ADULT SECOND LANGUAGE LEARNERS’ ACQUISITION IN OSV

WORD ORDER WITH CASE MARKERS IN KOREAN

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DEDICATION

This thesis is dedicated to my mother, Jungim Lee, to who has been my constant source of enthusiasm.
ABSTRACT OF THE THESIS

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This study examined the comprehension of native speakers and English-speaking second language learners of OSV word order with case markers using a “matching sentences to movies” method. Based on the Shallow Structure Hypothesis and previous research in other free word order language, this study hypothesized that 1) Korean OSV word order might be difficult to process for beginning English L2 learners of Korean due to L1 word order (SOV) or First Noun Principle. 2) Intermediate English – speaking L2 learners of Korean will use case markers as cues to identify grammatical relations in sentence comprehension as well as native speakers regardless of the L1 similarity (L1 word order and presence/absence of case markers). Ten native speakers, ten English beginning-level learners, and ten English intermediate-level learners participated in the study. The test sentence types were 1) SOV word order with subject and object markers, 2) SOV word order with subject markers, 3) OSV word order with subject and object markers, and 4) OSV word order with subject markers.

The result demonstrated that intermediate L2 learners were able to comprehend OSV word order with case markers similar to those used by native speakers when they identify agent/patient roles in Korean. These findings indicate that 1) English L2 learners are able to understand OSV word order with case markers using native-like processing strategy (use of case markers as cues) regardless of their L1, and 2) Native-like comprehension of OSV with case markers is attainable with intermediate proficiency.
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CHAPTER 1

INTRODUCTION

People learn a foreign language in adulthood for various meaningful purposes, which range from career development to family and relationships to education. However, we know that learning a second language (L2) in adulthood takes great effort, and learners are not always successful. Even for highly advanced L2 learners, the question arises: “Is achieving native-like language competence in L2 possible for adults?” In fact, the question has been one of the major issues in second language acquisition (SLA).

For the past 30 years, one question has been on whether L2 learners acquire native-like syntactic parsing. Syntactic parsing refers to the way that an individual analyzes a sentence or a phrase in terms of grammatical constituents, the parts of speech, and syntactic relations. For example, in English, when a parser receives an input string such as “The girl”, at the initial position of a sentence, the parser will process the following: The girl=subject and agent. When the parser hears the next series of words to be “who was pushed by the boy”, the parser will reprocess “The girl” to be the patient and “the boy” to be the agent. When the word is added such as “cried”, the parser will reprocess that the agent of the verb “cried” is “The girl.”

With regard to the issue of adult learners’ L2 success in the syntactic domain, Clahsen and Felser (2006) proposed the Shallow Structure Hypothesis (SSH). The basic claim of the SSH is that adult L2 learners’ processing is fundamentally different from native speakers (NSs) in that L2 learners do not engage in full syntactic parsing but only shallow processing. Shallow processing refers to 1) the fact that the learners are unable to construct an abstract mental representation of the syntactic structure, and 2) the tendency to rely more on semantic cues (the meaning of a word) rather than syntactic information during the parse.

Felser, Roberts, Gross, and Marinis (2003) carried out a self-paced reading study investigating whether advanced German and Greek L2 learners of English use native-like syntactic parsing strategies in resolving relative clause (RC) ambiguities in sentences as in (1).
The dean liked the secretary of the professor who was reading a letter.

The sentence (1) is ambiguous because the relative clause who was reading a letter can be construed either with the NP1, the secretary or with the NP2, the professor. The test sentences were designed to not have any semantic cues (e.g., animacy) that determined attachment. The results show that NSs significantly preferred NP2 over NP1 disambiguation for complex NPs linked by either of or with in the experimental sentences. In contrast, neither of the L2 groups showed any preferences to attach RC to NP1 or NP2. Felser et al. (2003) concluded L2 learners are not able to use native-like syntactic parsing strategy (i.e. preference of NP2 over NP1 for resolving RC ambiguities) in the absence of semantic cues.

Marinis, Roberts, Felser, and Clahsen (2005) conducted a self-paced reading study investigating whether NSs and four groups of L2 learners of English (German and Greek groups who have wh-movement in their L1s and, Chinese and Japanese groups who have no wh-movement in their L1s) make use of intermediate gaps during the processing of long distance wh-dependencies as in (2).

In the test sentences, an intermediate gap is present as in (2a) whereas it is absent as in (2b). The authors claim that long-distance wh-dependencies can be shorter by making use of the intermediate gap. Their results show that NSs produced significantly shorter reading time for (2a) than that of (2b), indicating that NSs’ filler integration (integrating the displaced wh-phrase with its subcategorizing verb (e.g., angered) during processing) was facilitated by the presence of an intermediate gap in sentences during processing. In contrast, none of the L2 groups showed significant difference in reading time of the two conditions (2a and 2b), indicating that they were not sensitive to the intermediate gaps. The results imply that L2 learners are unable to make use of native-like syntactic parsing strategies (using intermediate gaps in long distance wh-dependencies).

However, the SSH argues that while native-like processing is not achievable for syntactic processing, it is achievable for word-level processing (e.g., word to word
translations) and morphosyntactic feature processing (e.g., gender, number, person, case, etc) between adjacent or locally related word for learners with sufficient proficiency. Keating (2010) tested sensitivity of advanced English L2 learners of Spanish to morphological markers of gender using eye tracking method. Notice that in Spanish, gender has to be marked on adjective as in (3).

(3) a. la casa blanca
    a house (Feminine) white (F)
    a white house
b. el carro blanco
    a car (Masculine) white (M)
a white car

The test sentences varied in terms of the number of words between the noun and the predicate adjective as in (4). The test sentences included one word condition, four words condition, and seven words condition. In the one word condition, there was one word between the noun and the predicate adjective as in (4a). In the four words condition, there were four words between the noun and the predicate adjective as in (4b). In the seven words condition, there were seven words between the noun and the predicate adjective as in (4c).

Each sentence type had a grammatical and an ungrammatical version.

(4) a. La tienda está abierta/*abierto los sábados y domingos por la tarde.
    The store (F) is open (F) Saturdays and Sundays in the afternoon.
b. La mochila de la estudiante está llena/*llemo de libros de texto.
    The backpack (F) of the girl is filled (F) with textbooks.
c. La falda en la tienda de ropa femenina es roja/*rojo y viene de Italia.
    The skirt (F) in the store of women’s clothing is red (F) and comes from Italy.

The results show that linear distance influenced both NSs and L2 learners’ sensitivity to gender anomalies. The study reported that native Spanish speakers were sensitive to gender violations on predicative adjectives when linear distance from the noun was one and four words while L2 learners only showed sensitivity to gender violation up to a distance of one word. The result supports the claim of the SSH that L2 learners are only able to process morphological rules between related words that have short distance (one word) between them.

While Keating (2010) confirms that morphological rules are acquirable in L2 acquisition of Spanish only at the shallow level, little research has been done on morphological rules processing in L2 acquisition of Korean. One of prominent and salient
morphological rules in Korean is case markers. The case markers (e.g. subject markers and object markers) in Korean are postpositional markers that indicate that the noun is either the subject or object in a sentence. Since case markers are the major indicators of grammatical relations, case markers make free word order (SOV and OSV) possible in Korean. The L2 acquisition of case markers in a free word order has been one of the important issues in L2 classrooms because even advanced learners often make errors about case marking system especially in OSV word order.

The SSH predicts that L2 acquisition of case markers in simple transitive sentences (SOV and OSV) should be attainable with sufficient proficiency because the case markers are locally related in a simple transitive sentence. In simple transitive sentences, case markers are attached to the two nouns as postpositional markers and the second noun immediately follows the first noun. Thus, this current study tests the claim of the SSH in terms of acquisition of OSV and case markers. Furthermore, this study attempts to find the conditions in which the acquisition occurs. With these goals in mind, this study was designed to answer the following questions:

1. To what extent do English-speaking learners of Korean use subject and object markers as cues to determine grammatical relations during the comprehension of Korean sentences?

2. Does use of case markers in the L2 become more native-like as proficiency in the L2 increases? If yes, at which stage does the sensitivity occur?

This chapter reviews the Korean grammar regarding word order and case markers. It also reviews relevant studies regarding the acquisition of OSV and case markers. Section 2 explains the definitions and examples of word order and case markers. Section 3 reviews studies regarding children acquiring the word order and case markers. Section 4 introduces relevant studies regarding second language acquisitions of word order and case markers.
CHAPTER 2

WORD ORDER AND CASE MARKERS

Grammatical relations refer to functional relationships between noun phrases (NPs) in a sentence or clause. In Korean, word order and case markers are major factors that determine grammatical relations. Grammatical relations in traditional grammar include subject, direct object, and indirect object. English speakers use a word order cue to identify grammatical relations while Korean speakers use both word order and casemarking cues. This section will provide description of the word order and the case markers.

2.1 WORD ORDER

Word order is one of the major linguistic devices that expresses various message functions (Bates & MacWhinney, 1989; Kail, 1989). Some languages (e.g., English and French) have a fixed word order system such as while others (e.g., Korean, Japanese, Turkish) have a free word order and case marking system.

English has a fixed word order of SOV in a simple active sentence. Example (5) shows the word order in English.

(5) A student reads a book.
   S (A student) V (reads) O (a book)

In English, the subject always precedes the verb and the object always follows the verb. Consequently, between subject and object, subject always precedes object. Thus, word order is a major cue in determining grammatical relations in English (Kail, 1989). In an active transitive sentence as in (5), the subject is the agent of the action and the object is the patient of the action. Thus, in English, agent of an action can be identified by word order.

In contrast to English, Korean has flexible word order particularly concerning the position of subject and object (Verb occurs typically in the sentence final position). In Korean, the subject can precede the object (SOV) or follow it (OSV). However, between the two orders, SOV and OSV, SOV is more typically used. SOV can be considered the canonical word order. However, OSV is also grammatical, and is used particularly when the object is foregrounded in discourse.
Example (6) shows the canonical word order (SOV) and Example (7) shows the non-canonical word order (OSV) in Korean.

(6) Haksayng-i chayk-ul ilke-yo.
   student-Sub book-Obj read-polite sentence ending (SE)
   S       O       V
   A student reads a book.

(7) Chayk-ul haksayng-i ilke-yo.
    book-Obj student-Sub read-SE
    O       S       V
    A student reads a book.

2.2 CASE MARKERS

Free word order in Korean is the result of a well-developed case marking system (Sohn, 1999). Case markers are thus the major indicators of grammatical relations in Korean.

In Korean, the subject and object are marked by post-positional case markers: -i and -ka for the subject and -ul and -lul for the object. The choice between the two case markers for subject (-i and -ka) and object (-ul and -lul) depends on phonological structures, namely the final phoneme of the preceding noun. For the subject marker (SM), when the subject noun ends in a vowel, the form -ka is added (8) but if the subject ends in a consonant, the form -i is used (9).

(8) Emma-ka ttal-ul pwulle-yo.
   Mother-Sub daughter-Obj call-SE
   A mother calls a daughter.

