Acquisition of Scrambling of Negative Polarity Items (NPIs) by Heritage Korean Speakers

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1. Introduction

This study investigates the acquisition of scrambling of negative polarity items (NPIs) by Korean-English bilinguals who are 'heritage speakers' (Montrul, 2008; Polinsky and Kagan, 2007) in the United States. Specifically, I investigate how scrambling of the Korean negative polarity item (NPI), *amwuto*, 'anyone' is acquired by the adult heritage Korean speakers who grew up as bilinguals since early childhood from birth to middle childhood in a minority language environment. I compare two different heritage speaker groups based on their age of acquisition of the dominant language and examine whether and how they acquire age-appropriate levels of proficiency in the family language as compared to native language adult speakers in full command of their family language (Montrul, 2008).

The present study examines the properties of object NPI scrambling in Heritage Korean, addressing how heritage language is maintained from and/or, if any, affected by the dominant language word order, and whether and how age of onset of bilingualism plays a role in heritage language acquisition.

2. Theoretical Background
2.1. Negative Polarity Items in Korean

A negative polarity item (NPI) is a word or a phrase that canonically appear in a sentence when it is accompanied by a negative licensing element.

(1) a. John did **not** meet **any**one.
   b. *John met **any**one.

(2) a. John-un **amwuto** mannaci **ani** hayssta.
   J-TOP anyone see   not did
   'John didn't meet anyone.'

   b. *John-un **amwuto** mannassta.
    J-TOP anyone met
    '*John met anyone.'   (K.-W. Sohn, 1995, p. 1)

The sentences in (1b) and (2b) are ungrammatical, because *anyone* in (1b) and *amwuto* 'anyone' in (2b) are not licensed by the negation markers *not* and *an(i)* in English and Korean, respectively.[1]

For the investigations of NPI scrambling properties in Heritage Korean, the animate NPI *amwuto* 'anyone' is tested in the present study.

[1] The *amwu*-type NPIs in Korean can have neither a nominative nor an accusative Case marker.

2.2. Locality Condition of Negative Polarity Items in Korean

Along with the requirement that NPIs must be licensed by a negative element as shown in (2), there is a locality condition between NPIs and a licensor, i.e., the negator, *an* in Korean. Consider the following sentences as in (3-4).

(3) a. I do**n't** believe **[**that John loves **anyone]**.
    b. I do**n't** believe **[**that John thinks **[**that Mary loves **anyone]]**.

(4) a. na-nun **[**John-i **amwuto** ttaylici **ani** hayssta-ko**]** mitnunta.
       I-TOP J-NOM anyone hit   not   did-COMP   believe
       'I believe that John did not hit anyone.'

   b. ?*na-nun **[**John-i **amwuto** ttayliessta-ko**]** mitci **ani** hanta.
         I-TOP J-NOM anyone hit-COMP   believe not do
         'I do not believe that John hit anyone.'   (K.-W. Sohn, 1995, p. 9)

In English, the licensing domain of NPIs is either local as in (1a) or long-distant as in (3a-b). In other words, the relation between NPIs and negator in English needs not be clausemate. However, in Korean the sentence in (4a) is grammatical when the NPI *amwuto* and the negator *an(i)* occur in the same clause. That is, NPIs are subject to the "Clausemate Condition" (Choe, 1988). Thus, the sentence in (4b) becomes ungrammatical since the NPI *amwuto* does not co-occur with the negator *an* in the same clause.[2]

2.3. Scrambling of Negative Polarity Items in Korean

Since short-distance and long-distance scrambling in Korean show the properties of both A- and A-bar movement (S.-H. Park, 1994), reconstruction effects occur both in short-distance and long-distance scrambling in Korean. A question arises as to whether short-distance and long-distance scrambling of NPIs in Korean differ from other DPs in reconstruction effects.
Consider the following NPI constructions in Korean in (5-6).

(5) a. [$_{TP}$ Mary-ka   **amwuto** salangha-ci **an**-h-ass-ta]
          M-NOM   anyone   love-CI   NEG-do-PST-DEC
          'Mary did not love anyone.'

   b. [$_{CP}$ **amwuto$_k$** [$_{TP}$ Mary-ka   **t$_k$** salangha-ci **an**-h-ass-ta]]
           anyone   M-NOM   love-CI   NEG-do-PST-DEC
           'Mary did not love anyone.'
           (Intended) 'ANYONE, Mary did not love.'

