL learners as well as non-HL learners is determined strongly by their L1. This pattern is generally observed in each of the test conditions, which is summarized in Table 16.
### Table 16. Mean Accuracy rates of experimental items

<table>
<thead>
<tr>
<th>Conditions / n</th>
<th>HL Learners</th>
<th>Non-HL Learners</th>
<th>NS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KL1</td>
<td>BL1</td>
<td>EL1</td>
<td>SVO</td>
</tr>
<tr>
<td>A Sub-gap RC</td>
<td>3.92</td>
<td>3.50</td>
<td>2.31</td>
<td>1.28</td>
</tr>
<tr>
<td>+, R, S / 6</td>
<td>(2.271)</td>
<td>(2.414)</td>
<td>(2.093)</td>
<td>(1.611)</td>
</tr>
<tr>
<td>B Obj-gap RC</td>
<td>3.58</td>
<td>2.21</td>
<td>1.65</td>
<td>.75</td>
</tr>
<tr>
<td>+, R, S / 6</td>
<td>(2.075)</td>
<td>(1.865)</td>
<td>(1.495)</td>
<td>(1.016)</td>
</tr>
<tr>
<td>C Sub-gap RC</td>
<td>3.00</td>
<td>2.63</td>
<td>2.15</td>
<td>1.09</td>
</tr>
<tr>
<td>-, R, S / 6</td>
<td>(2.040)</td>
<td>(2.143)</td>
<td>(2.014)</td>
<td>(1.445)</td>
</tr>
<tr>
<td>D Sub/Obj-gap</td>
<td>4.89</td>
<td>4.63</td>
<td>3.58</td>
<td>2.31</td>
</tr>
<tr>
<td>RC +, NR, S / 6</td>
<td>(1.226)</td>
<td>(1.135)</td>
<td>(1.653)</td>
<td>(1.091)</td>
</tr>
<tr>
<td>E Sub/Obj-gap</td>
<td>5.34</td>
<td>5.00</td>
<td>3.77</td>
<td>2.69</td>
</tr>
<tr>
<td>RC -, NR, S / 6</td>
<td>(.938)</td>
<td>(1.251)</td>
<td>(1.818)</td>
<td>(1.061)</td>
</tr>
<tr>
<td>F Sub-gap RC</td>
<td>2.89</td>
<td>1.92</td>
<td>1.77</td>
<td>1.28</td>
</tr>
<tr>
<td>+, R, C / 4</td>
<td>(1.351)</td>
<td>(1.501)</td>
<td>(1.531)</td>
<td>(1.224)</td>
</tr>
<tr>
<td>G Obj-gap RC</td>
<td>2.21</td>
<td>1.25</td>
<td>.96</td>
<td>.53</td>
</tr>
<tr>
<td>+, R, C / 4</td>
<td>(1.545)</td>
<td>(1.073)</td>
<td>(1.216)</td>
<td>(.879)</td>
</tr>
<tr>
<td>H Sub-gap RC</td>
<td>2.42</td>
<td>2.12</td>
<td>1.62</td>
<td>1.19</td>
</tr>
<tr>
<td>-, R, C / 4</td>
<td>(1.407)</td>
<td>(1.650)</td>
<td>(1.444)</td>
<td>(1.148)</td>
</tr>
<tr>
<td>Total: 42 items</td>
<td>28.26</td>
<td>23.25</td>
<td>17.81</td>
<td>11.12</td>
</tr>
</tbody>
</table>

Standard Deviation in the parenthesis

+/- = +/- Case marker; R=Reversible (e.g. Animate-Animate); NR=Non-Reversible (Inanimate-Animate); S=Simple RC structure; C=Complex RC structure

**Statistical Analysis**

The accuracy rate of each participant was coded and analyzed. The analysis was designed to study the effect and interaction of the following 7 explanatory variables: (i) Individual effect (Id); (ii) L1 type: HL KL1, HLBL1, HL EL1, NHL SVO, NHL SOV (L1 Type); (iii) Proficiency level: Beginning, Intermediate, Advanced (Level); (iv) Relative clause (subject- versus object-gap (RC gap); (v) +/- Case marker cue (Case); (vi) Animacy cue (Animacy); and (vii) Relative clause construction: simple versus complex (Complex).

In order to accurately estimate the effect of item difficulty for each participant's individual ability, a version of the Rasch Model (See Bond & Fox (2001) for relevant discussion) has been applied to the final model. The Rasch Model is of the form below:
For the present study, ‘person ability’ corresponds to Id, and ‘item difficulty’ corresponds to Case + RC Gap + Animacy + Complex (i.e. test conditions). If we are only looking at the main effects of the test conditions in the model, then L1 type and proficiency level would not be necessary because it is already explained by Id effects. However, because we are also interested in the interactions between L1 type and proficiency level and the test conditions, L1 type and proficiency level will also be included in the model, in which they will be estimated only through the interactions with the test conditions.

Furthermore, comparing the models between +/- individual effect variable (Id), the analysis of deviance table below also showed how significant variable Id was and thus couldn’t be ignored.

Table 17. Analysis of Deviance Table

| Model       | Resid. Df | Resid. Dev | Df | Deviance | P(>|Chi|) |
|-------------|-----------|------------|----|----------|---------|
| Model 1 (-Id) | 1256      | 2941.9     |    |          |         |
| Model 2 (+Id) | 1135      | 1839.9     | 121| 1102.0   | 0.000   |

For the accuracy rate analysis, quasi-binomial logistic model, which is a generalized linear model (GLM) for binomial response cases (e.g. success vs failure), was applied. Generalized linear model is an extension of a classical linear model that relieves the requirement of equality and constancy of variances. Consequently, this model extends analyses to predict the mean of variables that are not normally distributed (e.g. binomial distribution) via a ‘link function’, which describes the non-linear relationship between the dependent variable and the covariates (See McCullagh & Nelder, 1989 for
relevant discussion). Furthermore, the quasi-binomial family differs from the binominal family only in that the dispersion parameter is not fixed at one, but can "model" over-dispersion.

In this study, it is not only the mean accuracy of a learner that is of interest, but rather how the accuracy rate of the test is affected by various factors such as L1 type, language use & exposure, proficiency level, and the different test conditions. Generalized linear models thus allow us to examine “patterns of systematic variation in much the same way as ordinary linear models are used to study the joint effects of treatments and covariates.” (McCullagh & Nelder, 1989: 3). The initial simple model for this study is as follows:

\[(20) \quad \text{Id} + \text{L1 Type} + \text{Level} + \text{RC gap} + \text{Case} + \text{Animacy} + \text{Complex}\]

As for variable selection method, a forward selection with 5% threshold was used. Assuming that all 3-factor and higher order interactions can be ignored and Id has no interaction with other values, only 2-factor interactions of 6 variables, L1Type, Level, RC Gap, Case, Animacy, and Complex, were considered for the simplest model. As a result, the following model was obtained:

\[(21) \quad \text{Id} + \text{L1 Type} + \text{Level} + \text{RC Gap} + \text{Case} + \text{Animacy} + \text{Complex} + \text{L1 Type: RC Gap} + \text{RC Gap: Animacy} + \text{RC Gap: Case} + \text{Level: RC Gap} + \text{L1 Type: Animacy} + \text{RC Gap: Complex}\]

Based on the final model, coefficient estimates of each general test conditions and its interactions are given in the Table below.
Table 18. Coefficients Estimates of Accuracy rates

|                         | Estimate | Std. Error | t value | Pr(>|t|) |
|-------------------------|----------|------------|---------|----------|
| Obj-gap                 | -0.473   | 0.2618     | -1.807  | 0.071    |
| - Case                  | -0.367   | 0.1097     | -3.342  | 0.001**  |
| Non-Rev                 | 2.845    | 0.2787     | 10.208  | 0.000*** |
| Complex                 | 0.323    | 0.1216     | 2.654   | 0.008**  |
| HL BL1: Obj-gap         | -0.895   | 0.2948     | -3.035  | 0.003**  |
| HL EL1: Obj-gap         | -0.293   | 0.2821     | -1.038  | 0.299    |
| NHL SVO: Obj-gap        | -0.495   | 0.2893     | -1.711  | 0.087    |
| NHL SOV: Obj-gap        | 2.237    | 0.4614     | 4.849   | 0.000*** |
| Obj-gap: Non-Rev        | -2.157   | 0.2756     | -7.827  | 0.000*** |
| Obj-gap: - Case         | 1.304    | 0.2686     | 4.856   | 0.000*** |
| Int level: Obj-gap      | 0.197    | 0.2166     | 0.908   | 0.364    |
| Adv level: Obj-gap      | 1.097    | 0.2966     | 3.698   | 0.000*** |
| HL BL1: Non-Rev         | 0.623    | 0.3632     | 1.715   | 0.087    |
| HL EL1: Non-Rev         | -0.275   | 0.3264     | -0.843  | 0.399    |
| NHL SVO: Non-Rev        | -0.718   | 0.3111     | -2.307  | 0.021*   |
| NHL SOV: Non-Rev        | -0.028   | 0.6041     | -0.046  | 0.963    |
| Obj-gap: Complex        | -0.516   | 0.2231     | -2.315  | 0.021*   |

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
(Dispersion parameter for quasi-binomial family taken to be 1.580698)
Null deviance: 4266.9 on 1279 degrees of freedom
Residual deviance: 1839.9 on 1135 degrees of freedom

Accuracy Results

As discussed in the data analysis section, the 8 experimental conditions were collapsed into four general RC conditions: (i) subject-versus object-gap (RC Gap), (ii) +case versus -case marker (Case), (iii) reversible versus non-reversible (Animacy), and (iv) simple versus complex construction (Complex).

(i) Subject- versus Object-gap RC Condition

3 As long as Id is in the model, only the fitted probability of each individual can be given. However, since coefficient estimates for Id effects are not of interest in the present study, only the results of the test conditions and its interactions will be reported and discussed.
Although the main effect of the RC-gap condition did not reach significance (estimated log odds ratio = -0.473, p = 0.071), it can been clearly interpreted that (with the exception of the Japanese speakers), L2 learners performed better on subject relative clauses than on direct object relatives (Table 19). This is similar to the results of previous studies, such as O’Grady, et al, 2003 and Kanno, 2001.

Table 19. Mean percentage of RC-gap condition.

<table>
<thead>
<tr>
<th>RC-gap Condition</th>
<th>Mean %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject-gap</td>
<td>53.6 (28.928)</td>
</tr>
<tr>
<td>Object-gap</td>
<td>44.2 (31.957)</td>
</tr>
</tbody>
</table>

Figure 4. Mean percentage accuracy score of subject- and object-gap RC by L1 type.

The analysis further revealed significant interactions between the RC gap condition and the L1 type. Figure 4 illustrates a comparison of the accuracy rate in processing subject versus object-gap relative clauses for each of the L1 type groups. For
instance, the interaction of HL KL1 (base line) x HL BL1 x RC Gap type reached significance (estimated log odds ratio = -0.895, p = 0.003) suggesting that in processing relative clauses, HL KL1 learners exhibit the use of strategies that differ from those of other HL learners and non-HL learners.

Based on the Figure above, while all learner groups generally display a similar pattern, NHL SOV learners show a significantly unusual pattern (estimated log odds ratio = 2.237, p = 0.000). This seems to suggest that NHL SOV learners may experience different processing difficulties with subject- and object-gap relative clauses than from those of other L1 Type groups. In particular, the results imply that Japanese-speaking learners have a strong preference for object-gap relative clauses over subject-gap relative clauses. However, this conclusion is questionable considering that (i) previous studies have shown that speakers of Japanese indeed find object-gap relative clauses more difficult to process than the subject-gap (e.g. Nakamura, 2003), and (ii) in Japanese, the nominative case marker (-ga) is phonetically identical to the nominative marker (-ka) in Korean, while the accusative marker is patently different (-lu in Korean and -o in Japanese). This will be explored further in the discussion section of this chapter.