(9) Ttal-i emma-lul pwulle-yo.
    Daughter-Sub Mother-Obj call-SE
    A daughter calls a mother.

   For the object marker (OM), when the noun ends in a vowel, the form -lul is used (8) but if the noun ends in a consonant, the form -ul is used (9).

   It should be noted that in colloquial speech, case markers can be omitted. This is particularly so for OM as in (10). SM can also be omitted but, sentences without SM as in (11) and (12) often sound unnatural.

(10) Haksayng-i chayk-∅ ilke-yo.
   student-Sub book read-SE
   S       O       V
   A student reads a book.
Case markers determine grammatical relations in a sentence in Korean. Thus, as shown in (13) and (14), the NP with an OM, regardless of its position in the sentence, is object and NP with an SM, regardless of its position, in the sentence is subject.

In sentence (13), the first noun, haksayng ‘student’ is the subject and the second noun chayk ‘book’ is the object while in sentence (14), the first noun, chayk ‘book’ is the object and the second noun, haksayng ‘student’ is the subject due to case markers. Even though the word orders are different, the grammatical relations of the two nouns in (13) and (14) are the same.

In summary, English and Korean differ in the grammatical cues they use to identify grammatical roles. English has a fixed word order (SOV) and thus uses word order to identify grammatical roles. In Korean, case markers play a greater role in determining grammatical relations as word order is more variable.
CHAPTER 3

FIRST LANGUAGE ACQUISITION OF OSV WORD ORDER WITH CASE MARKERS

The previous section has shown that Korean uses flexible word order with the case marking system. This section reviews how Korean children acquire the two systems in their L1. This section will attempt to particularly examine the conditions in which Korean children acquire OSV word order and case markers in Korean.

3.1 ACQUISITION OF THE CASE MARKERS

This section reviews the developmental sequence in the acquisition of case markers and corresponding semantic roles (i.e. agent and patient roles) in Korean. No (2009) shows that Korean children acquire the casemarking system step by step. In fact, it takes more than a year for Korean children to fully acquire the case marking system. No (2009) claims that the complexity of the casemarking system is the reason for Korean children’s late acquisition of case markers and that children acquire the system in several stages.

3.1.1 Developmental Sequence of the Case Subject and Object Markers in Korean

Several studies (Cho, 1981; Kim, 1997; Lee, 1999; Zoh, 1982b) have revealed that there is a developmental sequence for acquiring case markers in Korean as L1. Developmental order found in these studies has been consistent. Korean children begin to produce case markers between 1;8 and 3;0. The first marker to acquire is SM which occurs between 1;8 and 2;0 (Clancy, 1995; Kim, 1997; Lee & Cho, 2009; and No, 2009; Zoh, 1982a). When children acquire SM, they overgeneralize the use of SM (No, 2009; Zoh, 1982a). For example, in No’s study (2009), a child (1; 9) produced SM for the object NP, i.e. the patient role (15).

(15) Mother : Cwussu masi-ess-e.
     Juice drink-PAST-Q
     Did (you) drink juice?
Child: Cwussu-ka* masi-ess-e.
    Juice-Sub drink-PAST-DECL
    (I) drank juice.

In addition, children use a wrong form. For example, in Zoh’s data (1982a), a child combined *i and *ka together to produce -ika at 1;11 and at 2;0 as in (16).

(16) a. Child: Mal-i-ka* way nemecyess-e?
    horse-Sub-Sub why fall down-PAST-DECL
    Why did the house fall down? (1;11)

b. Child: Ipwul-i-ka* eps-esu wun-tayo
    blanket-Sub-Sub not there because cry-SE
    (He/She) is crying because there is no blanket (2;0).

One to five months after the onset of SM (1;9-2;2), children begin to produce OM (Cho, 1981; Clancy, 1995; Kim, 1997; Lee, 1999; Zoh, 1982b). The children in these studies overgeneralized the use of OM less than they did for SM. Nevertheless, regarding the overgeneralization of OM, No (2009) reports that a child, H applied OM to other semantic roles such as the instrumental lo. The context and the age of production were not reported in No’s study (2009).

### 3.1.2 Acquisition of Agent and Patient Roles of the Case Markers in Korean

As evinced by several studies, Korean children begin producing the case markers between 1;8 to 3;0. The topic marker -nun, the dative marker -han-tey, the locative marker -lo, and the locative markers –ey, and -eyes are also found around this age (No, 2009; Zoh, 1982a).

Korean children seem to know the semantic roles of the nous that carry case markers. Clancy (1995) and No (2009) claim that Korean children acquire the agent role of the noun with SM and the patient role of the noun with OM. However, production of the case markers does not seem to indicate that they understand the possibility that case markers can occur in any position in the sentence. That is, when children produce SM for the agent role, they only place it in the sentence initial position (SOV). They are not able to use SM for the second position, i.e. OSV. Thus, although these children begin to produce case markers early, they do not understand yet the aspect of free word order in Korean.

Clancy (1995) claims that at an early stage, Korean children understand the semantic roles (e.g., agent and patient) of the case markers rather than the grammatical relations
(subject and object). She analyzed longitudinal data of two Korean children (Wenceng:1;8-2;8 and Hyenswu:1;10-2;10) who were recorded for a year. One of the two children, Hyenswu, started to display a strong preference of using SM for human actors at 2;0 while she did not produce OM at all in her utterances until 2;0. The other child, Wenceng, produced SM early (1;10) and used it for human actors only. Within a month (1;11), Wenceng also produced OM using it primarily for inanimate patient. This means that both Wenceng and Hyenswu understood the agent role of SM while Wenceng alone understood the patient role of OM. The result implies that even though there are individual differences in the age of acquisition, children comprehend the agent role of SM earlier than the patient role of noun with OM. It should be noted that the word order in the two children’s utterances in Clancy’s study shows SOV only. It appears, then, that these children did not produce OSV (i.e., Object/patient as the first noun).

No (2009) also reports that when children produce OM, they constantly use OM for inanimate patient and SM for agent as in (17). However, their use of the OM is restricted to the second NP in the early stages of acquisition of OM.

   Cookie Monster-Sub guitar-Obj eat-DECL
   Cookie Monster is eating a guitar. (H, 1;11)

   b. Acessi-kaa namwu-lul tenci-ess-e.
   man-Sub wooden block-Obj throw-PAST-DECL
   A man threw a wooden block. (MJ, 2:6)

3.1.3 Acquisition of Agent and Patient Roles in English

In English, subject and object are determined by word order. For example, in the sentence, "A student reads a book," the subject is "a student" because it is the first noun and object is "a book" because it is the second noun. In this simple active transitive sentence, the subject assumes the agent roles and the object assumes the patient role.

Seidl, Hollich, and Jusczyk (2003) sought to determine when infants learning English as their L1 comprehend subject/agent and object/patient in wh-question sentences (wh-questions of simple active sentences). They tested 13-, 15-, 20-month-old infants using the splitscreen preferential looking program. They showed infants a movie (e.g., a book hitting a key) and asked them a question after they watched the movie (either a question about subject:
What hit the key? or a question about object: What did the book hit?). After showing the movie accompanied by the question, two pictures were presented on the screen, a key and a book. One picture matched to the answer to the question and the other movie didn’t. Seidl et al. (2003) measured the infants’ duration of eye gaze to the two pictures. They found that infants learning English responded (i.e., looked longer at the corresponding visual) to questions about the agent/subject by 15-months of age and to both questions about subject/agent and object/patient by 20-months. The results show that infants with English as an L1 are sensitive to subject/agent roles earlier than object/patient.

Comparing the results of the studies in Korean language acquisition just reviewed and those of Seidl et al.’s study (2003), we find that there are some differences in terms of the age of acquisition of subject- and object-hood. Studies in Korean have reported that children understand the agent and patient roles between 1;8 and 3;0. Seidl et al.’s study (2003) shows that English-learning infants understand the agent and patient roles by age 2;0. The two studies used different methodology, however: Seidl et al. (2003) tested infants’ acquisition of grammatical relations through their comprehension of wh- questions. The studies in Korean tested children’s production of case markers in naturalistic conversations. Thus, the two studies are not directly comparable. However, it may be possible that English-learning children acquire subject and object earlier than Korean children because English uses only word order whereas Korean uses both word order (to some extent) and case markers. However, it may be possible that English-learning children acquire subject and object earlier than Korean children because English uses only word order whereas Korean uses both word orders (to some extent) and case markers. Overall, one can conclude sensitivity to word order and case marking (in the case of Korean) for subject-/object-hood occurs approximately during the 2nd year of life (1;8-3;0). Furthermore, the studies have shown that both Korean and English children acquire subjecthood earlier than objecthood.

3.2 Acquisition of Free Word Order

Korean has a free word order system and adult speakers produce and correctly interpret both SOV and OSV word orders without any processing difficulties. However, Korean children do not acquire the multiple components of the free word order system all at
once. This section will examine the developmental sequence of the free word order system in Korean as L1 and possible reasons for the particular order of acquisition.

### 3.2.1 Developmental Sequence of Word Order in Korean

This section will focus on the developmental sequence of word order in comprehension and production in Korean.

#### 3.2.1.1 Developmental Sequence of Word Order in Comprehension

As mentioned in section 2.1, although word order is flexible in Korean, SOV is more frequent and typical, therefore it is the canonical order. Korean children initially exhibit a strong preference for SOV word order over OSV word order (Cho, 1981; Cho et al., 2002; Chung, 1994; Kim, O’Grady, & Cho, 1995). Also, they tend to interpret the first NP as the subject/agent and the second NP as the object/patient regardless of word order (SOV and OSV) until age 4;0 (Cho, 1981; Chung, 1994; Kim et al., 1995; No, 2009).

Chung (1994) tested children’s comprehension of three types of test sentences: (1) SOV with SM and OM, (2) OSV with SM and OM, and (3) OSV with SM only. The four age groups (Group A: 2;8-3;0, Group B: 3;3-3;5, Group C: 3;7-3;10, Group D: 4;1-4;6) were asked to act out the meaning of sentences with toys. For SOV sentences, comprehension rates were higher as age increased: 67% for Group A, 83% for Group B, 100% for Groups C, and 100% for D.

However, for OSV sentences, the oldest group (4;1-4;6) acted out OSV with both SM and OM correctly 78% of the time and acted out OSV with SM only 61% of the time correctly. Even at 4;6, comprehension of OSV with SM and OM was not complete since the oldest group (4;1-4;6) interpreted OSV word order correctly only three-quarters of the time at around age 4;0. The study also found that children interpreted OSV with both SM and OM more correctly than OSV with SM only. In other words, children interpreted the first NP without OM as the agent.

In addition to Chung’s study (1994), several studies showed that Korean children were able to use case markers to comprehend OSV sentences by around 4;0 (Chung, 1994; Kim et al., 1995). Kim et al. (1995) tested Korean children’s comprehension of SOV and
OSV with and without context. Their primary goal was to examine the effect of context on children’s comprehension of OSV. The context sentence (18) was given before the test sentences and all of the test sentences had both SM and OM as in (19).