An interaction of RC gap condition and proficiency level was also observed. As shown in Figure 5, in general, the accuracy rate increased as the proficiency level increased. Beginning and Advanced learner groups showed to be significantly different in their RC processing (estimated log odds ratio = 1.097, p = 0.000), however, no significant processing difference was found between Beginning and Intermediate level (estimated log odds ratio = 0.197, p = 0.364).
Figure 5. Mean percentage accuracy score of subject- and object-gap RC by Level.

(ii) +/- Case Marker Condition

Table 20 shows the effect of +/- case marker on comprehending relative clauses by L2 learners of Korean. The main effect was observed (estimated log odds ratio = -0.367, p = 0.001) which L2 learners found RC with case markers to be easier than those without, but no interaction of +/- Case and L1 Type was shown. The analysis also indicated that all learners found the object-gap RC without case markers to be less difficult than its counterpart (estimated log odds ratio = 1.304, p = 0.000), as shown in Table 21. This can be explained by the fact that all -case object-gap RC structures were non-reversible (i.e. extra animacy cue), which was found to be a helpful cue for L2 learners when processing RC sentences. Figure 6 shows the mean percentage rate of each L1 type group on the +/- Case condition excluding the non-reversible RC sentences.
Table 20. Mean percentage of Case marker condition.

<table>
<thead>
<tr>
<th>Case Marker Condition</th>
<th>Mean %</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Case</td>
<td>43.0 (26.807)</td>
</tr>
<tr>
<td>- Case</td>
<td>41.2 (27.649)</td>
</tr>
</tbody>
</table>

Table 21. Mean percentage of Case marker and RC-gap conditions.

<table>
<thead>
<tr>
<th></th>
<th>Subject-gap</th>
<th>Object-gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Case</td>
<td>56.5 (31.271)</td>
<td>40.1 (32.449)</td>
</tr>
<tr>
<td>- Case</td>
<td>50.7 (28.317)</td>
<td>61.7 (38.812)</td>
</tr>
</tbody>
</table>

Figure 6. Mean percentage accuracy score of +/- Case (Reversible) RC by L1 type.

Again, HL KL1 and NHL SOV learners diverge from the rest of the learners where they performed better with the case markers than without. This outcome indicates that among HL learners, HL KL1 learners exhibit some sensitivity to case markers, while the other HL learners (and NHL SVO learners) do not notice or distinguish the two types of sentences, which in turn suggest their lack of reliance on case marker cues. On the
other hand, as native speakers of Japanese, NHL SOV learners demonstrate strong reliance on case marker strategy to process Korean RCs.

(iii) Animacy Condition

As Table 22 and Figure 7 clearly shows, the non-reversible relative clauses (Animate-Inanimate/ Inanimate-Animate) were easier to comprehend than their reversible counterparts (Animate-Animate) for all learners (estimated log odds ratio = 2.845, p = 0.000). This is because the learners have an additional cue to assist them in determining the grammatical relation of the overt NP and of the gap that occurred in each relative clause. Similar results have been reported in Kanno (2001) and Sasaki (1991).

Table 22. Mean percentage of Animacy condition.

<table>
<thead>
<tr>
<th>Animacy Condition</th>
<th>Mean %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reversible (-Animacy)</td>
<td>42.4 (27.522)</td>
</tr>
<tr>
<td>Non-Reversible (+Animacy)</td>
<td>69.0 (26.080)</td>
</tr>
</tbody>
</table>

Figure 7. Mean score of Reversible and Non-Reversible RC.
(iv) RC-structure complex vs simple

Table 23 illustrates the mean accuracy rate of simple and complex relative clause constructions of all learners. The main effect reached significance (estimated log odds ratio = 0.323, p = 0.008) showing that complex construction turned out to facilitate the understanding of the relative clause. Moreover, a significant interaction of object-gap RC and complex RC construction was observed (estimated log odds ratio = -0.516, p = 0.021), revealing that, while subject-gap complex RCs are easier to process than the simple construction, object-gap complex RCs are found to be rather difficult. This is illustrated in Table 24.

<table>
<thead>
<tr>
<th>RC-structure Condition</th>
<th>Mean %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple (Reversible)</td>
<td>41.3 (28.607)</td>
</tr>
<tr>
<td>Complex</td>
<td>44.1 (27.927)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RC structure and RC-gap conditions.</th>
<th>Subject-gap</th>
<th>Object-gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple (Reversible)</td>
<td>42.5 (34.901)</td>
<td>38.8 (34.754)</td>
</tr>
<tr>
<td>Complex (Reversible)</td>
<td>48.1 (34.011)</td>
<td>35.9 (36.283)</td>
</tr>
</tbody>
</table>

Figure 8 shows the comparison among the L1 types on the simple versus complex condition. Since there was no complex construction in the Animacy test condition, the non-reversible items were not included in this analysis. For this reason, no interaction of L1 Type and Complex RC construction was shown statistically. However, based on the figure below, it can be noted that some of the L1 Type groups (i.e. HL KL1, HL EL1,
NHL SVO), complex condition was easier to process despite the complexity and the length.

![Graph showing mean percentage accuracy score of Simple (Rev) vs Complex RC by L1 type.](image)

**Figure 8.** Mean percentage accuracy score of Simple (Rev) vs Complex RC by L1 type.

In summary, the overall accuracy rates of the experimental items showed that the performance of correctly interpreting relative clauses may be strongly associated with the L1 type for both HL and non-HL learners. HL KL1 learners had the highest accuracy among HL learners, followed by the HL BL1 group and then by HL EL1 learners. Similarly, the two sub-groups of non-HL learners were demonstrated to be considerably different in that the NHL SOV learners repeatedly outperformed the NHL SVO learners, who always had the lowest accuracy rate. Generally, this pattern was consistent in all of the conditions, with some variations.
5.3.4.2 Error Rates

Data Analysis

For the error analysis, each error in all experimental item of each participant was coded in terms of its type: Reversal error, Head error, or Other error. This analysis was designed to compare the nature of the errors of each experimental group in order to examine the language transfer and strategies of the learners. There are three response variables (Reversal, Head, or Other) and two independent variables (L1 Type and Proficiency level). For this portion of the analysis, a multinomial logistic linear model was used to see the effects of L1 Type and Level and the interaction between those two factors. The initial model can be written as follows:

(22) L1 Type + Level + L1 Type:Level

Since the interaction term is strongly significant according to the likelihood ratio test (statistics given in the following table), this model was chosen as the final model. It fit the data quite well with no evidence of overdispersion. Coefficient estimates of the Error type are provided in Table 26.

<p>| Table 25. Single Term Deletions from the model |</p>
<table>
<thead>
<tr>
<th>Df</th>
<th>Deviance</th>
<th>LRT</th>
<th>Pr(Chi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;none&gt;</td>
<td>4463.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1 Type:Level</td>
<td>14</td>
<td>4493.4</td>
<td>30.4</td>
</tr>
</tbody>
</table>

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Table 26. Coefficient estimates of Error Types

<table>
<thead>
<tr>
<th></th>
<th>Head vs Reversal</th>
<th>Std. Err</th>
<th>Other vs Reversal</th>
<th>Std. Err</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>0.000</td>
<td>0.0632</td>
<td>-1.832</td>
<td>0.1204</td>
</tr>
<tr>
<td>HL BL1</td>
<td>0.723</td>
<td>0.0839</td>
<td>0.138</td>
<td>0.1663</td>
</tr>
<tr>
<td>HL EL1</td>
<td>0.787</td>
<td>0.0754</td>
<td>1.228</td>
<td>0.1334</td>
</tr>
<tr>
<td>NHL SVO</td>
<td>1.484</td>
<td>0.0734</td>
<td>2.282</td>
<td>0.1279</td>
</tr>
<tr>
<td>HNL SOV</td>
<td>-1.705</td>
<td>0.1832</td>
<td>1.306</td>
<td>0.1635</td>
</tr>
<tr>
<td>Int Level</td>
<td>0.091</td>
<td>0.0722</td>
<td>-0.133</td>
<td>0.1403</td>
</tr>
<tr>
<td>Adv Level</td>
<td>-0.038</td>
<td>0.1075</td>
<td>-12.150</td>
<td>0.0847</td>
</tr>
<tr>
<td>HL BL1:Int Level</td>
<td>-0.948</td>
<td>0.1060</td>
<td>-0.147</td>
<td>0.2103</td>
</tr>
<tr>
<td>HL EL1:Int Level</td>
<td>0.478</td>
<td>0.0992</td>
<td>0.111</td>
<td>0.1722</td>
</tr>
<tr>
<td>NHL SVO:Int Level</td>
<td>0.127</td>
<td>0.1010</td>
<td>0.175</td>
<td>0.1626</td>
</tr>
<tr>
<td>NHL SOV:Int Level</td>
<td>-1.049</td>
<td>0.2654</td>
<td>-0.463</td>
<td>0.2034</td>
</tr>
<tr>
<td>HL BL1:Adv Level</td>
<td>-0.823</td>
<td>0.1328</td>
<td>11.206</td>
<td>0.1564</td>
</tr>
<tr>
<td>HL EL1:Adv Level</td>
<td>0.390</td>
<td>0.1725</td>
<td>11.774</td>
<td>0.1781</td>
</tr>
<tr>
<td>NHL SVO:Adv Level</td>
<td>0.112</td>
<td>0.1676</td>
<td>11.413</td>
<td>0.1506</td>
</tr>
<tr>
<td>NHL SOV:Adv Level</td>
<td>0.000</td>
<td>0.0000</td>
<td>0.000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

**Results**

This study also analyzed the type of errors made by the learners to investigate how they differ in error types. As mentioned, both studies by Kanno (2001) and O'Grady et. al. (2003) reported two types of errors in the L2 learners: reversals and head errors. To recap, reversal errors involve the interpretation of the subject in the relative clause as the direct object and vice versa, and head errors involve a misidentification of the noun that functions as head of the relative clause. The interaction of L1 Type, Level, and Error type reached significance (p=.007). Table 27 presents the mean of error rate type for each L1 Type group.
Table 27. Mean of error rates by L1 Type

<table>
<thead>
<tr>
<th>Error Type</th>
<th>KL1</th>
<th>BL1</th>
<th>EL1</th>
<th>SVO</th>
<th>SOV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>13.47</td>
<td>18.33</td>
<td>22.73</td>
<td>29.19</td>
<td>12.38</td>
<td>1.50</td>
</tr>
<tr>
<td>Reversal</td>
<td>6.16</td>
<td>7.96</td>
<td>5.27</td>
<td>4.03</td>
<td>8.13</td>
<td>.33</td>
</tr>
<tr>
<td></td>
<td>(5.054)</td>
<td>(4.467)</td>
<td>(3.832)</td>
<td>(2.946)</td>
<td>(4.794)</td>
<td>(.816)</td>
</tr>
<tr>
<td>Head</td>
<td>6.53</td>
<td>9.38</td>
<td>14.65</td>
<td>18.97</td>
<td>.88</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>(7.325)</td>
<td>(9.885)</td>
<td>(10.590)</td>
<td>(9.043)</td>
<td>(1.458)</td>
<td>(.632)</td>
</tr>
<tr>
<td>Other</td>
<td>.79</td>
<td>1.00</td>
<td>2.81</td>
<td>6.19</td>
<td>3.38</td>
<td>.17</td>
</tr>
<tr>
<td></td>
<td>(1.339)</td>
<td>(1.251)</td>
<td>(2.466)</td>
<td>(3.505)</td>
<td>(2.200)</td>
<td>(.408)</td>
</tr>
</tbody>
</table>

Standard Deviation in the parenthesis

Table 28. Mean percentage distribution of error type by L1 Type.

<table>
<thead>
<tr>
<th>Error Type</th>
<th>HL Learners</th>
<th>Non-HL Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KL1</td>
<td>BL1</td>
</tr>
<tr>
<td>Reversal</td>
<td>45.7%</td>
<td>43.4%</td>
</tr>
<tr>
<td>Head</td>
<td>48.5%</td>
<td>51.2%</td>
</tr>
<tr>
<td>Other</td>
<td>5.8%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Figure 9. Mean error rate distribution by L1 Type
As illustrated in both Table 28 and Figure 9, the distribution of error type appeared to be different for each L1 Type group. In general, all learner groups (except the NHL SOV group) displayed more head errors than reversal errors. However, for the HL KL1 and HL BL1 learners, the distribution of the two types of errors were rather equal (e.g. HL KL1 = 45.7% Reversal, 48.5% Head), while HL EL1 and (especially) NHL SVO learners had notably more head errors than reversals (e.g. NHL SVO = 65% Head, 13.8% Reversal). The errors of the NHL SOV group were distinctly different from the rest of the groups with the dispersion of only 7.1% being head errors, 65.7% being reversals, and 27.3% being ‘other’ errors. The third error type implies that the learner does not understand the test item input either due to the lack of lexical comprehension or their misunderstanding of the relative clause. In this vein, HL learners have relatively fewer ‘other’ errors than non-HL learners, which implies that they can at least recognize the input as a relative clause, which can be explained by their good command of listening skills and vocabulary.

According to the statistical analysis, a strong interaction of level and L1 type was indicated. Thus, the following tables provide the estimated probabilities of each error type by level and L1 type. Looking at the two tables (estimate probability of HL and non-HL learners), the probability of reversal errors and head errors do not necessarily decrease as the proficiency level increases. In other words, reversal and head errors are manifested not only in the low-proficiency group, but also in the advanced group. These results thus indicate that learners find utilization of case markers difficult, which in turn leads to difficulty determining the grammatical relation of the gap to a relative clause. Likewise, with the exception of the NHL SOV learners, learners have a tendency to
process relative clauses using English word order strategy, with the head preceding the relative clause. Conversely, Table 29 and 30 clearly shows that proportion of other errors decreases as the proficiency level increases, suggesting that learners improve over time with respect to general listening comprehension of relative clauses.

<table>
<thead>
<tr>
<th>Table 29. Estimated Probability of HL learner Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>HL KL1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Rev</td>
</tr>
<tr>
<td>BEG</td>
</tr>
<tr>
<td>INT</td>
</tr>
<tr>
<td>ADV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 30. Estimated Probability of non-HL learner Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHL SVO</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>BEG</td>
</tr>
<tr>
<td>INT</td>
</tr>
<tr>
<td>ADV</td>
</tr>
</tbody>
</table>

In summary, while the accuracy rate revealed correlations with the learners' L1, the error analysis provided further evidence of HL learners and non-HL learners' utilization of various language strategies in processing subject- and object-gap relative clauses. For instance, HL KL1 and HL BL1 displayed equal distributions of both types of errors indicating that they have English word order transfers as well as a rather weak command of case marker cues. As expected, the nature of errors of NHL SVO (English native speakers) suggests that they are inflicting the head-initial order of their L1 on the Korean sentences. Contrary to this group, the Japanese-speaking learners exhibited mostly case-marker errors (and other errors), but rarely produced head errors. As for the interaction of proficiency level and error type, no pattern of improvement in case marker
use was identified. Moreover, the probability estimate of head errors also suggests that learners in all levels manifested English word order transfers in the processing of Korean relative clauses.

5.3.4.3 Filler Items

The purpose of the filler items was to distract the learners from identifying the target items and also to assess various types of linguistic input other than relative clauses, such as particles (e.g. delimiter particles, locative particles, etc.), passive construction, collocation, phonology, and pragmatics. The results concerning the filler items show some more insight into how HL learners and non-HL learners process Korean language items that are not relative clause constructs. A summary of the mean scores of the filler items is presented in Table 31.

<table>
<thead>
<tr>
<th></th>
<th>HL Learners</th>
<th></th>
<th>Non-HL Learners</th>
<th></th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KL1</td>
<td>BL1</td>
<td>EL1</td>
<td>SVO</td>
<td>SOV</td>
</tr>
<tr>
<td>Honorific</td>
<td>4.39</td>
<td>4.21</td>
<td>3.31</td>
<td>2.87</td>
<td>4.38</td>
</tr>
<tr>
<td></td>
<td>(1.242)</td>
<td>(1.141)</td>
<td>(1.490)</td>
<td>(1.601)</td>
<td>(1.598)</td>
</tr>
<tr>
<td>Passive</td>
<td>4.32</td>
<td>3.54</td>
<td>2.27</td>
<td>1.78</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>(1.561)</td>
<td>(1.351)</td>
<td>(1.485)</td>
<td>(1.070)</td>
<td>(1.195)</td>
</tr>
<tr>
<td>Locative</td>
<td>5.42</td>
<td>5.21</td>
<td>4.00</td>
<td>3.34</td>
<td>4.75</td>
</tr>
<tr>
<td></td>
<td>(.826)</td>
<td>(.884)</td>
<td>(1.327)</td>
<td>(1.260)</td>
<td>(1.165)</td>
</tr>
<tr>
<td>Delimiter</td>
<td>5.76</td>
<td>5.54</td>
<td>5.27</td>
<td>4.72</td>
<td>4.88</td>
</tr>
<tr>
<td></td>
<td>(.590)</td>
<td>(.833)</td>
<td>(.778)</td>
<td>(.991)</td>
<td>(.641)</td>
</tr>
<tr>
<td>Phonology</td>
<td>5.68</td>
<td>5.33</td>
<td>4.38</td>
<td>3.47</td>
<td>3.50</td>
</tr>
<tr>
<td></td>
<td>(.662)</td>
<td>(1.239)</td>
<td>(1.577)</td>
<td>(1.459)</td>
<td>(.756)</td>
</tr>
<tr>
<td>Mimetics</td>
<td>5.13</td>
<td>4.54</td>
<td>3.46</td>
<td>2.81</td>
<td>3.25</td>
</tr>
<tr>
<td></td>
<td>(1.018)</td>
<td>(1.179)</td>
<td>(1.679)</td>
<td>(.931)</td>
<td>(1.035)</td>
</tr>
<tr>
<td>Sub/Obj Focus</td>
<td>5.53</td>
<td>5.00</td>
<td>4.08</td>
<td>2.88</td>
<td>5.25</td>
</tr>
<tr>
<td></td>
<td>(.862)</td>
<td>(1.560)</td>
<td>(1.719)</td>
<td>(1.519)</td>
<td>(.707)</td>
</tr>
<tr>
<td>Total Filler Items</td>
<td>36.24</td>
<td>33.38</td>
<td>26.77</td>
<td>21.88</td>
<td>29.00</td>
</tr>
<tr>
<td></td>
<td>(5.048)</td>
<td>(5.372)</td>
<td>(7.612)</td>
<td>(4.844)</td>
<td>(4.721)</td>
</tr>
</tbody>
</table>
Overall, as in the case of the experimental items, the HL KL1 and HL BL1 learners exhibited to have the highest scores (86.3% and 79.5% respectively), implying once again their strength in listening comprehension skills. The NHL SVO learners had the lowest accuracy scores (52.1%), followed by HL EL1 (63.7%) and then the Japanese-speaking learners (69%).

Interestingly, the three sub-groups of HL learners displayed a similar pattern in that they found the delimiter particles (-to, ‘also’; -nun, ‘contrast’; and -man ‘only) to be the easiest to understand, followed by phonology (recognition of laxed, tensed, and aspirated consonant sounds), while they all found passive construction to be the most difficult, followed by use of honorifics and then mimetic words. The patterns of difficulty experienced by HL learners are shown in (23).

(23) HL learners’ patterns of difficulty (from least to most difficult)

KL1: Del > Phonology > Sub/Obj focus > Locative > Mimetics > Honorific > Passive
BL1: Del > Phonology > Locative > Sub/Obj focus > Mimetics > Honorific > Passive
EL1: Del > Phonology > Sub/Obj focus > Locative > Mimetics > Honorific > Passive

Non-HL learners also found passive construction and mimetic words most difficult to process. While NHL SVO learners exhibited a similar pattern of difficulty as those of HL learners, the NHL SOV learners again showed yet another pattern of difficulty.

(24) Non-HL learners’ patterns of difficult (from least to most difficult)

SVO: Del > Phonology > Locative > Sub/Obj focus > Honorific > Mimetics > Passive
SOV: Sub/Obj focus > Del > Locative > Honorific > Phonology > Mimetics > Passive
For instance, since Japanese native speakers rely on case marker cues (like Korean native speakers), Japanese-speaking learners found particle use (i.e. Subj/Obj focus, Del, Locative) to be the easiest while phonetic (consonant) recognition to be rather hard for comprehension. Similarly, due to their familiarity with the complex honorific system of Japanese, HNL SOV learners found the Korean honorific system easier than other HL and non-HL learners. Thus, a strong positive L1 transfer was observed in the Japanese group.

In the filler condition, the accuracy scores increased with the increase of the learners' proficiency level. This was apparent in all seven of the filler conditions, as shown in Table 32. As for patterns of difficulty in each proficiency level, delimiter particles and phonology were found to be easy, while passive, honorific, and mimetic words were challenging.

(25) Pattern of difficulty by proficiency level (least to most difficult)

BEG: Del > Phonology, Locative > Sub/Obj focus > Mimetic, Honorific > Passive
INT: Del > Phonology > Locative > Sub/Obj focus > Mimetic > Honorific > Passive
ADV: Del > Phonology, Sub, Obj focus > Locative > Mimetic > Honorific > Passive
Table 32. Mean accuracy score of filler items by proficiency level.

<table>
<thead>
<tr>
<th></th>
<th>Beginning</th>
<th>Intermediate</th>
<th>Advanced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honorific</td>
<td>3.50</td>
<td>3.65</td>
<td>4.79</td>
<td>3.76</td>
</tr>
<tr>
<td></td>
<td>(1.539)</td>
<td>(1.506)</td>
<td>(1.084)</td>
<td>(1.520)</td>
</tr>
<tr>
<td>Passive</td>
<td>2.30</td>
<td>3.24</td>
<td>4.58</td>
<td>3.04</td>
</tr>
<tr>
<td></td>
<td>(1.462)</td>
<td>(1.633)</td>
<td>(1.346)</td>
<td>(1.699)</td>
</tr>
<tr>
<td>Locative</td>
<td>4.07</td>
<td>4.71</td>
<td>5.32</td>
<td>4.53</td>
</tr>
<tr>
<td></td>
<td>(1.478)</td>
<td>(1.257)</td>
<td>(.885)</td>
<td>(1.374)</td>
</tr>
<tr>
<td>Delimiter</td>
<td>5.13</td>
<td>5.31</td>
<td>5.79</td>
<td>5.30</td>
</tr>
<tr>
<td></td>
<td>(.848)</td>
<td>(.979)</td>
<td>(.419)</td>
<td>(.883)</td>
</tr>
<tr>
<td>Phonology</td>
<td>4.07</td>
<td>4.87</td>
<td>5.74</td>
<td>4.66</td>
</tr>
<tr>
<td></td>
<td>(1.576)</td>
<td>(1.428)</td>
<td>(.653)</td>
<td>(1.518)</td>
</tr>
<tr>
<td>Mimetics</td>
<td>3.50</td>
<td>4.16</td>
<td>4.84</td>
<td>3.98</td>
</tr>
<tr>
<td></td>
<td>(1.526)</td>
<td>(1.463)</td>
<td>(1.068)</td>
<td>(1.506)</td>
</tr>
<tr>
<td>Sub/Obj Focus</td>
<td>3.81</td>
<td>4.64</td>
<td>5.74</td>
<td>4.45</td>
</tr>
<tr>
<td></td>
<td>(1.884)</td>
<td>(1.508)</td>
<td>(.562)</td>
<td>(1.711)</td>
</tr>
<tr>
<td>Total filler items</td>
<td>26.39</td>
<td>30.58</td>
<td>36.79</td>
<td>29.73</td>
</tr>
<tr>
<td></td>
<td>(7.949)</td>
<td>(7.215)</td>
<td>(4.237)</td>
<td>(7.973)</td>
</tr>
</tbody>
</table>

In sum, the results from the filler items revealed similar accuracy patterns to those of the experimental items. This suggests that the L1 type variable of HL learners and non-HL learners may be an important variable to be considered not only with regards to their processing of relative clauses, but also in other areas of the Korean language, such as, different particles, phonology, pragmatic use, etc. Furthermore, patterns of difficulty were identified for each group, in which discrepancies existed between HL and non-HL learners. Such information can be valuable not only for curriculum development, but also in the identification of developmental sequence of Korean of HL and non-HL learners.