(18) Yeki namca iss-e. Thunthunha-ci.
    Here boy exist. Strong-SE (denoting certainty of information)
    Here is a boy. (He looks) strong.

Sixty-eight children (aged 2;0-8;0) heard each test sentence as in (19) and were shown two pictures (e.g., A girl knocking down a boy and a boy knocking down a girl) and children were asked to point out the picture that matched what was said (e.g., A girl knocking down a boy and a boy knocking down a girl).

(19) I namca-lul yeca-ka nemettuly-e.
    this boy-Obj girl-Sub knock down-PAST-DECL
    A girl knocks down the boy.

Kim et al. (1995) found that children had better comprehension rates of OSV sentences when context was provided. For example, children at age 4;0 comprehended 55% for OSV word order with SM and OM without context and 64% for OSV word order with SM and OM with context.

In summary, in terms of developmental sequence in comprehending word order, Korean children initially exhibit a strong preference for SOV word order over OSV word order in general before age 4;0. In addition, previous studies found that Korean children understand OSV word order better when both markers are present or when context is present.

### 3.2.1.2 Developmental Sequence of Word Order in Production

The acquisition pattern of production of word order is similar to that of comprehension. Korean children produce SOV word order before OSV word order. No (2009) examined the acquisition pattern of production of word order based on longitudinal data from three children, H (1;0-3;0), MJ (1;10-2;9), and SK (1;11-2;4). The data sources include daily diary notes and bi-weekly audio-tapes. She observed H (1;11) produced SOV word order with both SM and OM markers and four months later the child (2;3), produced OSV word order with both markers. MJ, on the other hand, produced SOV with both SM and OM at 2;6, but did not produce OSV sentences till the end of the study (2;9).
The child, SK only produced SM in incomplete sentences as in (20). SK did not produce any transitive sentences (SOV or OSV) during the study period (1;11-2;1).

(20) a. Emma-ka nwun.
    Mommy-Sub eye
    Mommy (closed her) eyes (SK, 1;11)

    mommy-Sub daddy-Sub[DAT] honey
    Mommy (calls) daddy honey (SK, 2;1)

In sum, the developmental sequence of word order in both comprehension and production is consistent across the children in these studies. The canonical word order, SOV is acquired earlier than the non-canonical word order, OSV. The findings indicate that children with Korean as their L1 acquire the free word order system in a predictable order.

3.2.2 Developmental Sequence of Word Order in Japanese

This study attempts to find the general developmental sequence of free word order. Korean is not the only language to employ this system. Japanese has a similar grammatical structure to Korean in terms of word order and morphology, employing both free word order (SOV and OSV) and postpositional case markers. Therefore, this study introduces studies about first language acquisition of the developmental sequence of word order in Japanese.

Japanese children’s developmental sequence of word order appears to be the same as Korean children: they comprehend and produce SOV earlier than OSV. Hakuta (1977) tested 48 Japanese children’s comprehension and production of four types of sentences: SOV/active, OSV/active, SOV/passive, and OSV/passive. For the comprehension task, children were asked to act out the sentences they heard using toy animals. Children’s age were between 2; 3 and 6; 2. In his study (Hakuta, 1977), most of the Japanese children processed SOV word order well. For OSV active sentences, children in the younger group (4;3-5;2) understood about 70% of the sentences and children in the older group (5;3-6;2) understood about 80% of the sentences.

For the production task, children watched videos showing animals doing various actions and were then asked to describe what they saw to a puppet toy. The sentences that the children produced were overwhelmingly in SOV order. Of the approximately a total of
1,200 utterances that the children produced, only 3 instances were OSV and only 2 instances of the passive sentence occurred. The remaining 1195 sentences were in SOV.

Otsu (1994) found that Japanese children can correctly interpret OSV sentences in an act-out task around age three or four. Otsu (1994) tested Japanese children’s (N=24) comprehension of word order. Children were asked to act out test sentences: OSV with no context, and OSV with context. Example (21) shows preceding context and Example (22) shows a test sentence.

(21) Kooen-ni ahirusan-ga imasita.
    Park-in duck-Sub be
    There was a duck in the park.

(22) Sono ahirusan-o kamesan-ga osimasita.
    The duck-Obj turtle-Sub push-PAST
    The turtle pushed the duck.

In the no-context condition, the younger group (3;1-3;11) understood 25% of the time of the OSV and the older group (4;1-4;11) understood 67% of the time of OSV word order. In contrast, in the with-context condition, the younger group (3;1-3;10) understood 83% of the time the OSV, and the older group (4;1-4;11) understood 96% of the time the OSV word order.

Hakuta (1977) and Otsu (1994)’s result converge on the finding that Japanese children are able to use case markers to comprehend OSV sentences by around 4; 0.

3.2.3 Explanations of the Earlier Acquisition of SOV than OSV in Korean

Child language researchers have examined possible explanation for the earlier acquisition of SOV than OSV word order. Several studies claim that SOV word order is acquired earlier because it is much more frequent in the input than OSV word order (Cho, 1981; No, 2009). For example, Cho (1981) found that mothers produced SOV sentences five to ten times as many as OSV sentences.

In contrast to Cho (1981), Zoh (1982a) states that children often receive OSV word order as much as SOV word order. He states that SOV word order is acquired earlier than OSV word order because SOV word order is cognitively simpler to process than OSV word order. That is, since the agent is first mentioned in SOV, it matches with the sequence of
action, going from the initiator of the action (i.e. agent) to the recipient of the action (i.e. patient). We can call this operating principle the ‘First Noun Principle.’

3.3 Acquisition of Grammatical Relation with Case Markers

Previous studies have shown the developmental sequence of case marking system and word order in Korean. Children begin to produce SM (-i/-ka) at age 1;8 to 2;0 and use SM for the NP that is assigned to the agent role. At around 1;9 to 2;3, they produce OM (-lul) for the NP that is assigned to the patient role. As summarized earlier (section 2.1), in terms of word order, Korean children understand and produce SOV word order regardless of presence of SM and OM at around age 1;11. Finally, they comprehend OSV word order regardless of presence of SM and OM at around 4;0.

As shown in the previous studies, Korean children acquire case marking system and word order in stages. No (2009) found that when children acquire case markers, acquisition of OM could not precede that of SM. In addition, when children first produce simple transitive sentences, they strictly restricted the use of OM to the second NP (No, 2009). These findings imply that children acquire the case marking system and free word order in a predictable order, and they may not skip a single step to fully acquire grammatical relations as determined by case markers.

3.4 Second Language Acquisition of Case Markers and OSV Word Order

The mechanism by which adult learners acquire a target language is different from that by which they acquire their first language. In terms of language acquisition ability, a person is considered an adult language learner by the age of 10.

In L2 acquisition of Korean in an academic setting, SM and OM are introduced at the beginning of the elementary level Korean courses. However, even learners at an advanced level often make errors related to case markers (Park, 2008). Then, the question arises: “What blocks the L2 learners’ comprehension and production of case markers?” In Second Language Acquisition (SLA), there are two important factors that can affect whether or not L2 learners successfully acquire the target language; the role of L1 knowledge and proficiency in L2. Therefore, in the next section, I will review studies about the role of L1
knowledge and proficiency in the L2 in SLA and particularly on the acquisition of OSV word order with case markers.

### 3.4.1 The Role of L1 Grammar on Acquisition of OSV Word Order with Case Markers

SLA researchers have been interested whether or not the role of L1 knowledge affects L2 acquisition because learners often use their first language (L1) grammar to process L2 in the initial stage of L2 acquisition. This is called L1 transfer. As a result, when L2 has the same features as L1, it is easier for learners to acquire the features by transferring relevant knowledge from their L1 to L2. For example, it is predicted that native Japanese speakers of learning Korean as L2 might successfully apply their L1 knowledge about case markers when they identify the agent in Korean sentences because word order and case marking systems in Japanese are similar to those in Korean.

However, when L2 structures differ from those of the L1, L1 grammar could be a barrier to achieving native-like processing in the L2. For example, English has a fixed word order and does not have case markers. Thus, if English speakers apply their L1 grammar of word order when processing Korean sentences, they would identify the first noun as the agent of word order. Such L1 knowledge (SVO word order in English) will work for SOV sentences but not for OSV sentences in Korean.

While the L1 similarity is an important factor affecting the L2 acquisition, VanPattern (2002) introduces the debate between the L1 transfer and the First Noun Principle, since the First Noun Principle asserts that L2 learners universally identify the first noun as the subject/agent regardless of their L1. VanPattern (2007) states that both L1 transfer and the First Noun Principle are plausible and more research needs to be conducted to determine which position is stronger.

In fact, several studies have examined the role of L1 word order in the acquisition of OSV word order in L2. Haznedar (2006) investigated whether beginning English speakers acquire case markers in Turkish. Turkish has free word order (SOV, OSV, OVS, and VSO) with case markers. It was predicted that using L1 knowledge in processing Turkish could not be helpful. Haznedar (2006) recorded spontaneous speech of an English-speaker learning of Turkish as L2 during the participant’s 5-month stay in Turkey. The data showed that the learner demonstrated a relatively low rate of accurate performance in case marking. The
occurrence of OM in non-canonical sentences (OSV, OVS, and VSO) was only 32% and the error rate of OM in all sentences was 91.56%. Haznedar (2006) divided the error types into three categories: suppliance (8.45%), substitution (5.94%), and missing inflection (85.62%). Example (23) shows the main error type, missing inflection.

(23) Benim ailem-∅ çok özlı-yor-um
my family-(Obj) very miss-PRESENT-1PS
I miss my family so much.

Mueller, Hirotani, and Friederici (2007) investigated whether advanced German learners learning Japanese show sensitivity to case violations in Japanese using the ERP (event related potential) method. The German language also has free word order; therefore, it is possible that the German speakers could successfully detect the case violations by using their L1 strategy. They measured native speakers and German L2 learners’ brain responses using event related potentials (ERPs) while participants were reading the test sentences in Japanese as in (24).

(24) Ichiwa-no kamo-ga ni hiki-no nezumi-o tobikoeru tokoro desu.
1 bird-Gen duck-Sub 2 small animal-Gen mouse-Obj jump over take place-SE
A duck jumps over two mice.

When learners show the sensitivity to semantic and syntactic violations, certain parts of their brains respond when they read the words that violate L2 grammar. The types of test sentences included grammatical sentences such as SOV with SM and OM as in (24) and OSV with SM and OM, and ungrammatical sentences such as SOV with case violation (SOV with 2 SMs) and OSV with case violation (OSV with 2 OMs) in Japanese. The components of ERPs, N400 (detection of semantic violation) and P600 (detection of syntactic violation) were measured to observe the learners’ sensitivity to semantic and syntactic violations. In Mueller et al.’s study (2007), both native speakers and advanced German L2 learners of Japanese showed N400 and P600 effect for case violations in Japanese sentences. Thus, Mueller, et. al.’s study (2007) show that advanced L2 learners show sensitivity to case violation similar to native speakers.