5.3.5 Discussion

In this study, an attempt was made to identify processing differences among HL and non-HL learners of Korean. In particular, an empirical study was conducted to see
whether HL learners employ different strategies from those of non-HL learners when processing Korean relative clauses. Two types of data were collected from beginning, intermediate, and advanced learners of Korean from five universities: performance in listening comprehension picture-selection task (the same method & procedure used by O'Grady et. al. (2003) and Kanno (2001)), and a language background questionnaire. The findings of the two data sets will be summarized and discussed.

One of the goals of this study was to determine the key variable that would best predict the variability of HL learners. Previous studies suggested that variables such as parental language, type of instruction, or language dominance, influenced learner's language performance. In determining sub-groups of HL and non-HL learners of Korean for this study, the predominant language used (i.e. L1) at the early stages (ages 0-5) of life proved to have a strong correlation with the total accuracy scores of the experiment. Thus, three sub-groups of HL learners (Korean as L1, Both English and Korean as L1, and English as their L1) were identified. Furthermore, since Japanese shares its basic syntactic properties with Korean, such as word order and overt case markers, the Japanese-speaking learners of Korean were sub-categorized as NHL SOV, whereas English speaking (along with 2 Chinese speakers and 1 Russian speaker) learners were sub-grouped as NHL SVO.

As suspected, HL learners reported having received substantial amount of exposure to the target language while growing up when compared to the non-HL learners. However, one important finding from the language background questionnaire is the fact that HL learners are not homogeneous in terms of the quantity and quality of their Korean language exposure and use. For instance, in comparison to KL1 and BL1 learners, HL
ELI learners received the least amount of exposure while growing up. As for the type of exposure, while a similar percentage in all three HL groups reported to have visited Korea (KL1=31%, BL1=21%, EL1=20%), they differed in prior language instruction. That is, only 5% of the ELI learners reported having received formal instruction when growing up, while 13% of KL1 and 11% of BL1 learners reported having received formal language instruction from community schools. Considering that the choice of attending a community language school is made primarily by the parents, it might be foreseen that their degree of Korean language communication with the learner is greater than cases in which school attendance is not chosen.

The report of Korean language use frequency by HL learners indicates that the primary source of language exposure is from the home, more specifically, from the parents. Moreover, all HL learners reported an imbalance between the input and output of the language in which Korean is always used more receptively than productively. The report also revealed that HL KL1 learners receive the most input from parents, followed by HL BL1 and then HL EL1. Also, the frequency of input for each parent was examined and it was reported that more Korean input came from the mother than the father. Among those HL learners with both parents being native speakers of Korean, HL KL1 learners receive frequent input from both of the parents. HL BL1 learners differed from the other two groups, with frequent input from the mother, but moderate input from the father. As for the HL EL1 learners only moderate input from the mother is given while barely any input comes from the father. Evidence from the experiment reported above then indicates that the language used as L1 plus the nature of input and output experienced between the
HL learners and their parents could be critical information for future studies involving HL learners of Korean.

In processing Korean subject- versus object-gap relative clauses, HL KL1 and NHL SOV learners attained the highest scores, implying that they can utilize the case-marker cues more effectively than the rest of the L1 learner groups. In contrast, the findings from the NHL SVO learners exhibited their weakness in using the case marker cues when processing relative clauses. Among the HL learners, HL KL1 learners outperformed the HL BL1 learners who in turn outperformed the HL EL1 learners. This pattern was shown throughout the test conditions.

Relative clause studies on first and second language acquisition suggest that subject positions are easier to process than object positions (See O’Grady, 1999 for a brief review). Other studies on the processing of head-final languages (e.g. Korean and Japanese) further provided evidence that subject relative clauses are easier to produce and understand than are direct object relatives (e.g. O’Grady, et. al. 2003; Kanno, 2001; Nakamura, 2003, etc.). However, in this study, while all of the L2 groups showed a strong preference for subject-gap relative clause over object-gap, the Japanese-speaking learners did far better on the direct object relatives than on the subject relatives. One possible explanation would be as follows. The morphological marking of the nominative case in Korean is /ka, where /i/ is used after a consonant ending and /ka/ is used after the vowel ending. For the experiment, only /ka/ was deliberately chosen for the object-gap relative clause for the sake of controlling the variable. Since the Japanese subject marker /ga/ is phonologically similar (if not identical), it may have been rather salient for the Japanese-speaking learners who thus found the object-gap relative clause easier to
process than the subject-gap. One way to resolve this would be to re-test the NHL SOV
learners by including both -i and -ka in the object-gap sentences.

In comparing the relative clauses with and without case markers, learners did not
display any sensitivity to either the addition or absence of the case-marker cue. This can
be interpreted in two ways. On the one hand, judging from their low accuracy rate, it can
be assumed that NHL SVO learners are not using case-marker cues and therefore not
showing an effect of the case-drop. On the other, it may be that because the unmarked
interpretation of the -case drop and reversible relative clause is subject-gap, and assuming
that subject-gap relative clauses are easier to process than the object-gap, learners find no
difficulty in processing the input with the case-drop. A similar finding in Kanno (1996),
which investigated the status of a computational principle that is accountable for the
asymmetry in admissibility of case drops in subject and direct object positions in
Japanese, was reported where adult learners of Japanese as a second language did not
perform significantly differently from the native speakers in case drop sentences.

As expected, the findings from Kanno (2001) concerning the reversible versus
non-reversible condition were confirmed in the present study, in that all learners found
the non-reversible condition significantly easier (even with case-drop) than the reversible
relative clauses, due to the extra animacy cue.

One result that was somewhat unexpected, but not inexplicable, is the learners’
accuracy rate in comprehending complex relative clause constructions. When the two
constructions were compared, a high degree of variance between groups was shown,
where some L2 groups (HL KL1, HL EL1, NHL SVO) found the added clauses to be
facilitating while others found it to be more difficult to process the relative clause (HL
BL1 and NHL SOV). This finding brings up interesting questions as to what differentiates between context and complexity and how the two factors interact. Consider the following sentence used in the experiment.

(26) yayki ha-ko sipese yeca-ka po-nun namca speak want- woman-NOM see-RL man
‘the man that the woman is looking at because she wants to talk to him’

On one hand, a listener may find the context of the relative clause, which is the reason why the man is looking at the woman, helpful in processing the relative clause. On the other hand, another listener may find the added clause with the two connectives, -ko and -ese, along with additional lexical information, too complex and be unable to process the relative clause fast enough. So why did some learners find it easier, and others more difficult? This condition was added with the prediction that HL learners would find the added clause facilitating since they possess better listening skills and could be considered as contextual learners, while non-HL learners were predicted to experience difficulty due to the complexity overload. However, findings show that NHL SVO learners also found it facilitating while the HL BL1 found it slightly difficult. This issue should be explored further to see if the distinction between context and complexity is affected by individual differences, nature of the syntactic structure, or the nature of semantics.

Findings from error analysis showed more evidence that HL learners and non-HL learners process relative clauses differently. Furthermore, the distribution of error types were associated with the L1 type for both HL and non-HL learners. Clear evidence of L1 transfer was demonstrated by both sub-groups of the non-HL learners. The English-
speaking learners relied heavily on the English word order strategy, and therefore exhibited head errors, while the Japanese-speaking learners exhibited scarcely any word order error. HL EL1 learners more resembled English-monolinguals and revealed significantly more head errors than reversal errors, proving that they are employing English word order strategy. By looking at the error types of HL KL1 and HL BL1, it can be seen that the two groups do not employ one strategy over another, but rather seem to be using different language strategies (e.g. context, vocabulary, etc.) to process relative clauses.

Lastly, L2 learners of Korean with different proficiency levels did not necessarily differ in their use of cues in processing Korean relative clauses. Overall, the accuracy rate increased as the proficiency level increased; however, only the beginning and advanced levels showed any significant difference between them. This finding suggests that there may be a problem in how the present study operationalized the proficiency level variable, which was determined by two criteria: (i) the textbook used and the level that the learners were enrolled in. In other words, the findings may have reflected that the standard used for placing a learner at a level may not be the same in all Korean language programs. Thus, a more systematic way of defining and identifying proficiency levels may have provided different results.

5.4 Conclusion

This chapter reported findings from the empirical data showing that HL learners showed processing strategies and language transfer that differed from those of non-HL learners. Furthermore, interesting evidence was revealed through error analysis which
showed that HL learners, who have received considerable exposure to the HL, have processing strategies similar to both sub-groups of the non-HL learners: NHL SVO learners, whose L1 is head initial (English), and NHL SOV learners, whose L1 is an head-final language (Japanese). This in turn is not that surprising, considering that HL learners have received significant input of both Korean and English. The more essential issue would be to understand what it means psycholinguistically when strategies of two distinct languages are employed. This issue will be explored and discussed in the concluding chapter, which will also include a discussion of research and pedagogical implications prompted by these findings.
CHAPTER 6
GENERAL DISCUSSION & CONCLUSION

The objective of this dissertation was to determine whether English-dominant HL learners of Korean process linguistic input differently from those of non-HL learners and to collect empirical evidence on how processing differed among each group. This study also showed the learners' LI in the early stages (0-5 years) to have a strong correlation with their language performance, revealing it to be the determinant variable for distinguishing sub-groups among learners. The results of the experiment showed that HL and non-HL learners of Korean exhibit different language strategies and transfer when processing subject- and object-gap relative clauses. This chapter recapitulates the major findings from the experiment and discusses them in a wider perspective. The final section goes on to suggest possible avenues for future research in this area.

6.1 Summary and general discussion of the findings

The first finding was that information on the parental language of the learner and their identity of LI (defined as language used from ages 0-5) best predicted the variability in their language performance, amount and type of language exposure, and the nature and frequency of language use. Five learner groups were identified: three sub-groups of HL learners; those who reported either Korean (HL KL1), both Korean and English (HL BL1), or English (HL EL1) to be their LI, and two sub-groups of non-HL learners; those who either reported English, Chinese, Russian (NHL SVO), or Japanese (NHL SOV) to be their LI. According to the background questionnaire, HL learners of Korean can be
characterized as those who have received significant exposure and input of the language and culture principally from family (e.g. parents), in which the heritage language was used more receptively than productively. Three qualities that divided the HL learners into sub-groups were: the L1 used as a child, degree of language exposure and the frequency of language use with their parents. Out of the three sub-groups, HL KLI learners had the most HL input (and output) followed by HL BLI group and then the HL ELI group. In turn, supporting the expectation, HL KLI learners consistently performed better (but not always significant) than the two sup-groups in all test conditions of the listening comprehension task.