Mitsugi and MacWhinney (2010) examined the processing of Japanese sentences of different word order by native speakers and L2 learners of Japanese. To see the effect of L1 transfer, they tested two groups of L2 learners with different L1 backgrounds: English speaking intermediate-level learners and Korean intermediate-level learners. The type of test
sentences included canonical order (S-SM O-Dative O-OM V) and other orders where the orders of DAT (marking indirect object/recipient), SM, and OM are varied: (O-Dat S-SM O-OM V), (O-OM S-SM O-Dat V), and (O-Dat O-OM S-SM V). Their study measured learners’ reading times using a self-paced reading method. When participants pressed a button, the first word appeared. Each test sentence was followed by a comprehension question (a Yes/No question for identifying the agent of action). Only test sentences where the participants correctly answered the follow-up comprehension question were included in the data analysis.

When they pressed a button again, the first word reverted to dashes, and the second word appeared. Mitsugi and MacWhinney (2010) measured the time between two button-presses to measure the reading time for each word. The results show the reading times spent by both intermediate English and Korean speakers were not significantly different from that of native speakers. The findings indicated that L2 learners of both language groups could attain native-like sensitivity to word order, regardless of their L1 word orders.

In sum, contrary to the results of Haznedar (2006) who found that native-like processing strategy of case markers as cues is not attainable for L2 learners with L1s that have fixed word order, Mueller et al. (2007) & Mitsugi and MacWhinney (2010) showed that native-like processing strategy of case markers as cues is possible regardless of the degree to which L1 is similar to L2. It is important to note that the learner in Haznedar’s study (2006) was a beginner, and the learners in Mueller et al. (2007) and Mitsugi and MacWhinney (2010) were at an advanced or intermediate level. This implies that L2 proficiency can be a factor in determining acquisition of native-like processing strategy in processing OSV word order with case markers.

### 3.4.2 L2 Proficiency in Acquisition of Case Markers and OSV Word Order

Recall the SSH (Shallow Structure Hypothesis) claims that acquiring native-like processing is achievable for word-level processing (e.g., word to word translations) and morpho-syntactic feature processing (e.g., gender, number, person, case, etc) between adjacent or locally related word for learners with sufficient proficiency. According to the SSH, the negative effects of L1 transfer can be mitigated by L2 proficiency. In this section, the studies that investigated L2 acquisition of OSV word order by learners with different L2
proficiency levels will be reviewed. Iwasaki (2003) and Papadopoulou et al. (2011) conducted studies with L2 learners of different L2 proficiency (beginner, intermediate, and advanced) to see whether or not L2 proficiency is a factor that determines native-like processing.

Iwasaki (2003) investigated learners of Japanese as L2 on their knowledge and use of SOV and OSV sentences with case markers. She tested three groups of English speakers: beginner, intermediate, and advanced. Four different types of tasks were used: picture description, fill-in-the-blank, grammaticality judgment, and interview. The picture description task was designed to elicit production of Japanese sentences in different word orders; the other three tasks were designed to assess L2 knowledge of Japanese case markers in sentences of different word orders. In the picture description tasks, the participants verbally described a series of pictures. The participants were asked to start their sentences by mentioning the marked item first so that they could produce non-canonical sentences with case markers. For example, a picture of a man eating a hamburger was presented. When the hamburger was marked with dark color, participants were asked to begin a sentence with ‘A hamburger’. But, when the man was highlighted with dark color, they are asked to begin a sentence with ‘A man’. The case markers used for each NP in the learners’ utterances were coded and analyzed. If they used a correct marker or did not produce a marker that can be legally dropped, their response was scored as 1. If they corrected themselves, their response was scored as 0.5. Their response was scored as 0 when they used an incorrect marker. Iwasaki (2003) found that English-speaking learners of Japanese of all proficiency levels (i.e., beginner, intermediate, and advanced) failed to accurately produce non-canonical sentences with correct case markers. The results report that beginning students showed 66.9%, intermediates showed 65%, and advanced learners showed 66.3% accuracy rates in OSV sentences. Iwasaki (2003) concluded that L2 learners who have different L1 grammar are not able to attend to OSV word order regardless of L2 proficiency.

In addition, Papadopoulou et al. (2011) came to similar conclusions as Iwasaki (2003). They investigated whether Greek learners were able to acquire word order and case markers in Turkish. Since Greek has neither free word order nor case markers, it is predicted that applying L1 knowledge of word order to process OSV with case markers in Turkish will
result in wrong analysis. Papadopoulou et al. (2011) divided Greek learners into three groups by their proficiency in Turkish: beginner, intermediate, and advanced.

For the method, a sentence picture matching task and a grammaticality judgment task were used. In the sentence picture matching task, the participants listened to a sentence in Turkish as in (25) and two pictures were presented (e.g., a man embracing the woman and a woman embracing a man).

(25) kadın-ı erkek kucakl-iyor
        Woman-Obj man   embrace-PRES
        A man is embracing the woman.

Their test sentences included SOV with OM, OSV with OM, and SOV with no markers. Participants were asked to point out the matching picture. The result was that all groups performed better on SOV sentences than on OSV sentences. In addition, their response times for OSV sentences in the sentence picture matching task were slower than for SOV. Moreover, in the grammatical judgment task, L2 learners showed processing difficulties in correctly judging the grammaticality of OSV sentences with OM. These findings indicate that Greek learners are not able to process case markers in a similar manner to native Turkish speakers regardless of L2 proficiency.

The two studies have shown that when the L1 grammar is different from L2, even advanced learners are not able to acquire OSV word order and the case marking system. As a result, theses studies challenge the SSH’s claim that native-like morpho-syntactic feature processing (in this case, case markers) is attainable with sufficient proficiency in the target language.

In this section, I have reviewed several studies that examined the role of L1 grammar and L2 proficiency in the acquisition of OSV with case markers. These studies show conflicting results. Studies by Mueller et al. (2007) and Mitsugi and MacWhinney (2010) support that L2 acquisition of OSV with case markers is possible with sufficient proficiency regardless of the L1. In contrast, Iwasaki (2003) and Papadopoulou et al. (2011) claim that even advanced learners are not able to process OSV word order with case markers in a manner similar to native speakers regardless of their L2 proficiency.
3.5 SUMMARY

This chapter reviewed the SSH (Shallow Structure Hypothesis), Korean grammar regarding word order and case markers, studies regarding children acquiring word order and case markers, and studies regarding second language acquisition of word order and case markers.

The SSH claims that while native-like syntactic processing is not attainable in L2 acquisition, native-like processing of morphological rules is attainable. Korean uses flexible word order with the case marking system and the SSH predicts that native-like processing of using case markers as cues to comprehend OSV word order is possible in L2 acquisition.

Studies of first language acquisition have shown the conditions in which Korean children acquire OSV word order and case markers. Korean children acquire case marking system and word order in stages. For the case markers, children begin producing SM and OM at around 2 years of age. At this stage, they begin to comprehend the distinction between the SM representing the agent role and the OM representing the patient role. For the word order, Korean children comprehend and produce SOV word order earlier than OSV word order. Mastery of both word order and case markers in both SOV and OSV word orders occur at around 4 years of age. The findings imply that children acquire the case marking system and free word order in a predictable set of stages and that these stages always occur in a specific order.

Researchers studying second language acquisition examined the role of L1 grammar and L2 proficiency in the acquisition of native-like processing of using case markers as cues to comprehend OSV word order. These studies showed conflicting results. Studies by Mueller et al. (2007) and Mitsugi and MacWhinney (2010) concluded that acquiring native-like processing of using case markers as cues is possible with sufficient proficiency regardless of the L1. In contrast, Isawaki (2003) and Papadopoulou et al. (2011) concluded that even advanced learners are not able to acquire native-like processing of using case markers as cues to process OSV word order in a manner similar to native speakers.

In line with prior research on the processing of L2 grammar, the present study attempts to examine the role of L1 word order and L2 proficiency in the acquisition of OSV word order in Korean using a “matching sentences to movies” method that adapted the experimental design of Seidl et al.’s study (2003).
CHAPTER 4
THE PRESENT STUDY

The SSH states that native-like processing is achievable with sufficient proficiency for locally related morphological features. Case markers are one of the prominent morphological features in Korean. These markers are attached to the two nouns as postpositional markers and the second noun immediately follows the first noun in a simple sentence. Therefore, the SSH predicts that L2 acquisition of case markers in a simple transitive sentence should be attainable with sufficient proficiency. This current study tests the SSH in Korean, a language that has not been examined in terms of L2 acquisition of OSV sentences with case markers. This study also attempts to find the conditions under which this acquisition occurs. In addition, this study investigates the role of L1 grammar and L2 proficiency in L2 acquisition of OSV sentences with case markers. With these goals in mind, this study was designed to answer the following questions:

1. To what extent do English-speaking learners of Korean use subject and object markers as cues to determine grammatical relations during the comprehension of Korean sentences?

2. Does use of case markers in the L2 become more native-like as proficiency in the L2 increases? If yes, at which stage does the sensitivity occur?

Based on the SSH, this study hypothesizes that intermediate L2 learners of Korean but not beginners will comprehend OSV word order by using case markers as cues to identify subject/agent and object/patient of the sentence. To test the hypothesis, namely that use of case markers as cues develops from beginner’s level to intermediate level, this study adapted the design of Seidl et al.’s study (2003). As reviewed in Chapter 2 (Section 1.3), Seidl et al. (2003) tested comprehension of grammatical relations in English using wh-questions of simple active sentences. They showed infants a movie (e.g., a book hitting a key) and asked them a question (e.g., a question of subject identification: What hit the key? or a question of object identification: What did the book hit?). After the movie and the question, two pictures were presented, a key and a book. One picture matched the answer to the question and the other picture didn’t. Infants’ eye gaze to each picture was measured. This study used a similar design and was adapted to adult learners.
4.1 Participants

Participants were divided into 3 groups: a beginner group, an intermediate group, and a control group of native Korean speakers. There were 10 participants in each group. Participants in the beginner group (ages: 18–29 years) were recruited from a Korean 101 class (the first semester of Korean courses) at San Diego State University in the U.S. At San Diego State University, beginning and intermediate courses are each 5 units (i.e. five hours of class per week).

The beginner group had no experience learning Korean before attending the Korean 101 class. The present study was conducted during the third week of the Korean 101 course, just after they had learned in class the SM and OM, SOV word order and the number system in Korean. In the intermediate group (ages: 18–32 years), nine were recruited from Korean 102 and 201 classes (second and third semester of Korean courses respectively). The remaining one English speaker in the intermediate group was a San Diegan who had been learning Korean for one and a half years with a tutor. Neither the beginner nor the intermediate group had been immersed in a Korean-speaking environment. Both groups of the L2 learners were native English speakers. Four participants in the beginner group and three participants in the intermediate group had exposure to Tagalog, but they defined themselves as English-dominant speakers. Students who had a background in Japanese were excluded. Participants in the control group were all native speakers of Korean (ages: 22–39 years). They were recruited from San Diego State University and La Sierra University in southern California. These native speakers were all born and lived in South Korea till the end of their high school. They were all international students taking courses at San Diego State University or La Sierra University. They took English classes at school in Korea and came to the U.S to study in a college, but they considered themselves to be Korean native speakers.

4.2 Materials

This section will describe the design of the stimuli and stimuli sentences used in the experiment.
4.2.1 Design of the Stimuli

There were 12 test sentences and six control/distracter sentences. The test sentences were designed to determine whether English speakers learning Korean recognize grammatical and semantic relations (subject/agent and object/patient) correctly in SOV and OSV sentences by using case markers as cue. The test sentences were simple active sentences so that any student who had learned the SM and OM in Korean, and the classifier (gay for general items, kwen for books, etc) would be able to comprehend all the morphemes in the sentences. All test sentences were transitive sentences having two noun phrases (NPs), one subject/agent and one object/patient. The six distracter sentences were intransitive sentences with the verb (-iss-eyo ‘to be-SE’) and numbers as in (26).

(26) Chayk-i sey kwen iss-eyo.
book-Sub three classifier be-SE
There are three books.

The subject/agent was always marked with the SM –i or –ka. The object of the sentence did not always carry the OM –(l)ul explicitly. That is, in some sentences, the marker –(l)ul was omitted because as explained earlier in spontaneous naturalistic conversation, OM is often optional (cf. Chapter 4 Section 4.1).

It should be noted that animacy was controlled in the design. Kail (1989) reports that animacy is one of the major factors governing interpretation of grammatical relation in English. To focus the present investigation to the degree of strengths between word order and case markers only, and to eliminate the possibility that animacy is a factor in determining the subject/agent, this experiment only used inanimate stimuli items (a phone, a key, and a book). The three inanimate test items had the same color (yellow) and were similar in size so that participants could not assign the subject/agent or object/patient based on color or size. In the 12 test sentences, each of the three items (phone, key, and book) was used in four of the 12 test sentences. The same item was not used both as subject and object in the same sentence.

Even though SOV and OSV word orders are possible in Korean and the SM and OM disambiguate grammatical roles, only the canonical word order (SOV) is explicitly taught in Korean 101 and 102 courses. The non-canonical word order (OSV) is not explicitly taught. Therefore, the OSV test sentences test L2 learners’ implicit knowledge of using case markers.
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4.2.2 Stimuli Sentences

Two practice sentences (SOV and OSV word order) were provided (sentences (1a) and (1b) below). The purpose of the practice sentences was to let participants determine where the action of the item starts in the screen. The correct choices of the practice sessions were not informed. The practice sentences were used again as two of the L2 test sentences in the experiment.

Half of the test sentences were in SOV word order and the other half were in OSV word order. Among the six SOV test sentences, four had SM and OM (sentences (2a-2d), two had SM only (sentences (4a-4b). Among the six OSV test sentences, four had SM and OM (sentences (3a-3d), two had SM only (sentences (5a-5b). The filler sentences were intransitive sentences with explicit SM. Each sentence included expression of counting, thus the filler sentences tested numbers in Korean as in example (6a-6f).

Practice sentences

(1a) 열쇠가 책을 힐어요.
Yelsoy-ka chayk-ul chye-yo.
Key-Sub book-Obj hit-polite sentence ending (SE)
A key hits a book.

(1b) 열쇠를 책이 힐어요.
Yelsoy-lul chayk- i chye-yo.
Key- Obj book-Sub hit-SE
A book hits a key.

Test sentences (the order of (2a) – (6f) was randomized)

SOV structure with SM and OM

(2a) 책이 전화기를 힐어요.
Chayk-i cenhwaki-lul chye-yo.
book -Sub phone-Obj hit-SE
A book hits a phone.

(2b) 열쇠가 책을 힐어요.
Yelsoy-ka chayk-ul chye-yo.
key-Sub book-Obj hit-SE
A key hits a book.

(2c) 전화기가 책을 힐어요.
Cenhwaki-ka chayk-ul chye-yo.
phone-Sub book-Obj hit-SE
A phone hits a book.

OSV structure with SM and OM

(3a) 열쇠를 전화기가 힐어요.
Yelsoy- lul cenhwaki- ka chye-yo.
key-Obj phone-Sub hit-SE
A phone hits a key.

(3b) 전화기를 책이 힐어요.
Cenhwaki-lul chayk-i chye-yo.
phone-Obj book-Sub hit-SE
A book hits a phone.

(3c) 책을 열쇠가 힐어요.
Chayk-ul yelsoy-ka chye-yo.
book-Obj key-Sub hit-SE
A key hits a book.
(2d) 전화기가 열쇠를 쳐요.
Cenhwiki-ka yelsoy-lul chye-yo.
phone-Sub key-Obj hit-SE
A phone hits a key.

SOV structure with SM only
(4a) 책이 열쇠 쳐요.
Chayk- i yelsoy chye-yo.
book -Sub key hit-SE
A book hits a key.

(4b) 열쇠가 전화기 쳐요.
Yelsoy-ka cenhwiki chye-yo.
key -Sub phone hit-SE
A key hits a phone.

Filler sentences
(6a) 열쇠가 두 개 있어요.
Yelsoy –ka twu kay iss-eyo.
key-Sub two classifier be-SE
There are two keys.

(6b) 전화기가 두 대 있어요.
Cenhwiki-ka twu tay iss-eyo.
phone-Sub two classifier be-SE
There are two phones.

(6c) 열쇠가 세 개 있어요.
Yelsoy -ka sey kay iss-eyo.
key-Sub three classifier be-SE
There are three keys.

(3d) 전화기를 열쇠가 쳐요.
Cenhwiki-lul yelsoy-ka chye-yo.
phone-Obj key-Sub hit-SE
A key hits a phone.

OSV structure with SM only
(5a) 열쇠 책이 쳐요.
Yelsoy chayk-i chye-yo.
key book-Sub hit-SE
A book hits a key.

(5b) 책 전화기가 쳐요.
Chayk cenhwiki-ka chye-yo.
Book phone-Sub hit-SE
A phone hits a book.

(6d) 책이 세 권 있어요.
Chayk-i sey kwen iss-eyo.
book-Sub three classifier be-SE
There are three books.

(6e) 전화기가 네 대 있어요.
Cenhwiki-ka ney tay iss-eyo.
phone-Sub four classifier be-SE
There are four phones.

(6f) 책이 네 권 있어요.
Chayk-i ney kwen iss-eyo.
book-Sub four classifier be-SE
There are four books.

4.3 PROCEDURE

The participants were tested individually in front of a computer screen (the computer was a laptop with a 10.1” wide screen display with 16:9 aspect ratio). The researcher explained the procedure before the experiment detailed below. First, the two practice sentences (sentences 1a and 1b above) were given. Once the participant was familiarized with the task procedure, the 12 test sentences and six distracter sentences (2a – 2f above) were presented one by one in the randomized order by the computer program. Each sentence (including sentences of the practice session) consisted of two displays on the computer.
screen one after the other. Each display lasted 5 seconds. In the first display, a target Korean sentence appeared on the computer screen (see Figure 4.1). During this display the researcher also read the sentence aloud with a normal intonation clearly pronouncing each word. Figure 1 shows the test sentence as in (27).

(27) Eylsoy -ka chayk-ul chye-yo.
       key-Sub  book-Obj  hit-SE
       A key hits a book.

![Image of sentence display](image)

Figure 4.1 Example of sentence display.

After 5 seconds, the sentence display disappeared automatically and was followed by the second display. In the second display, two movies were presented side by side. Figure 4.2 shows an example of two movies with the trajectory of path of motion drawn in discontinued lines.

One movie (e.g., a movie showing a key hitting a book) matched the subject/agent and object/patient of the target sentence presented in the previous screen and the other movie (e.g., a movie showing a book hitting a key) did not. In each movie, an item assigned the agent role appeared from the upper left corner of the screen and hit an item assigned the patient role which was located in the middle of the bottom of the screen. After hitting the patient, the agent/subject bounced back to the upper right corner of the screen.

Each movie contained a static distracter item which was placed next to an item assigned object/patient role. For example, in Figure 4.2, the distracter, a phone, did not move and did not get hit by any object. For half of the movies, the distracters were placed on the right side of the target items and for the other half, they were placed on the left side of the target items. In Fig. 1b, in the left screen the distracter was placed on the right side of the
item assigned the patient role while in the right screen the distracter was placed on the left side of the patient item. Thus, within a display of the two alternates, the positions of the distracter were different (left or right of the patient item). The sides of the distracter were counterbalanced across displays. The participant’s task was to watch the two movies and select the movie that corresponded to the test sentence by clicking the white button below the chosen movie.

4.4 Coding

For each test sentence, the computer program automatically recorded each participant’s answer choice (‘A’ for choosing the left screen and ‘B’ for choosing the right screen) and response time (time in milliseconds between presentation of test sentence and participant’s choice). The participants’ answer choices and response times were then transferred to an Excel sheet grouping them by learner proficiency level (beginning, intermediate, and native speaker), and by types of sentences (SOV with SM and OM, SOV with SM only, OSV with SM and OM, and OSV with SM only).

4.5 Predictions

As stated in section 1, this study asks two questions:

1. To what extent do beginning English learners of Korean perceive the subject and object markers in Korean as cues to determine grammatical relations in Korean sentence comprehension?
2. As learners become more proficient in Korean, does their sensitivity to case markers increase for sentence processing in Korean? If yes, at which stage does the sensitivity occur?

Based on previous studies, I hypothesize that at a beginning level, English speakers learning Korean as L2 will use their L1 strategy (i.e. SOV word order) to process Korean sentence whereas intermediate learners will use native-like L2 strategy (i.e. case markers). The hypothesis then makes the following predictions:

1. For SOV sentences, both the beginners and intermediates will perform well and not show significant differences in correctly identifying agent/patient roles. In addition, response time will be similar in both groups. This is because both levels of L2 groups can correctly identify the agent/subject in SOV word order by using either a word order cue or case markers as cues.

2. For SOV sentences with explicit SM and OM, both the beginners’ and intermediates’ correct answer rate will not be significantly different from that of SOV sentences with SM only. The reason is that English speakers tend to assign the first noun as the agent/subject; therefore when they see SM in the first noun, they will be sure that the sentence has SOV word order.

3. For OSV sentences, the beginners’ group will show a lower rate of the correct answers than the intermediate group. It is also expected that the beginners’ group will take more time than the intermediate group in identifying subject/agent role in OSV sentences.

4. For OSV sentences with explicit SM and OM, the beginners’ group will show a higher rate of correct answers than OSV sentences with SM only. This is because the more explicit cues (case markers) there are, the better they can identify the agent and patient roles.

5. Native Korean speakers will choose the correct movies in both SOV and OSV sentences and may show a ceiling effect (100%) as the sentences are simple active sentences with only two NPs.
CHAPTER 5

RESULT

The present study varied sentences by word order and number of explicit case makers: (1) SOV with both SM and OM, (2) SOV with SM only, (3) OSV with SM and OM, and (4) OSV with SM only. To examine overall correctness as well as correctness of each type of sentence, the following analyses were conducted.