The two sub-groups of non-HL learners were shown to be similar in that they had minimal (if not zero) exposure to and Korean culture and language, which is a typical trait of a foreign language learner. However, the experiment showed that the Japanese-speaking learners performed remarkably better than the English-speaking learners in comprehending Korean relative clauses. This can be simply explained by the inherent syntactic resemblance between Japanese and Korean. Thus, it can be concluded that the (listening) comprehension skills of for HL learners is affected chiefly by the quality and quantity of heritage language exposure and use, while the native language of non-HL learners is the main variable that interacts with comprehension (and acquisition) of the target language. From the evidence of a strong interaction between language background and the L2 processing of a learner, one can easily see the importance of language background variables in not only the HL learner population but also in the non-HL learners, meaning it must therefore be factored into the research design.
Looking at the results of the non-HL learners, we can see how learners who are speakers of a head-initial language (e.g. English) differ from the speakers of a head-final language (e.g. Japanese) when processing Korean relative clauses. As mentioned above, evidence from the accuracy scores implied that the relative clause is far more difficult to process for English-speaking learners of Korean than the Japanese-speaking learners. In examining the type of errors, one source of difficulty for NHL SVO learners is the word order discrepancy between English (SVO) and Korean (SOV). Hence, a greater part of NHL SVO learners’ errors were head errors (65%), which reveals that they are employing an English word order L1 strategy. The opposite was evident in NHL SOV learners with 65.7% of their errors being reversal errors, implying that they have not yet fully acquired the Korean case particles, while the general syntactic structure of the relative clause was not the main source of difficulty. In this regard, the question would be, how and to what extent do HL learners vary from the two polar sub-groups of non-HL learners?

Based on the language background of HL learners, two outcomes can be predicted: (i) HL learners (especially HL KL1, BL1) will not have Head errors due to an ample exposure to and input of the Korean language; and (ii) HL learners will mostly have Reversal errors considering that their type of exposure is limited to spoken language, in which case-drops occur. However, unlike either of the non-HL learner sub-groups, the error analysis indicates that HL KL1 and HL BL1 learners do not exhibit more errors of one type over another, but rather have both error types, revealing that HL learners also employ the English word order strategy. As studies in bilingual processing

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4 Note that there were no Advanced level Japanese learners of Korean. Thus, it can be presumed that they have not yet acquired the Korean case system.
point out, (e.g. Fernandez, 2004) the result of HL learners using English strategies in sentence processing may be due to the language dominance of the bilingual. Thus, English as the dominant language could account for the head errors in HL learners. While HL learners were expected to show a similar processing strategy use as those of the Japanese speakers, the results show that HL learners find both utilization of case marker cues and syntactic structure of a relative clause equally difficult when processing relative clause structures.

Despite these difficulties, how is it that HL learners generally comprehend input considerably better than English-speaking non-HL learners? According to many SLA researchers, this may be so because meaning-based comprehension (i.e. semantic processing) may occur independently of acquisition (i.e. syntactic processing), through the sole use of top-down processing strategies that draw on learners’ existent linguistic knowledge and contextual information. (Han, 2004: 134) Viewed in this light, HL learners may have not fully acquired the syntactic structures of Korean (and thus exhibit English word order transfer) but have sufficient semantic knowledge and contextual skills to comprehend even the complex structures. This type of interpretation then poses the question of fossilization (or stabilization) in HL learners. Does fossilization exist in HL learners? Are they indeed fossilized or stabilized? If stabilized, what implication does this have for instruction? The following section will further discuss some research and pedagogical implications regarding HL learners in relation to the issue of fossilization and stabilization.
6.2 Implications for Research and Pedagogy

With the evidence that HL learners process language differently from non-HL learners, the next step is to examine why they process differently. From the results of the non-HL learners’ performance in this study, it is clear that their L1 plays a major role in language transfer and strategy use for both HL and non-HL learners of Korean. However, with English language being the dominant language, HL learners (KL1 and BL1) seem to share the processing attributes of an English-speaking L2 learner and the Japanese-speaking L2 learner. The fact that HL learners partially process like Japanese learners simply means that they are in part processing like a native speaker. This suggests that HL learners may have in some measure acquired the target language but it is fossilized (or stabilized) as a result of the language development being interrupted by the dominance of L2 (i.e. English).

The term ‘fossilization,’ which was first introduced to the field of SLA by Selinker in 1972, refers to a permanent non-native-like state of a linguistic form, feature, or rule that persists despite further exposure to the target language. Furthermore, to clarify the distinction between fossilization and stabilization, the former is the end product of the latter with the only difference being permanence (Long, 2003). At this point, it is difficult (or perhaps impossible by nature) to ascertain whether or not HL learners’ language has been fossilized or stabilized (See Long, 2003 for relevant discussion). Nonetheless, judging from the nature of language use and exposure prior to formal (college-level) instruction of HL learners, their language performance and processing seem to indicate that there are indeed linguistic features that appears to be stabilized, if not fossilized.
In the SLA literature, various factors have been proposed to account for possible fossilization. Han (2004) categorizes them into external or internal factors. External factors refer to the environmental condition of the context that a learner is in, (in other words, the type of input that one receives), while internal factors refer to variables pertaining to cognitive (knowledge representation, processing, and psychological), neurobiological, and socio-affective aspects of the learner. Table 33 (same table given in Han, 2004:29) presents a summary of putative causal factors of fossilization (See Han, 2004 for citation of studies relevant to each factor proposed).

If the factors below do cause fossilization, then which of these factors are relatable to HL learners? With the findings from the language background questionnaire of the present study, as well as with other language background studies (e.g. H. Kim, 2002; Choi, 1999), it can be agreed that external factors may be the major basis of fossilization in HL learners in which they lack written input, formal instruction, and communicative relevance outside from home. More importantly, with the naturalistic linguistic environment that HL learners are exposed to and with parents being the primary source of language input, it is extremely likely that HL learners do not receive any corrective feedback, since the focus of the language between an HL learner and his/her parents is meaning and not form (yet another factor causing of fossilization).

This brings us to the issue of internal (particularly cognitive) factors that HL learners may already possess. The results of the present study revealed that HL learners (KL1 and BL1) and Japanese-speaking learners both had substantial reversal errors, indicating that they are not able to utilize case marker cues efficiently when processing relative clause sentences. Although there is no empirical evidence that a difference exists
in the quality of the processing between the HL learners and NHL SOV learners, it can be speculated that based on the language background disparities, the Japanese-speaking learner errors may be evidence of interlanguage development, while HL learner errors can be viewed as evidence of both interlanguage and fossilization. That is, assuming that case-markers are one of the linguistic features prone to fossilization, as discussed in Han (2004) and Long (2003), one way to describe the linguistic profiles of an HL learner is as someone who is insensitive to language input as a result of the type of linguistic environment they have been immersed in. In other words, HL learners may have developed processing constraints that hinder them from noticing input-output discrepancies and thus consistently fail to focus on form or detect errors. Consequently, the profile of HL learners brings the realization that this population of learners may be an ideal candidate for investigating the theory (or reality) of fossilization.
Table 33. A taxonomy of putative causal factors of fossilization (Han, 2004:29)

<table>
<thead>
<tr>
<th>External Environmental</th>
<th>Absence of corrective feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lack of input</td>
</tr>
<tr>
<td></td>
<td>Reinforcement from linguistic environment</td>
</tr>
<tr>
<td></td>
<td>Lack of instruction</td>
</tr>
<tr>
<td></td>
<td>Lack of communicative relevance</td>
</tr>
<tr>
<td></td>
<td>Lack of written input</td>
</tr>
<tr>
<td></td>
<td>Language complexity</td>
</tr>
<tr>
<td></td>
<td>Quality of input</td>
</tr>
<tr>
<td></td>
<td>Instruction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internal Cognitive Knowledge representation</th>
<th>L1 influence conspiring with other factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L1 influence</td>
</tr>
<tr>
<td></td>
<td>Failure of parameter-resetting</td>
</tr>
<tr>
<td></td>
<td>Possession of a mature cognitive system</td>
</tr>
<tr>
<td></td>
<td>Non-operation of UG learning principles</td>
</tr>
<tr>
<td></td>
<td>Learning inhibiting learning</td>
</tr>
<tr>
<td></td>
<td>Representational deficits of the language faculty</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge processing (receptive/productive)</th>
<th>Lack of attention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inability to notice input-output discrepancies</td>
</tr>
<tr>
<td></td>
<td>False automatization</td>
</tr>
<tr>
<td></td>
<td>Automatization of the first language system</td>
</tr>
<tr>
<td></td>
<td>Using top-down processes in comprehension</td>
</tr>
<tr>
<td></td>
<td>Lack of understanding</td>
</tr>
<tr>
<td></td>
<td>Use of domain general problem-solving strategies</td>
</tr>
<tr>
<td></td>
<td>End of sensitivity to language data</td>
</tr>
<tr>
<td></td>
<td>Lack of opportunity to use the target language</td>
</tr>
<tr>
<td></td>
<td>The speed with which, and extent to which, automatization has taken place</td>
</tr>
<tr>
<td></td>
<td>Processing constraints</td>
</tr>
<tr>
<td></td>
<td>Failure to detect errors</td>
</tr>
<tr>
<td></td>
<td>Failure to resolve the inherent variation in the interlanguage</td>
</tr>
<tr>
<td></td>
<td>Reduction in the computational capacity of the language faculty</td>
</tr>
<tr>
<td></td>
<td>Lack of verbal analytical skills</td>
</tr>
<tr>
<td></td>
<td>Lack of sensitivity to input</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Psychological</th>
<th>Inappropriate learning strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change in the emotional state</td>
</tr>
<tr>
<td></td>
<td>Reluctance to take the risk of restructuring</td>
</tr>
<tr>
<td></td>
<td>Simplification</td>
</tr>
<tr>
<td></td>
<td>Natural tendency to focus on content, not form</td>
</tr>
<tr>
<td></td>
<td>Avoidance</td>
</tr>
<tr>
<td></td>
<td>Transfer of training</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Neuro-biological</th>
<th>Changes in the neural structure of the brain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maturational constraints</td>
</tr>
<tr>
<td></td>
<td>Age</td>
</tr>
<tr>
<td></td>
<td>Decrease of cerebral plasticity for implicit acquisition</td>
</tr>
<tr>
<td></td>
<td>Neural entrenchment</td>
</tr>
<tr>
<td></td>
<td>Lack of talent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Socio-affective</th>
<th>Satisfaction of communicative needs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lack of acculturation</td>
</tr>
<tr>
<td></td>
<td>Will to maintain identity</td>
</tr>
<tr>
<td></td>
<td>Socio psychological barriers</td>
</tr>
</tbody>
</table>
From the view of instruction, HL learners’ natural tendency to focus on content and their inability to notice linguistic features pose problems to their acquisition. According to Long (e.g. 1983, 1997), “a pure focus on meaning has been shown to be inefficient by comparisons which find great advantages for learners who receive formal instruction of various kinds.” (Long, 1997:156). He further suggests that such learners do not simply notice, in Schmidt’s sense (Schmidt, 1990), items from the input as well as the output. The Noticing Hypothesis proposed by Schmidt (1990, 1993, 1994, 1995) emphasizes the subjective experience of noticing as a necessary and sufficient condition for converting input to intake. Furthermore, in this scheme, the second condition for acquisition to occur is that learners must ‘notice the gap’ between the current state of their developing linguistic system, as realized in their output, and the target language system available as input.