First, this study compared total number of correct choices across the three groups. Note that correct choice is a dependent variable for all statistical analyses in this study. Second, correct choices were compared across group by word order. Third, correct choices were compared by number of explicit markers and by word order. In addition, this study analyzed correct choices across the groups by stimulus items (items assigned subject roles and patient roles). Last, this study compared response time across the groups by the four types of the test sentences.

5.1 COMPARISON OF CORRECT CHOICES ACROSS THE THREE GROUPS AND ACROSS ALL SENTENCE TYPES

First, correct choices were compared across the three groups and across all sentence types. A one-way ANOVA was conducted with number of correct choice as a dependent variable, and Group (beginners, Group 1; intermediates, Group 2; NSs, Group 3) as a between-subject variable. This ANOVA revealed a main effect of Group (F (2, 27) = 12.77, p = .001).

Table 5.1 shows the mean number of correct choices for each group. Overall, Group 1 (beginners) had the lowest percentage of correct answers (79%). Group 3 (NSs) were correct in all 12 sentences. Group 2 (intermediates) performed just as well as Group 3 (96%). The result indicates that overall, Group 1 showed the most difficulty identifying the agent/patient roles in the test sentences. The results also support Prediction #3, namely that native speakers will identify the correct subject-verb relation (agent of action) in the test sentences (which were all simple sentences) regardless of word order and that their
Table 5.1. The Correct Answer Rates by Group (Beginners, Intermediates, Native speakers)

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of participants</th>
<th>Number of test sentences</th>
<th>Mean # of correct choice (SD)</th>
<th>% of correct score per group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (beginners)</td>
<td>10</td>
<td>12</td>
<td>9.5 (.90)</td>
<td>79%</td>
</tr>
<tr>
<td>2 (intermediates)</td>
<td>10</td>
<td>12</td>
<td>11.5 (.71)</td>
<td>96%</td>
</tr>
<tr>
<td>3 (native speakers)</td>
<td>10</td>
<td>12</td>
<td>12.0 (.00)</td>
<td>100%</td>
</tr>
</tbody>
</table>

performance will reach the ceiling (100%). All native speakers processed subjecthood in all SOV and OSV sentences correctly.

5.2 Correct Choices by Word Order

Correct answers of the three groups were compared separately for SOV and OSV sentences. Two way repeated-measures of ANOVA was conducted comparing participants’ correct choices by Word order (SOV vs. OSV) as a within-subject variable and Group (beginners, Group 1; intermediates, Group 2; NSs, Group 3) as a between-subject variable. The ANOVA revealed a main effect of Word order (F (1, 27) = 14.22, p = .001). However, there was also a significant interaction between Word order and Group (F (2, 27) = 7.72, p = .002). This means that difference of the overall number of correct answers by Group differed between SOV and OSV test sentences. To examine the nature of the interaction, follow-up t-tests comparing the correct answer rates of the three groups were conducted for SOV and for OSV separately.

Table 5.2 shows the mean of correct answer rates for SOV and OSV word orders for each group. As we already know from Table 1, Group 3 (NSs) showed correct answer rates of 100% in both SOV and OSV word orders. For L2 learners, both Group 1 and Group 2 showed higher rates of correct answers in SOV sentences (90% and 98% respectively) than OSV sentences (68% and 93.33%) respectively. T-tests show that for SOV word order, Group 1 and Group 2 did not differ and also that the two groups did not differ from Group 3 (NSs). The result meets Prediction #1: The three groups will not show significant differences in correct answer rates for SOV sentences.
Table 5.2. The Correct Answer Rates in SOV and OSV Word Orders

<table>
<thead>
<tr>
<th>Sentence type</th>
<th>Group</th>
<th>Number of participants</th>
<th>Number of test sentences</th>
<th>Mean # of correct choice (SD) (max 6)</th>
<th>Average % of correct score per group</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOV</td>
<td>1</td>
<td>10</td>
<td>6</td>
<td>5.4 (.96)</td>
<td>90%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10</td>
<td>6</td>
<td>5.9 (.31)</td>
<td>98.33%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>6</td>
<td>6.0 (.00)</td>
<td>100%</td>
</tr>
<tr>
<td>OSV</td>
<td>1</td>
<td>10</td>
<td>6</td>
<td>4.1 (1.19)</td>
<td>68.33%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10</td>
<td>6</td>
<td>5.6 (.69)</td>
<td>93.33%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>6</td>
<td>6.0 (.00)</td>
<td>100%</td>
</tr>
</tbody>
</table>

For OSV sentences, Group 1 showed a significantly lower rate of correct choices (68%) than Group 2 (93.3%). The result meets Prediction #2: For OSV sentences, the beginners’ group will show a lower rate of the correct answers than the intermediate group. It should also be noted that, within Group 1, the correct performance was significantly lower in OSV sentences (68.3%) than in SOV sentences (90%) (p = .01). This suggests that Group 1’s choices of agent/subject were influenced by their L1 word order or the First Noun Principle. All the above results, taken together, indicate that as beginners advance to intermediate level, English speakers learning Korean as L2 become more aware of the function of case markers and pay less attention to word order.

5.3 Comparison Across Group by Word Order and by Number of Explicit Markers

This section reports comparisons across the three groups by word order and by number of markers present (both SM and OM vs. SM only). Recall that Group 3 was 100% in all sentences. Thus, the following analyses focus on performances of Group 1 and Group 2.

5.3.1 Comparison Across Group by SOV Sentences and Number of Explicit Markers

The SOV sentence structure had two sentence types: 1) SOV with both SM and OM, and 2) SOV with SM only. The two L2 groups showed differences in performance depending whether OM was explicitly given or not. Table 5.3 shows correct answer rates in SOV with both markers and SOV with SM only.
Table 5.3. Correct Answer Rates in SOV with Both Markers vs. SOV with SM Only

<table>
<thead>
<tr>
<th>Sentence Type</th>
<th>Group</th>
<th>Number of Participants</th>
<th>Number of Test Sentences</th>
<th>Mean # of correct sentences (SD)</th>
<th>Average % of correct sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOV</td>
<td>1</td>
<td>10</td>
<td>4</td>
<td>3.5 (.97)</td>
<td>87.5%</td>
</tr>
<tr>
<td>(w/SM&amp;OM)</td>
<td>2</td>
<td>10</td>
<td>4</td>
<td>3.9 (.31)</td>
<td>97.5%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>4</td>
<td>4.0 (.00)</td>
<td>100%</td>
</tr>
<tr>
<td>SOV</td>
<td>1</td>
<td>10</td>
<td>2</td>
<td>1.9 (.31)</td>
<td>95%</td>
</tr>
<tr>
<td>(w/SM only)</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>2.0 (.00)</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>2</td>
<td>2.0 (.00)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: SOV (w/SM&OM), SOV with subject and object markers; SOV (w/SM), SOV with subject markers.

When both SM and OM were present, Group 1 answered 87.5 % and Group 2 answered 97.5 % of questions correctly. When only SM was present, Group 1 answered 95 % correctly while Group 2 answered 100% correctly for both types of sentences. Thus, both groups did slightly better when only SM was present than when both markers were present.

A repeated-measure of ANOVA was conducted comparing participants’ correct choices of subject/agent by number of explicit markers (both markers vs. single marker). No significant main effects were found for number of case markers (F (1, 27) = .96, p = .34). Also, there was no significant interaction between number of case markers and group (F (2, 27) = .42, p = .66). The results show that all three groups showed no significant differences in identifying the agent in both types of the SOV structures. This finding indicates that even beginners identified the agent in SOV word order regardless of whether OM was present or absent. The result implies that English L2 learners easily identify the agent in SOV sentences with explicit subject marker only. This is probably due to the similarity in word order between L1 and the canonical sentences in Korean.

5.3.2 OSV Sentences and Number of Explicit Markers Present

The OSV sentence structure had two sentence types; 1) OSV with SM and OM, and 2) OSV with SM only. A repeated-measure of ANOVA was conducted comparing participants’ correct choices of subject/agent by number of explicit markers within OSV. Table 5.4 shows correct answer rates in OSV with both markers and SM only.
Table 5.4. Correct Answer Rates in OSV with Both Markers and with SM Only

<table>
<thead>
<tr>
<th>Sentence Type</th>
<th>Group</th>
<th>Number of Participants</th>
<th>Number of Test Sentences</th>
<th>Mean # of correct sentences (SD)</th>
<th>Average % of correct sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSV (w/SM&amp;OM)</td>
<td>1</td>
<td>10</td>
<td>4</td>
<td>3.1(.73)</td>
<td>77.5%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10</td>
<td>4</td>
<td>3.6(.69)</td>
<td>90%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>4</td>
<td>4.0(.00)</td>
<td>100%</td>
</tr>
<tr>
<td>OSV (w/SM only)</td>
<td>1</td>
<td>10</td>
<td>2</td>
<td>1.0(.66)</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>2.0(.00)</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>2</td>
<td>2.0(.00)</td>
<td>100%</td>
</tr>
</tbody>
</table>

For the OSV sentences, when both SM and OM were present, Group 1 accurately responded to 77.5% of the test sentences while accurately responding only 50% correct when only SM was present. Thus, Group 1 identified the subject/agent better when both markers were present than when only SM was present. We will come back to this point in the following sub-section. This result is opposite to the pattern we find for SOV sentences. (Recall that in SOV sentences, Group 1 did slightly better when only SM was present). In contrast, Group 2 displayed 90 % correct answer rate when both SM and OM were present and correctly identified the subject in all of the sentences when only SM was present.

A repeated-measure of ANOVA was conducted comparing participants’ correct answer rates by Group and by number of explicit markers. There was a significant main effect of number of markers (F (1, 27) = 6.95, p = .014). Moreover, this ANOVA revealed a significant interaction between presence /absence of OM and Group (F (2, 27) = 8.54, p = .001).

Follow-up t-tests compared correct answer rates of the three groups when both SM and OM present and when only SM was present in OSV sentences. Table 5.5 shows P values of comparison across the three groups.

Table 5.5 indicates that when both markers were present, Group 1 (beginners) and Group 2 (intermediates) did not significantly differ (p = .14). However, the two groups differed significantly when only SM was present (p = .001). Also, Group 1 (beginners) differed from Group 3 (NSs) significantly in both types of OSV structures (p = .001 for both types).
Table 5.5. Comparison of Three Groups and Number of Explicit Markers in OSV Sentences

<table>
<thead>
<tr>
<th></th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSV (w/SM&amp;OM)</td>
<td>0.14</td>
<td>0.001*</td>
</tr>
<tr>
<td>P value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSV (w/SM only)</td>
<td>0.001*</td>
<td>0.001*</td>
</tr>
<tr>
<td>P value</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Performance of Group 2 (intermediates) did not differ significantly from Group 3 in either type of OSV sentence. In particular, Group 2 scored perfectly 100% just like Group 3 did for OSV structure with SM only. However, there was a marginal difference between the Group 2 and Group 3 in OSV word order when both markers were present (F (2.18) = 22.33, P = .09). This means that there is a slight tendency for Group 2 to have some difficulty in understanding OSV structure when both markers are present. This result will be discussed in the following sub-section.