Following this thinking, if one wants to discuss the pedagogical implication for HL learners, we must presume that HL learners’ language is stabilized and not yet fossilized (and thus providing the possibility to be destabilized). Given that, the discussion above gives strong implications for instruction with the main goal of having HL learners ‘notice’ linguistic features. This implication generally applies to all L2 learners. However, for HL learners, the difference would be that there should be significantly stronger emphasis on the latter condition of noticing, which is for them to notice the input-output discrepancies. In other words, HL learners must notice their own gap by being able to compare the stabilized form to the correct form of the target language, which in turn focuses on the accommodating and restructuring of the interlanguage rather than processing input. According to VanPatten (2004),

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accommodation refers to “either the partial penciling in or complete incorporation of a surface feature (form-meaning connection) of language into the developing system...” and restructuring refers to “what may happen to the developing system after a form has been accommodated.” (p. 33)

Guided by this conception, considering that HL learners have partially acquired the language implicitly, it can be inferred that they lack explicit meta- and rule-based knowledge to figure out why their stabilized language is incorrect. Thus grammar-based instruction, though not adequate in itself, could have a significant contribution to make to at least the noticing (and restructuring) of certain stabilized features of an L2. Of particular relevance to this discussion, Schmidt claims that “intentional learning (explicit learning), including the attempt to form and test conscious hypotheses, is important...probably for learning some features of natural languages and not others.” (Schmidt, 1994:198). In other words, explicit instruction is necessary for at least the acquisition of some features of the target language.

One study to be mentioned in relevance to stabilization and instruction would be the Canadian-French immersion program. According to Krashen, the French immersion is the “most successful program ever recorded in the professional language-teaching literature.” (Krashen, 1984:61) However, many criticisms have been leveled in respect to these learners’ grammatical inaccuracies in that their productive skills remain far from being native-like when in fact they have attained levels of receptive skills comparable to native speakers. Thus, Swain (1991) and others (e.g. Salomone, 1992) have conducted classroom observations to investigate student-teacher interactions in the French immersion classrooms. Results of the observations illustrated the limited output of the
learners due to the teacher’s failure to create opportunities for learners to ‘notice’ and systematically use the forms and functions of the language in meaningful situations. Aside from the limited opportunities to speak in class, when there was output by the learners, the feedback they received was more likely to be content-focused rather than form or language-focused. In other words, teachers were described as providing insufficient and inconsistent negative feedback to the learner’s output.

To date there are no studies providing sufficient evidence that language acquisition is output dependent rather than input dependent. However, it has been suggested by other studies (e.g. Izumi, 2002) that the role of output is clearly facilitative in which input plus output is more effective than input alone. From this, VanPatten (2004) argues the importance of the quality of interaction and instruction where providing structured input (e.g. focus on form) may be sufficient to cause change in learner competence.

Despite the different language-learning environments (e.g. instructional versus naturalistic context), one can see the parallelism between the teacher-student interaction from the immersion program and the parent-child interaction of HL learners. From the natural exposure that HL learners have received since childhood, we can infer that inadequate negative feedback was (not) given in plenty. Hence, in formal language instruction, it may be crucial for teachers to provide HL learners with consistent interaction with negative feedback that draws attention to the form, rather than meaning. This naturally leads to the question of what type of feedback (explicit versus implicit) would be most efficient for HL learners. According to Doughty & Williams (1998), combinations or variety of feedback are likely to be most useful. Some proven
combinations are “promoting perceptual salience through input flooding (Sharwood-Smith, 1991, 1993), directing learner attention to salient or frequent linguistic features, corrective recasting (Long, 2000), and interaction enhancement” (Doughty & Williams, 1998:243). More importantly, as pointed out by Swain (1985), one chief source of stabilization in learners who have learned implicitly is their lack in engagement of language production. Thus, a vital pedagogical implication for HL learners would be to maximize the combination of the learner’s production and the teachers’s efficient negative feedback (i.e. interaction) to promote a noticing of the discrepancy between their output and the corrective feedback.

It is also worth pointing out that although SLA is input-dependent, VanPatten (2004) also points out that in the case of developing fluency and accuracy (i.e. skill building), output is most likely required. He further points out that based on Pienemann’s work on Processability Theory (Pienemann, 1998), “learners may be able to develop an underlying competence without output,” but only output would push learners toward building degrees of fluency and accuracy (p.43). In this vein, based on the language background information of HL learners, they can be defined as those who have “developed an underlying competence without output” and in order to promote accuracy and fluency in their language production, a focus on output must be incorporated into instruction. That is, in comparison to other L2 learners of Korean, HL learners may be at a different stage of IL development and therefore instruction should be targeted accordingly. Evidently, more research on instructed SLA is necessary to consider what kind of instruction affect what kind of process for the acquisition of which/what kind of form and skill (VanPatten, et. al., 2004).
6.3 Future research agenda

Upon examination of the history and evolution of the theory of fossilization, Long (2003) points out that studies investigating the issue suffer from one or more of the four following methodological problems: (i) assuming, not demonstrating, fossilization; (ii) selecting inappropriate learners for study; (iii) basing findings on insufficient data; and (iv) using inadequate analyses. Furthermore, with the explanation that fossilization is the end product of stabilization, he concludes “understanding the causes of stabilization (and destabilization) would seem to promise as much for SLA theory as work on fossilization.” (2003:490). Yet another methodological issue for research is the concern of the time span of a longitudinal study. That is, sufficient time should be allowed for the learners to acquire and display learning to distinguish between what has not been acquired (or has been fossilized) versus what is still in the process of being acquired. (Han, 2004)

As the previous discussion pointed out, HL learners could potentially be an ideal candidate for the study of both issues of stabilization and fossilization for the following reasons. For one, HL learners enroll in college level language classes after approximately 17-20 years of significant (natural) input of the target language. A thorough language background inspection can be done to begin identifying possible causal variables of their stabilization. By carefully detecting the common errors of HL learners at various levels (especially in the advanced level), we can test to see if there is an interaction of input sensitivity with perceptual saliency to try to account for the stabilization or fossilization of some structures. As Long (2003) speculates, such data should predict accurately which classes of linguistic elements are more likely to stabilize than others. Also, by using the
instruction type as a dependent variable, then one could begin to better address the
distinction between stabilization and fossilization.

Finally, by sampling different age groups of HL learners with similar background
language exposure and use, it may be possible to see the process of fossilization in action
over time. In this vein, data of first language acquisition of Korean native speakers would
be useful and critical in comparing those of HL learners. That is, if the language of HL
learners is indeed stabilized, then they should show errors that can be found only in
Korean L1 acquisition, but not in L2 learners of Korean. Future research in HL studies
should compare the language processing and production of HL learners to the
development sequence in L1 as well as L2 acquisition of Korean.

6.4 Concluding remarks

This dissertation research addressed the question of language processing
differences in HL and non-HL learners of Korean. Overall, it has been found that HL and
non-HL learners do indeed process language differently by employing language strategies
used either in their native language (Japanese- and English-speaking learners), the
dominant language (HL learners whose L1 is English), or both (HL learners whose L1 is
Korean or both Korean & English). As the discussion of this chapter has shown, many of
the questions that were set out for investigation have been answered, while another body
of question and research motives in relation to the theories of fossilization and
stabilization have surfaced.
APPENDIX A: LANGUAGE BACKGROUND QUESTIONNAIRE

The following survey is part of a research project on the prior Korean language experience and comprehension of learners. Simply circle / check the response that seems most appropriate for your case. Some questions require a brief written response(s). If you need more space, use the last page and mark your answers with the corresponding question number. Thank you for taking part in the survey. Your time and participation are greatly appreciated.

Section I

• Name: (optional) --------------- • Email: -------------------------------
• Gender:  □ Male    □ Female
• Affiliated University: ------------------------------- • Korean class level: -------------------------------
• Class standing: □ Freshman □ Sophomore □ Junior □ Senior □ Graduate □ Unclassified student
• Major (if any): -------------------------------
• How long have you studied Korean as a foreign language at a university?
  _____ Year(s) _____ Months
  List institutes & all courses:
• Place of birth: -------------------------------
• If you were not born in the US, at what age did you come to the US? ________ Yrs. Old
• Check all the family members who you have lived with for a significant time (over 3 years) of your life that
  are native speakers of Korean.
  □ Grandmother    □ Grandfather    □ Mother    □ Father
  □ Brother(s)    □ Sister(s)    □ Relatives (uncle/aunt)    □ Spouse
• Father’s ethnic background: ____________________________
• Mother’s ethnic background: ____________________________
Section II

1. When you were a child, what was your first language(s)? (Check all that apply)
(e.g., if your parents spoke to you in Korean before your age of 5, your first language is Korean.)

☐ English  ☐ Korean  ☐ Both

• Others (please specify): _________________________________

2. When growing up, I have received exposure of Korean language and culture.

N/A  1: never  2: rarely  3: sometimes  4: often  5: always

3. Have you ever lived in Korea? (for more than three months)

☐ Yes  ☐ No

3-1. If YES,  At what age(s): _____  For how long (total time): _____ yr _____ mo

4. Have you ever studied in Korea?

☐ Yes  ☐ No

4-1. If YES,  List the school level / Program (e.g. K-12, college, summer school, study abroad, etc.):

________________________________________________________________________________

For how long: _____ yr _____ mo

5. Have you ever studied Korean at other formal non-college institution in the US?
(e.g. Saturday Weekend School; high school, etc.)

☐ Yes  ☐ No

5-1. If YES,  List Institution/ Affiliation:

________________________________________________________________________________

At what age: _____  For how long: _____ yr _____ mo

6. Have you visited Korea? (for less than 3 months)

☐ Yes  ☐ No

6-1. If YES,  At what age(s): _____  For how long (total time): _____ yr _____ mo

Reason(s) of visit: _________________________________

7. How often do you speak Korean with the following people?

(1: never  2: rarely  3: sometimes  4: often  5: always)

• Friends  N/A  1  2  3  4  5
• Significant other / Spouse  N/A  1  2  3  4  5
• Korean Classmates/ Teacher  N/A  1  2  3  4  5
• Grandparent(s)  N/A  1  2  3  4  5
• Mother  N/A  1  2  3  4  5
• Father  N/A  1  2  3  4  5
• Sibling(s)  N/A  1  2  3  4  5
• Relatives  N/A  1  2  3  4  5
• Others (specify): ________________________________

8. How often do the following people speak Korean to you?

• Friends  N/A  1  2  3  4  5
• Significant other / Spouse  N/A  1  2  3  4  5
• Korean Classmates/ Teacher  N/A  1  2  3  4  5
• Grandparent(s)  N/A  1  2  3  4  5
• Mother  N/A  1  2  3  4  5
• Father  N/A  1  2  3  4  5

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9. Please mark your other uses/ exposure of Korean.
   (1: never 2: rarely 3: sometimes 4: often 5: always)
   • I watch Korean TV / movies. (1 2 3 4 5)
   • I read (books, newspaper, etc) in Korean. (1 2 3 4 5)
   • I write / email in Korean. (1 2 3 4 5)
   • I listen to Korean music. (1 2 3 4 5)
   • Other: ____________________________ (1 2 3 4 5)

10. I am confident communicating in:
    (1: Strongly Disagree 2: Disagree 3: Maybe 4: Agree 5: Strongly agree)
    • Korean (1 2 3 4 5)
    • English (1 2 3 4 5)
    • Others (specify): ________________ (1 2 3 4 5)

11. I am confident in the following Korean language skills:
    (1: Strongly Disagree 2: Disagree 3: Maybe 4: Agree 5: Strongly agree)
    • Speaking (1 2 3 4 5)
    • Listening (1 2 3 4 5)
    • Reading (1 2 3 4 5)
    • Writing (1 2 3 4 5)
    • Grammar (1 2 3 4 5)
    • Honorific Use (polite style) (1 2 3 4 5)
    • Intimate/ casual form ('panmal') (1 2 3 4 5)
    • Other (specify): ____________________________ (1 2 3 4 5)

END

***감사합니다! Thank you very much!***
APPENDIX B: FOLLOW-UP ANALYSIS (Proficiency Level X L1 Type)

I. Two-way ANOVA of Proficiency level x L1 Type (all)

Table 34. Descriptive Statistics: Level x L1 Type (all)