In summary, the present data show that overall; there was no significant difference between Group 2 and Group 3 except a marginal difference in OSV with both markers present. However, Group 1 differed significantly from Group 2 as well as from Group 3. More specifically, Group 1’s identification of agenthood in OSV sentences with SM only was significantly lower than both Group 2 and Group 3. On the other hand, when both SM and OM were present, Group 1 differed from Group 3 only.

5.3.2.1 PROCESSING MECHANISMS FOR SOV AND OSV WORD ORDERS BY L2 GROUPS

A general conclusion can be made from the present data. Overall, Group 1 (beginners) did worse in OSV (77.5% with SM and OM and 50% with SM only) than SOV (87.5% with SM and OM, and 95% with SM only). A high rate of correct choices for SOV and a low rate for OSV in Group 1 converge on the suggestion that Group 1 used the word order cue of their L1 to process sentence meaning in Korean. This indicates that beginning
English L2 learners of Korean are influenced by First Noun Principle or the L1 word order (SOV) in comprehending OSV word order. In contrast, Group 2 used the L2 strategy (i.e. use of case markers) appropriately for both types of sentences.

**5.3.2.2 Processing Mechanisms for SOV and OSV Word Orders with Explicit Markers by L2 Groups**

The data showed that having explicit markers for both subject and object particularly helped beginners when the sentence was in OSV. They identified the agent at a high rate (77.5%) in OSV word order when both SM and OM were present. But when OM was missing in the first noun in OSV sentences, they easily accepted the first noun (object) to be a subject (50%) although the second NP had a SM. In other words, it appears that beginners need an OM to reject the First Noun Principle or the word order of L1 when the word order is OSV. In the case of SOV, not having an OM did not cause difficulty to beginners. This is probably because English L2 learners naturally tend to process first noun as an agent and second noun as a patient. As a result, when they see a SM in the first noun, they don’t necessarily need to have an OM in the second noun to be sure that the sentence has SOV word order. In fact, explicit OM in the second NP could be a distracting element for their choice, as beginners did slightly worse (87.5%) when OM was present than when it was not (95%).

In sum, the results show that the role of L1 was mitigated by L2 proficiency. Both Group 1 and Group 2 identified the agent at high rates in SOV word order, but Group 1’s identification of agent in OSV was significantly worse than that of Group 2. In addition, the number of explicit markers significantly affected beginning L2 learners’ interpretation of OSV word order. They identified the agent better in OSV word order when both SM and OM were present. This implies that beginners are also sensitive to the patient role of OM.

**5.4 Analysis by Stimulus Item**

Three inanimate stimuli items, a phone, a key, and a book, were used in the experiment. Recall that all stimuli items were of the same color (yellow) and of similar size so that the participants did not assign the subject/agent or object/patient role based on animacy, size or color. Nevertheless, the data were analyzed to confirm that the L2 groups
identified the target item as subject or object based on word order or case markers and not on the particular item.

A repeated-measure of ANOVA was conducted comparing the participants’ correct answer rates by item assigned to subject role (Key (subj), Book (subj), Phone (subj)) as a within-subject variable and Group as a between-subject variable. This ANOVA did not find a main effect for item-subject (p = .154). Furthermore, there was no significant interaction between Item and Group (p = .261). There was only a main effect of Group (F (2, 27) = 15.67, p = .0001). Since Group did not interact with a particular item that was assigned the subject role, the group difference was not due to a particular item.

A repeated-measure of ANOVA was conducted comparing participants’ correct answer rates by item assigned to object role (Key (obj), Book (obj), vs. Phone (obj)) as a within-subject variable and Group as a between-subject variable. There was a marginal difference for object item (p = .064). The descriptive statistics show the mean of correct choices. The Phone tended to be the easiest for all groups to correctly identify as object/patient (95% respectively), and the Key tended to be the hardest (87% respectively). This ANOVA showed no significant interaction between Item assigned to object role and Group (p = .145). Again, there were only significant group differences (F (2, 27) = 12.77, p = .0001). Since group did not interact with a particular item (object), the group difference was not due to a particular item.

Overall, regardless of whether the item was Book, Key, or Phone, and regardless of whether it was subject or object, Group 1 had the lowest correct answer rates for all sentence types of the three groups. These results indicate that both groups of L2 learners did not show a preference for identifying single item as a subject or an object in the stimuli sentences. This can be considered as further evidence that both Group 1 and Group 2 used word order or case markers as cues to identify grammatical roles rather than semantic information or perceptual saliency of the item.

### 5.5 Response Time

Response time, namely the latency between the presentation of stimulus and response, is one of the methods used in sentence processing experiments to determine degree of processing difficulty. Longer response time indicates more processing difficulty.
Therefore, the current study analyzed how varying word order and number of explicit case markers affected participants’ response time to determine if processing difficulties occurred for different syntactic and morphological structures.

Two way repeated measures of ANOVA with Response time and Group as a between-subject effect was performed. This ANOVA revealed a significant main effect for Group (F (2, 27) = 11.81, p = .000). However, there was no significant interaction between Word order and Group (p = .95) or number of explicit markers and Group (p = .38).

Figure 5.1 shows the response time for SOV and OSV structures by Group. As shown in Figure 5.1, this study found three results. First, as proficiency level increased, the response time for identifying the critical item as subject or object decreased. Group 1 displayed the longest response time (average 4.84 sec) followed by Group 2 (average 2.08 sec) and Group 3 (average 0.55 sec). The group difference may reflect degree of automatization of sentence processing. That is, the ability of proficient learners to process L2 sentences has been automatized to a greater degree than less proficient learners regardless of the sentence types. In Figure 5.1, overall response time of intermediates was faster than beginners, NSs processed all types of sentences faster than L2 groups, indicating their automaticity in their native language.

![Figure 5.1. Comparison between group by response time, word order, and number of explicit markers.](image-url)
Second, although not statistically significant, with the exception of SOV sentence in Group 1, all groups’ response times tended to be higher with SM only than with both SM and OM. This indicates that it is relatively easier to identify agent/patient role when both particles are present in a sentence. Furthermore, the result may imply that both native speakers and L2 learners use case markers to identify grammatical relations in Korean.

Finally, response time of Group 1 corresponded to the accuracy of the answer. The shortest response time for SOV with SM only (average 4.11 sec) converges with the highest accuracy of the choice of the sentence type (95%). Furthermore, the longest response time for OSV with SM and OM (average 5.80 sec) matches the lowest accuracy of the choice of sentence type (50%).

5.6 SUMMARY OF RESULTS

To summarize, the results of the present study demonstrate the following: First, in terms of word order, both levels of L2 groups can correctly identify the agent/subject in SOV word order regardless of the presence of case markers whereas only intermediate learners can correctly identify the agent/subject in OSV word order. Second, the response times for identifying the agent/subject role in SOV was similar in both groups whereas the beginners’ group took more time than the intermediate group in identifying agent/subject role in OSV sentences. The present study assumes that beginning English L2 learners of Korean are influenced by L1 word order (SOV) or First Noun Principle in comprehending OSV word order. Third, in terms of the presence of explicit OM, beginners identify the agent/subject better in OSV word order when both SM and OM are present, even though they do not perform well on OSV word order. This implies that beginners are also sensitive to the patient role of OM.
CHAPTER 6

DISCUSSION AND CONCLUSION

6.1 GENERAL DISCUSSION

One of the aims of this study was to test the SSH. The SSH claims that while native-like processing is not achievable for syntactic processing in complex syntactic structures (e.g., wh-movement) (Felser et al, 2003; Clahsen & Felser, 2006), it is achievable for word-level processing (e.g., word to word translations) and morphological rule processing (e.g., gender, number, person, case, etc) between adjacent or locally related words for learners with sufficient proficiency (Clahsen & Felser, 2006; Keating, 2010). Keating (2010) showed that L2 learners were able to process morphological markers of gender in Spanish when there was only one word or no gap between the noun and its morphologically marked predicate adjective.

In line with prior research on the processing of L2 grammar, the present study focused on L2 acquisition of SOV and OSV word orders with case markers in Korean. In a simple transitive sentence consisting of a subject noun, an object noun and a verb, case markers are attached to the two nouns as postpositional markers and the second noun immediately follows the first noun. Since case markers are locally related to the verb (i.e. with a distance of no more than one word) in a simple transitive sentence, the SSH predicts that L2 acquisition of case markers in simple transitive sentences (SOV and OSV) should be attainable with sufficient proficiency.

In L2 acquisition, learners are initially affected by the grammar of their L1 and their proficiency in the L2. Prior studies have investigated whether the two factors affect L2 acquisition of OSV with case markers (cf. Chapter 1). Haznedar (2006) found that native-like processing of case markers as cues is not attainable for L2 learners with fixed word order L1s. Contrary to the results of Haznedar (2006), however, Mueller et. al (2007) and Mitsugi and MacWhinney (2010) showed that native-like processing of case markers is possible regardless of L1 similarity. Thus, Mueller et al. (2007) and Mitsugi and MacWhinney (2010) support the SSH. The present study also examined the role of fixed word order in L1
grammar. When English L2 learners were given a task where they had to determine the agent of a sentence, beginning learners in this study did very well for SOV sentences (where there is a match between the first noun and agent) but not so for OSV sentences for which they also identified the first noun in OSV sentence to be the agent/subject. This indicates that they were using word order rather than case markers to determine the grammatical relations in the test sentences. Using a L1 strategy (a word order cue) blocked the L2 learners’ ability to correctly identify the agent/subject in OSV word order. These results imply that L1 word order affects L2 acquisition of OSV word order when learners have low proficiency in the L2.

The present study hypothesized that proficiency in L2 affects L2 acquisition of OSV word order. Isawaki (2003) and Papadopoulou et al. (2011) conducted studies on L2 (Japanese and Turkish) acquisition of OSV with case markers with L2 learners of different proficiency levels (beginning, intermediates, advanced). The two studies have shown that when the L1 grammar is different from the L2, L2 learners are not able to comprehend or produce OSV with case markers regardless of proficiency. However, the present study challenges the results of Isawaki (2003) and Papadopoulou et al. (2011), finding evidence in support of the SSH. In the present study, in contrast to beginners, intermediate learners showed evidence of native-like processing of OSV. Intermediate learners were able to use case marking cues to correctly identify the agent/subject in OSV sentences at an accuracy rate similar to that of the native speakers in the study. The results indicate that L2 acquisition of OSV with case markers is possible with sufficient proficiency regardless of L1 grammar. However, it is important to point out, that the types of sentences and methodology used by Isawaki (2003) and Papadopoulou et al. (2011) were different from the present study. In terms of the test sentences, Papadopoulou et al. (2011) used simple transitive sentences with only 2 NPs, but they used various verbs (e.g., to embrace, to kill, etc), and Isawaki (2003) used simple transitive and intransitive sentences with different types of verbs (e.g., to eat, to drink, to come, to walk, to exist, to marry, and to graduate). In contrast, the present study used simple transitive sentences with only one verb (i.e. chita ‘to hit’). Since only one verb was used in all test sentences, the L2 learners in the present study could have focused their attention more to case markers and thus could do better than participants in the other studies.
Furthermore, in terms of methodology, Papadopoulou et al. (2011) used a picture matching task. Their participants were asked to choose a matching picture out of four pictures (e.g., a gangster chasing a policeman, a policeman chasing a gangster, and two other distracter pictures). In addition, Isawaki (2003) used a grammaticality judgment for comprehension and picture description task for production. The participants’ task in the present study was different as it used a sentence movie matching task and the participants had only two options of movies when they were asked to choose the answer (e.g., a movie of a key hitting a book and a movie of a book hitting a key). Thus, it is possible that the relatively simple test sentences and methodology used in the present study led to much higher performance rates than the results shown in the findings of Isawaki (2003) and Papadopoulou et al. (2011). However, using simple sentences and methodology the present study has revealed that degree of sensitivity to case markers in L2 increases as a function of L2 proficiency (from beginning to intermediate level).