<table>
<thead>
<tr>
<th>PROFICIENCY LEVEL</th>
<th>L1 TYPE</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEGINNING</td>
<td>HL KL1</td>
<td>26.14</td>
<td>8.552</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>22.43</td>
<td>10.196</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>18.29</td>
<td>11.828</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>11.29</td>
<td>6.075</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>NHL SOV</td>
<td>29.00</td>
<td>7.550</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>20.45</td>
<td>10.538</td>
<td>31</td>
</tr>
<tr>
<td>INTERMEDIATE</td>
<td>HL KL1</td>
<td>32.14</td>
<td>5.872</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>25.14</td>
<td>9.686</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>13.57</td>
<td>8.502</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>10.00</td>
<td>9.274</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>NHL SOV</td>
<td>30.00</td>
<td>5.657</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>21.70</td>
<td>11.804</td>
<td>33</td>
</tr>
<tr>
<td>ADVANCED</td>
<td>HL KL1</td>
<td>34.14</td>
<td>9.616</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>25.71</td>
<td>8.139</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>23.00</td>
<td>9.899</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>14.50</td>
<td>10.607</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>27.44</td>
<td>10.495</td>
<td>18</td>
</tr>
<tr>
<td>TOTAL</td>
<td>HL KL1</td>
<td>30.81</td>
<td>8.495</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>24.43</td>
<td>9.020</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>16.81</td>
<td>10.121</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>11.13</td>
<td>7.667</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>NHL SOV</td>
<td>29.63</td>
<td>5.902</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>22.49</td>
<td>11.252</td>
<td>82</td>
</tr>
</tbody>
</table>

Table 35. Tests of Between-Subjects Effects: Level x L1 Type (all)

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
<th>Noncent. Parameter</th>
<th>Observed Power(a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>5006.845b</td>
<td>13</td>
<td>385.142</td>
<td>4.991</td>
<td>.000</td>
<td>.488</td>
<td>64.880</td>
<td>1.000</td>
</tr>
<tr>
<td>Intercept</td>
<td>31162.006</td>
<td>1</td>
<td>31162.006</td>
<td>403.803</td>
<td>.000</td>
<td>.856</td>
<td>403.803</td>
<td>1.000</td>
</tr>
<tr>
<td>Level</td>
<td>211.153</td>
<td>2</td>
<td>105.576</td>
<td>1.368</td>
<td>.262</td>
<td>.039</td>
<td>2.736</td>
<td>.285</td>
</tr>
<tr>
<td>Type</td>
<td>3592.313</td>
<td>4</td>
<td>898.078</td>
<td>11.637</td>
<td>.000</td>
<td>.406</td>
<td>46.550</td>
<td>1.000</td>
</tr>
<tr>
<td>Level * Type</td>
<td>270.315</td>
<td>7</td>
<td>38.616</td>
<td>.500</td>
<td>.831</td>
<td>.049</td>
<td>3.503</td>
<td>.202</td>
</tr>
<tr>
<td>Error</td>
<td>5247.643</td>
<td>68</td>
<td>77.171</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Total</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Corrected Total</td>
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<td></td>
</tr>
</tbody>
</table>

a Computed using alpha = .05
b R Squared = .488 (Adjusted R Squared = .390)
Table 36. Multiple Comparisons (Tukey HSD): Proficiency Level

<table>
<thead>
<tr>
<th>(I) PROFICIENCY LEVEL</th>
<th>(J) PROFICIENCY LEVEL</th>
<th>Mean Difference</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEGINNING</td>
<td>INTERMEDIATE</td>
<td>-1.25</td>
<td>2.197</td>
<td>.838</td>
<td>-6.51 - 4.02</td>
</tr>
<tr>
<td></td>
<td>ADVANCED</td>
<td>-6.99(*)</td>
<td>2.603</td>
<td>.024</td>
<td>-13.23 - .76</td>
</tr>
<tr>
<td>INTERMEDIATE</td>
<td>BEGINNING</td>
<td>1.25</td>
<td>2.197</td>
<td>.838</td>
<td>-4.02 6.51</td>
</tr>
<tr>
<td></td>
<td>ADVANCED</td>
<td>-5.75</td>
<td>2.574</td>
<td>.073</td>
<td>-11.92 .42</td>
</tr>
<tr>
<td>ADVANCED</td>
<td>BEGINNING</td>
<td>6.99(*)</td>
<td>2.603</td>
<td>.024</td>
<td>.76 13.23</td>
</tr>
<tr>
<td></td>
<td>INTERMEDIATE</td>
<td>5.75</td>
<td>2.574</td>
<td>.073</td>
<td>-.42 11.92</td>
</tr>
</tbody>
</table>

Based on observed means.
* The mean difference is significant at the .05 level.

Table 37. Multiple Comparisons (Tukey HSD): L1 Level (all)

<table>
<thead>
<tr>
<th>(I) L1 TYPE</th>
<th>(J) L1 TYPE</th>
<th>Mean Difference</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>HL KL1</td>
<td>HL BL1</td>
<td>6.38</td>
<td>2.711</td>
<td>.141</td>
<td>-1.22 13.98</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>14.00(*)</td>
<td>2.915</td>
<td>.000</td>
<td>5.83 22.17</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>19.68(*)</td>
<td>2.915</td>
<td>.000</td>
<td>11.52 27.85</td>
</tr>
<tr>
<td></td>
<td>NHL SOV</td>
<td>1.18</td>
<td>3.650</td>
<td>.998</td>
<td>-9.04 11.41</td>
</tr>
<tr>
<td>HL BL1</td>
<td>HL KL1</td>
<td>-6.38</td>
<td>2.711</td>
<td>.141</td>
<td>-13.98 1.22</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>7.62</td>
<td>2.915</td>
<td>.079</td>
<td>-.55 15.79</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>13.30(*)</td>
<td>2.915</td>
<td>.000</td>
<td>5.13 21.47</td>
</tr>
<tr>
<td></td>
<td>NHL SOV</td>
<td>-5.20</td>
<td>3.650</td>
<td>.615</td>
<td>-15.42 5.03</td>
</tr>
<tr>
<td>HL EL1</td>
<td>HL KL1</td>
<td>-14.00(*)</td>
<td>2.915</td>
<td>.000</td>
<td>-22.17 -5.83</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>-7.62</td>
<td>2.915</td>
<td>.079</td>
<td>-15.79 .55</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>5.69</td>
<td>3.106</td>
<td>.364</td>
<td>-3.02 14.39</td>
</tr>
<tr>
<td></td>
<td>NHL SOV</td>
<td>-12.81(*)</td>
<td>3.804</td>
<td>.011</td>
<td>-23.47 -2.15</td>
</tr>
<tr>
<td>NHL SVO</td>
<td>HL KL1</td>
<td>-19.68(*)</td>
<td>2.915</td>
<td>.000</td>
<td>-27.85 -11.52</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>-13.30(*)</td>
<td>2.915</td>
<td>.000</td>
<td>-21.47 -5.13</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>-5.69</td>
<td>3.106</td>
<td>.364</td>
<td>-14.39 3.02</td>
</tr>
<tr>
<td></td>
<td>NHL SOV</td>
<td>-18.50(*)</td>
<td>3.804</td>
<td>.000</td>
<td>-29.16 -7.84</td>
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<tr>
<td>NHL SOV</td>
<td>HL KL1</td>
<td>-1.18</td>
<td>3.650</td>
<td>.998</td>
<td>-11.41 9.04</td>
</tr>
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<td>HL BL1</td>
<td>5.20</td>
<td>3.650</td>
<td>.615</td>
<td>-5.03 15.42</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>12.81(*)</td>
<td>3.804</td>
<td>.011</td>
<td>2.15 23.47</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>18.50(*)</td>
<td>3.804</td>
<td>.000</td>
<td>7.84 29.16</td>
</tr>
</tbody>
</table>

Based on observed means.
* The mean difference is significant at the .05 level.
II. Two-way ANOVA of Proficiency level X L1 Type (W/O NHL SOV group)

Table 39. Descriptive Statistics: Level x L1 Type (w/o NHL SOV group)

<table>
<thead>
<tr>
<th>PROFICIENCY LEVEL</th>
<th>L1 TYPE</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEGINNING</td>
<td>HL KL1</td>
<td>26.14</td>
<td>8.552</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>22.43</td>
<td>10.196</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>18.29</td>
<td>11.828</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>11.29</td>
<td>6.075</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>19.54</td>
<td>10.497</td>
<td>28</td>
</tr>
<tr>
<td>INTERMEDIATE</td>
<td>HL KL1</td>
<td>32.14</td>
<td>5.872</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>25.14</td>
<td>9.686</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>13.57</td>
<td>8.502</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>10.00</td>
<td>9.274</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>20.21</td>
<td>12.057</td>
<td>28</td>
</tr>
<tr>
<td>ADVANCED</td>
<td>HL KL1</td>
<td>34.14</td>
<td>9.616</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>25.71</td>
<td>8.139</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>23.00</td>
<td>9.899</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>14.50</td>
<td>10.607</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>27.44</td>
<td>10.495</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>HL KL1</td>
<td>30.81</td>
<td>8.495</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>24.43</td>
<td>9.020</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>HL EL1</td>
<td>16.81</td>
<td>10.121</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>11.13</td>
<td>7.667</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>21.72</td>
<td>11.443</td>
<td>74</td>
</tr>
</tbody>
</table>

Table 40. Tests of Between-Subjects Effects: Level x L1 Type (w/o NHL SOV group)

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
<th>Noncent. Parameter</th>
<th>Observed Power(a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>4553.398(b)</td>
<td>11</td>
<td>413.945</td>
<td>5.127</td>
<td>.000</td>
<td>.476</td>
<td>56.398</td>
<td>1.000</td>
</tr>
<tr>
<td>Intercept</td>
<td>27060.758</td>
<td>1</td>
<td>27060.758</td>
<td>335.175</td>
<td>.000</td>
<td>.844</td>
<td>335.175</td>
<td>1.000</td>
</tr>
<tr>
<td>Level</td>
<td>209.369</td>
<td>2</td>
<td>104.684</td>
<td>1.297</td>
<td>.281</td>
<td>.040</td>
<td>2.593</td>
<td>.271</td>
</tr>
<tr>
<td>Type</td>
<td>2979.572</td>
<td>3</td>
<td>993.191</td>
<td>12.302</td>
<td>.000</td>
<td>.373</td>
<td>36.905</td>
<td>1.000</td>
</tr>
<tr>
<td>Level * Type</td>
<td>270.145</td>
<td>6</td>
<td>45.024</td>
<td>.558</td>
<td>.762</td>
<td>.051</td>
<td>3.346</td>
<td>.208</td>
</tr>
<tr>
<td>Error</td>
<td>5005.643</td>
<td>62</td>
<td>80.736</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Total</td>
<td>44457.000</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>9559.041</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

a Computed using alpha = .05
b R Squared = .476 (Adjusted R Squared = .383)
Table 41. Multiple Comparisons (Tukey HSD): Proficiency Level

<table>
<thead>
<tr>
<th>PROFICIENCY LEVEL</th>
<th>PROFICIENCY LEVEL</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEGINNING</td>
<td>INTERMEDIATE</td>
<td>-0.68</td>
<td>2.401</td>
<td>0.957</td>
<td>Lower Bound: -6.45 Upper Bound: 5.09</td>
</tr>
<tr>
<td></td>
<td>ADVANCED</td>
<td>-7.91(*)</td>
<td>2.715</td>
<td>0.014</td>
<td>Lower Bound: -14.43 Upper Bound: -1.39</td>
</tr>
<tr>
<td>INTERMEDIATE</td>
<td>BEGINNING</td>
<td>0.68</td>
<td>2.401</td>
<td>0.957</td>
<td>Lower Bound: -5.09 Upper Bound: 6.45</td>
</tr>
<tr>
<td></td>
<td>ADVANCED</td>
<td>-7.23(*)</td>
<td>2.715</td>
<td>0.026</td>
<td>Lower Bound: -13.75 Upper Bound: -0.71</td>
</tr>
<tr>
<td>ADVANCED</td>
<td>BEGINNING</td>
<td>7.91(*)</td>
<td>2.715</td>
<td>0.014</td>
<td>Lower Bound: 1.39 Upper Bound: 14.43</td>
</tr>
<tr>
<td></td>
<td>INTERMEDIATE</td>
<td>7.23(*)</td>
<td>2.715</td>
<td>0.026</td>
<td>Lower Bound: 0.71 Upper Bound: 13.75</td>
</tr>
</tbody>
</table>

Based on observed means.
* The mean difference is significant at the .05 level.

Table 42. Multiple Comparisons (Tukey HSD): L1 Type (w/o NHL SOV group)

<table>
<thead>
<tr>
<th>TYPE</th>
<th>TYPE</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HL EL1</td>
<td>14.00(*)</td>
<td>2.982</td>
<td>0.000</td>
<td>6.13 21.87</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>19.68(*)</td>
<td>2.982</td>
<td>0.000</td>
<td>11.81 27.56</td>
</tr>
<tr>
<td>HL BL1</td>
<td>HL KL1</td>
<td>-6.38</td>
<td>2.773</td>
<td>.109</td>
<td>-13.70 9.4</td>
</tr>
<tr>
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<td>HL EL1</td>
<td>7.62</td>
<td>2.982</td>
<td>0.061</td>
<td>-2.6 15.49</td>
</tr>
<tr>
<td></td>
<td>NHL SVO</td>
<td>13.30(*)</td>
<td>2.982</td>
<td>0.000</td>
<td>5.43 21.18</td>
</tr>
<tr>
<td>HL EL1</td>
<td>HL KL1</td>
<td>-14.00(*)</td>
<td>2.982</td>
<td>0.000</td>
<td>-21.87 -6.13</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>-7.62</td>
<td>2.982</td>
<td>0.061</td>
<td>-15.49 .26</td>
</tr>
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<td>NHL SVO</td>
<td>5.69</td>
<td>3.177</td>
<td>.288</td>
<td>-2.70 14.07</td>
</tr>
<tr>
<td>NHL SVO</td>
<td>HL KL1</td>
<td>-19.68(*)</td>
<td>2.982</td>
<td>0.000</td>
<td>-27.56 -11.81</td>
</tr>
<tr>
<td></td>
<td>HL BL1</td>
<td>-13.30(*)</td>
<td>2.982</td>
<td>0.000</td>
<td>-21.18 -5.43</td>
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<td>-5.69</td>
<td>3.177</td>
<td>.288</td>
<td>-14.07 2.70</td>
</tr>
</tbody>
</table>

Based on observed means.
* The mean difference is significant at the .05 level.
APPENDIX C: EXPERIMENTAL ITEMS

**Condition A: Subject-gap RC / + Case / Reversible / Simple**

1. 남자를 보는 여자
   ‘the woman who is looking at the man’
2. 여자를 소개하는 남자
   ‘the man who is introducing the woman’
3. 남자를 부르는 여자
   ‘the woman who is calling the man’
4. 여자로 생각하는 남자
   ‘the man who is thinking about the woman’
5. 남자를 좋아하는 여자
   ‘the woman who likes the man’
6. 여자를 싫어하는 남자
   ‘the man who dislikes the woman’

**Condition B: Object-gap RC / + Case / Reversible / Simple**

1. 남자가 보는 여자
   ‘the woman who the man is looking at’
2. 여자가 소개하는 남자
   ‘the man who the woman is introducing’
3. 남자가 부르는 여자
   ‘the woman who the man is calling’
4. 여자가 생각하는 남자
   ‘the man who the woman is thinking about’
5. 남자가 좋아하는 여자
   ‘the woman who the man likes’
6. 여자가 싫어하는 남자
   ‘the man who the woman dislikes’

**Condition C: Subject-gap RC / - Case / Reversible / Simple**

1. 남자 보는 여자
   ‘the woman who is looking at the man’
2. 여자 보는 남자
   ‘the man who is introducing the woman’
3. 남자 부르는 여자
   ‘the woman who is calling the man’
4. 여자 생각하는 남자
   ‘the man who is thinking about the woman’
5. 남자 Ø 좋아하는 여자
   ‘the woman who likes the man’
6. 여자 Ø 싫어하는 남자
   ‘the man who dislikes the woman’

Condition D: Subject (3) & Object (3) -gap RC / + Case / Non-Reversible / Simple

1. 케이크를 좋아하는 여자
   ‘the woman who likes cake’
2. 햄버거를 싫어하는 남자
   ‘the man who dislikes hamburgers’
3. 아이스크림을 생각하는 여자
   ‘the woman who is thinking about ice-cream’
4. 남자가 부르는 노래
   ‘the song that the man is singing’
5. 여자가 보는 텔레비전
   ‘the TV that the woman is watching’
6. 남자가 받는 꽃
   ‘the flower that the man is receiving’

Condition E: Subject (3) & Object (3) -gap RC / - Case / Non-Reversible / Simple

1. 여자 Ø 좋아하는 케이크
   ‘the cake that the woman likes’
2. 남자 Ø 싫어하는 햄버거
   ‘the hamburger that the man dislikes’
3. 여자 Ø 생각하는 아이스크림
   ‘the ice-cream tha the woman is thinking about’
4. 노래 Ø 부르는 남자
   ‘the man who is singing a song’
5. 텔레비전 Ø 보는 여자
   ‘the woman who is watching TV’
6. 꽃 Ø 받는 남자
   ‘the man who is receiving flowers’
Condition F: Subject-gap RC / + Case / Reversible / Complex

1. 친구를 소개하고 싶어서 남자를 부르는 여자
   ‘the woman who is calling the man, because she wants to introduce a friend’
2. 질문을 하고 싶어서 여자에게 보는 남자
   ‘the man who is watching the woman, because he wants to ask a question’
3. 데이트를 하고 싶어서 남자를 생각하는 여자
   ‘the woman who is thinking about the man, because she wants to date him’
4. 결혼을 하고 싶어서 남자를 좋아하는 여자
   ‘the woman who likes the man, because she wants to get married’

Condition G: Object-gap RC / + Case / Reversible / Complex

1. 동생을 소개하고 싶어서 남자가 부르는 여자
   ‘the woman the man is calling, because he wants to introduce a younger sibling’
2. 애기를 하고 싶어서 여자가 보는 남자
   ‘the man that the woman is watching, because she wants to talk to him’
3. 전화를 하고 싶어서 남자가 생각하는 여자
   ‘the woman that the man is thinking about, because he wants to call her’
4. 사랑을 하고 싶어서 여자가 좋아하는 남자
   ‘the man that the woman likes, because he wants to love’

Condition H: Subject-gap RC / - Case / Reversible / Complex

1. 동생Ø 소개하고 싶어서 여자Ø 부르는 남자
   ‘the man who is calling the woman, because he wants to introduce a younger sibling’
2. 질문Ø 하고 싶어서 남자Ø 보는 여자
   ‘the woman who is looking at the man, because she wants to ask a question’
3. 전화Ø 하고 싶어서 여자Ø 생각하는 남자
   ‘the man who is thinking about the woman, because he wants to call her’
4. 결혼Ø 하고 싶어서 남자Ø 좋아하는 여자
   ‘the woman who likes the man because he wants to get married’
APPENDIX D: FILLER ITEMS

Condition I: Honorific

1. 이 할아버지께서는 주무십니다.
   ‘This grandfather is sleeping.’
2. 이 할아버지께서는 점지를 드심니다
   ‘This grandfather is eating (a meal).’
3. 이 분은 연세가 많으세요.
   ‘This person is old in age.’
4. 이 꽃은 할머니께서 주십니다
   ‘This flower, the grandmother is giving (to the student)’
5. 이 꽃은 할머니께 드려요.
   ‘This flower, (the student) is giving to the grandmother’
6. 이 학생은 할머니께 길을 여쭈어 봐요
   ‘This student, is asking the grandmother for direction’

Condition J: Passive Construction

1. 이 음악은 집에서 들립니다.
   ‘This music is being heard from the house’
2. 이 개는 고양이한테 물립니다
   ‘This dog is being bitten by the cat.’
3. 이 고양이는 개한테 쫓깁니다.
   ‘This cat is being chased by the dog.’
4. 이 여자는 남자한테 잡혀요.
   ‘This woman is being caught by the man.’
5. 이 문은 바람에 닫혀요.
   ‘This door is being closed by the wind.’
6. 이 문은 바람에 열려요.
   ‘This door is being opened by the wind.’
Condition K: Locative Particles

1. 이 학생은 학교에 갑니다.
   ‘This student is going to school.’
2. 이 학생은 학교에 옵니다.
   ‘This student is coming to school.’
3. 이 학생은 학교에서 가요.
   ‘This student is going from school.’
4. 이 학생은 집에서 와요.
   ‘This student is coming from school.’
5. 이 학생은 집에서 먹습니다.
   ‘This student is eating at home.’
6. 이 학생은 집에 있어요.
   ‘This student is at home.’

Condition L: Delimiter Particles

1. 이 여자는 바나나는 없습니다.
   ‘This woman, as for the banana, she doesn't have it.’
2. 이 여자는 토마토만 없어요.
   ‘This woman, only doesn't have a tomato.’
3. 이 여자는 오렌지도 없어요.
   ‘This woman, also doesn't have an orange.’
4. 이 여자는 바나나는 있습니다.
   ‘This woman, as for the banana, she has it.’
5. 이 여자는 토마토만 있습니다.
   ‘This woman, only has a tomato.’
6. 이 여자는 오렌지도 있어요.
   ‘This woman, also has an orange.’

Condition M: Phonology

1. 이 남자는 발이 아픕니다.
   ‘This man's foot hurts.’
2. 이 책은 보더스에서 산 책이에요.
   ‘This book is the book I bought at Border’s.’
3. 이 음식은 아주 차요.
   ‘This food is very cold.’
4. 이 책상에는 콩이 있습니다.
   ‘On this table are beans.’
5. 딸이 아주 예쁩니다.
   ‘The daughter is very pretty.’
6. 빵이 하나 있어요.
‘There is one bread.’

Condition N: Mimetic

1. 이 남자는 비틀비틀 걷어요.
   ‘This man is walking in zigzag (swaying).’
2. 이 여자는 엉엉 울어요.
   ‘This woman is bawling.’
3. 이 여자는 싱글벙글 웃습니다.
   ‘This woman is smiling really big.’
4. 이 물은 줄줄 흘러요.
   ‘This water is flowing.’
5. 이 남자는 경종경종 뛰어요.
   ‘This man is hopping.’
6. 이 물은 똥 똥 떨어 집니다.
   ‘This water is dripping.’

Condition O: Subject / Object Focus Particle (-nun)

1. 이 케이크는 여자가 좋아합니다.
   ‘This cake, the woman likes.’
2. 이 햄버거는 남자가 싫어요.
   ‘This hamburger, the man dislikes.’
3. 이 아이스크림은 여자가 생각하고 있습니다.
   ‘This ice-cream, the woman is thinking about.’
4. 이 여자는 노래를 부르고 있습니다.
   ‘This man, is singing a song.’
5. 이 여자는 텔레비전을 보고 있습니다.
   ‘This woman, is watching TV.’
6. 이 남자는 꽃을 받고 있습니다.
   ‘This man is receiving flowers.’
APPENDIX E: SAMPLE TEST PICTURES

Sample 1. Subject versus Object-gap RC

Sample 2. Subject versus Object-gap
Sample 3. Subject versus Object-gap

Sample 4. Non-Reversible RC
Sample 5. Honorific

Sample 6. Passive construction
Sample 7. Locative particles

Sample 8. Delimiter particles
Sample 9. Mimetics

Sample 10. Phonology
Sample 11. Subject versus Object focus (-nun)
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