Another important issue that needs to be addressed is to understand the mechanisms by which L2 acquisition of case marking system and word order occur. Park (2008) points out that it is ineffective for teachers to simply give corrections on students’ case marking errors in writing assignments. Similar to Park’s claim (2008), we often observe that L2 learners are not able to comprehend or produce multiple components of a complex L2 grammar all at once even when they have received instruction on both of these grammatical features. This implies that explaining the functions of the case marking system and word order only will not help learners develop native-like processing strategies and having knowledge about case markers does not necessarily indicate that a learner will be able to successfully comprehend and produce all types of sentences with case markers.

With regard to this issue, the present study has revealed a connection between first language acquisition and second language acquisition in terms of the developmental order of case marking system and word order. Previous studies in L1 acquisition have shown that Korean children are able to understand OSV word order only after they have understood the agent and patient roles of case markers in SOV word order (cf. Chapter 1). Interestingly, L2 learners of Korean in the present study followed a similar developmental sequence. In the present study, beginners correctly identified the agent/subject in SOV sentences at a similar rate to native speakers; however, they exhibited a lower rate of correct identification of the
agent/subject in OSV sentences. This suggests that like L1 learners, word order is a stronger cue for subject/agent identification at an early stage in L2 learning. That is, the beginners were not able to use case markers for determining grammatical relations as early as they used word order as cues. The primacy of word order cue in L2 acquisition found in this study could be due to two possible reasons: (1) word order is a primary strategy in language learning in general regardless of the language involved (in both L1 and L2), or (2) it was primarily used by the beginners in this study because their L1 (English) used fixed word order and they transferred their L1 strategy to L2 at a beginning stage. The present study could not tease apart between those two possibilities because it examined only one L2 population, namely English learners of Korean whose L1 has fixed word order.

Even though they are not able to comprehend OSV word order in a manner similar to native speakers, the beginners were still sensitive to the patient role of OM. The evidence is that the beginners were better in identifying the agent/subject in OSV word order when an explicit OM was present than in OSV word order when an explicit OM was not present. As OM is an explicit marker for objecthood, it helps beginners to eliminate a possibility for subjecthood.

On the other hand, intermediate L2 learners of Korean correctly identified the agent/subject in OSV word order at a rate similar to native speakers. The results of the beginners and intermediates, taken together, imply that L2 learners follow the same path as Korean children in comprehension of OSV word order with case markers: L2 learners comprehend the agent and patient roles of SM and OM in SOV word order prior to comprehending OSV word order.

6.2 LIMITATIONS

The results show that while native speakers and intermediate learners can comprehend OSV word order tested in the study, beginning learners had difficulties in comprehending OSV word order. However, this study has several limitations.

First, this study did not include a proficiency test for the two L2 groups (beginners and intermediates). It is possible that there were individual differences within both groups.

Second, there may have also been individual differences in working memory span, which could have affected the results. (Recall that the target sentence was given only in the
first screen display and during the second display of two choice movies the audio was silent.)

High span and low span L2 learners might show different performance due to their working memory span.

Third, regarding the test sentences, while SOV and OSV word orders with both markers had four test sentences, SOV and OSV word orders with SM only had two test sentences. Including a greater number of sentences with SM only may have led to more plausible results.

Fourth, the test sentences in the present study were all simple sentences with just two nouns (subject and object) and a verb. Sentences with more complexity (e.g., sentences with oblique NPs or adverbial phrases, sentences with relative clause, different types of verbs) probably would have posed more difficulty for both beginners and intermediates. If so, a study with more complex sentences would identify processing differences between intermediates and native speakers.

Fifth, even though this study attempted to examine the learners' understanding of grammatical relations, OSV sentences are less frequent than SOV sentences in Korean. OSV word order was not explicitly taught in class. Nevertheless, it is possible that intermediate learners had more exposure to OSV word order in Korean outside the classroom (e.g., friends, media, etc) than beginning learners since the duration of time spent learning Korean was longer for the intermediate learners. However, the present study did examine implicit transfer of knowledge about case marking to OSV (after having learned the case markers in SOV sentences). The results show that beginners could not transfer the knowledge immediately after having learned about the case markers in SOV sentences, but took some time (at least two semesters) to do so.

6.3 Teaching Implications

The current study showed that acquiring reliance of case marking cue is attainable with a certain L2 proficiency in adulthood. However, as a number of other research studies have shown, acquiring the use of case marking cues is difficult for L2 learners. Iwasaki (2003) claimed that the reason for L2 learners’ inaccurate production of OSV sentences in Japanese is due to incorrect processing strategies, rather than the lack of grammatical knowledge.
To solve L2 learners’ processing problem, VanPattern (2002) suggests Processing Instruction (PI). PI first identifies learners’ potential problematic processing strategies and provides activities that push learners away from the problematic processing strategies (VanPattern, 2002). In the case of using case markers to determine grammatical relations in OSV, relying on word order would be the problematic processing strategy. Consider the following OSV sentence:

(28) Sonyeon–ul kay-ka ttalakass-eyo.
   
   boy-Obj  dog-Sub  chase-PAST-SE
   
   A dog chased a boy.

In Example (28), beginning learners might process sonyeon ‘boy’ as an agent/subject because it is the first NP in the sentence. Thus, they could possibly translate the sentence as A boy chased a dog. According to PI, a teacher needs to structure the activities to help learners focus on the case markers. To help learners focus on the case markers, it is important that a teacher points out that markers in Korean are post-positions, not pre-positions so that English L2 learners pay attention to ends of nouns rather than what comes before nouns.

Based on VanPattern (2002), the following activity can be suggested: Learners read or hear sentences such as exemplified in (28). Then, a teacher asks learners to identify the agent/subject of the action such as Nwu-ka ttalakass-eyo? ‘Who chased whom?’ This basic suggestion proposed by VanPatten can be modified to include activities such as a picture-matching game or a drawing game for comprehension tasks (listening activities), and description activities for a production task (speaking activities). For the picture-matching task, a teacher assigns two students in a group. One student reads a sentence, such as exemplified in (28), and the other student finds a matching picture out of two pictures. For the drawing game, a student reads a sentence, such as exemplified in (28), and his/her activity partner draws a picture based on the sentence they just heard. These activities can be assigned for an individual or group. When students find a matching picture or draw the description of the sentence together, strong students may help weaker students notice their incorrect interpretation of an utterance as the two work together to negotiate the meaning of the sentence. This pushes the weaker student to alter their faulty processing strategy so that they can correctly interpret the sentence. In addition, the description activity can be used for a production task. In this activity, a teacher asks learners to describe a picture aloud. At this time, teacher could make a rule that learners are only allowed to start a sentence with NP and
OM. These activities would lead learners to pay attention to case markers rather than word order. Note that these adaptations involving interactions, feedback, and spontaneous productions are no longer considered part of PI. A teacher needs to provide both SOV and OSV sentences and lead the learners to use case marking cues rather than word order to determine grammatical relations.

6.4 CONCLUSION

The goal of this study was to examine to what extent and at what stage of acquisition L2 learners with a fixed word order L1 comprehend OSV word order with case markers as compared to native speakers. For this purpose, two L2 groups of different proficiency levels (beginners and intermediates) and native speakers participated in an experimental study where they had to determine the agent/subject in both SOV and OSV sentences with explicit and implicit case markers. The results indicate that beginners did not show a native-like sensitivity to case markers in OSV sentences while intermediate learners did so.

The present study answers the research questions as follows:

1. **Research question 1**: To what extent do English-speaking learners of Korean use subject and object markers as cues to determine grammatical relations during the comprehension of Korean sentences? The present study concludes that intermediate adult L2 learners (who have taken Korean courses for two or three semesters) are able to comprehend simple OSV sentences with case markers in a manner similar to native speakers. In other words, it takes at least two semesters of instruction in Korean for English-speaking L2 speakers to comprehend OSV sentences using case markers as cues.

2. **Research question 2**: Does use of case markers in the L2 become more native-like as proficiency in the L2 increases? If yes, at which stage does the sensitivity occur? The present data show that the answer for the first question is ‘yes.’ For the second question, the present study shows that the increase occurs as a continuum from beginning to intermediate levels. This study shows evidence that from the beginning level, learners (i.e. beginners) are aware of the subject (–i/ka) and the object (–(l)ul) case markers. The evidence is that the beginners better identified the agent in OSV sentences when OM was present than when OM was absent. In addition, beginners’ response time was faster in OSV sentences when OM was present than when OM was absent. These indicate that they were sensitive to the presence of the OM and correctly assigned its NP to the patient role eliminating the possibility that it could be an agent. These findings suggest that beginners are at the preliminary stage of acquiring the processing ability (using case markers as cues) to comprehend OSV word order.

On the other hand, intermediate learners showed a greater degree of sensitivity to case markers than beginners. The evidence is that intermediate learners showed
sensitivity to grammatical relations with case markers in both SOV and OSV sentences. Unlike the beginners in this study, they were able to use case markers as cues in determining grammatical relations in OSV sentences. Thus, this study concludes that adult L2 learners increase their sensitivity to case markers for sentence processing in Korean as they become more proficient in Korean.

The second part of the question asked at which stage the sensitivity occurs. The results showed that sensitivity increases gradually from the beginning to the intermediate levels. Beginners were aware of the agent role of SM and the patient role of OM in SOV sentences, but not grammatical relations with case markers. The reason for beginners’ lower degree of sensitivity than that of intermediates is that beginners were strongly influenced by SVO word order in English or the First Noun Principle. However, the effects of a fixed word order in L1 or the First Noun Principle on learners’ sentence processing decreased in the intermediate group. Rather, the intermediate learners relied on case marking cues. This result can be generalized to conclude that the role of L1 decreases as L2 proficiency increases. Furthermore, sensitivity to L2 grammar increases as L2 proficiency increases.

In conclusion, this study supports the SSH by demonstrating that adult L2 learners with intermediate proficiency are able to comprehend simple OSV sentences with case markers despite structural/processing differences of L2 from their L1 grammar.
REFERENCES