(6) a. [$_{TP}$ John-i [$_{CP}$ Mary-ka **amwuto** salangha-ci **an**-h-ass-ta-ko]   sayngkak-ha-yss-ta]
          J-NOM   M-NOM anyone love-CI   NEG-do-PST-DEC-COMP   think-do-PST-DEC
          'John thought that Mary did not love anyone.'

   b. [$_{TP}$ John-i [$_{CP}$ **amwuto$_k$** Mary-ka **t$_k$** salangha-ci **an**-h-ass-ta-ko]   sayngkak-ha-yss-ta]
           J-NOM   anyone   M-NOM   love-CI   NEG-do-PST-DEC-COMP   think-do-PST-DEC
           'John thought that Mary did not love anyone.'
           (Intended) 'John thought that ANYONE Mary did not love.'

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[2] The grammaticality of the sentence (4b) is actually very marginal because there is variability in the grammaticality of non-local embedded object NPI condition in Korean.

c. ?✓[$_{CP}$ **amwuto$_k$** [$_{TP}$ John-i [$_{CP}$ Mary-ka **t$_k$**   salangha-ci   **an-**h-ass-ta-ko]
   anyone   J-NOM   M-NOM   love-CI   NEG-do-PST-DEC-COMP
   sayngkak-ha-yss-ta]]
   think-do-PST-DEC
   'John thought that Mary did not love anyone.'
   (Intended) 'ANYONE, John thought that Mary did not love.'

In short-distance scrambling in simple sentences as in (5b), the scrambled NPI *amwuto* in (5b) is licensed by the negation in the base position in the simple sentence as in (5a), whereas in short-distance scrambling in complex sentences as in (6b), the scrambled NPI *amwuto* in (6b) is licensed by the negation in the embedded base position in the complex sentence as in (6a).

On the other hand, in long-distance scrambling as in (6c), the grammaticality of the sentence is degraded a little since the scrambled NPI *amwuto* and the negator *an* are not clausemate at S-structure. However, the scrambled NPI *amwut*o in the matrix clause in (6c) is also licensed by the negation in the embedded base position as in (6a). The grammaticality of NPI scrambling in (5-6) indicates that the scrambled NPI *amwuto* reconstructs to the base position to be licensed by the negation, satisfying the Clausemate Condition.

3. Acquisition Research
3.1. L1 and L2 Acquisition of Scrambling

Research on the acquisition of scrambling has been done in two types of scrambling: obligatory scrambling (e.g., in Dutch and German) and non-obligatory scrambling (e.g., in Japanese and Korean). On the optionality of scrambling in child L1 when obligatory scrambling is used in adult L1, various kinds of accounts (syntax, semantics, pragmatics, and their interface) have been presented (Schaeffer, 2000; Barbier, 2000; Unsworth, 2005). In Dutch, scrambling of the specific object DPs is obligatory (over negation), but in child Dutch, specific object DPs scramble optionally. Reporting that children of all ages (2;8-6;3) imitated scrambled sentences in a target-like fashion, Barbier (2000) claims that children are sensitive to the interpretive constraints on scrambling over negation, since scrambled definite DPs result in a sentential negation reading, whereas a contrastive reading is obtained when definite DPs appear in a non-scrambled position. Schaeffer (2000) reports that nominal specificity is optionally marked at age 2, while object scrambling in child Dutch is close to adult Dutch by age 3.

Based on the observations of optional scrambling of the specific (definite or referential) DPs in child Dutch, Schaeffer (2000) argues that scrambling in Dutch is triggered by discourse-related feature, i.e., specificity (or referentiality, p. 24), claiming that since specificity is underspecified in early child grammar, child Dutch show optional scrambling due to a lack of pragmatic principle (i.e., lack of shared knowledge).

With regard to L2 acquisition of scrambling, Unsworth (2005) examines whether English-speaking adult and child L2 learners go through the same developmental sequence in the acquisition of object scrambling in Dutch as L1 Dutch children. Unsworth assumes that scrambling is movement to VP-external position, because of interpretative (semantic) effects. That is, scrambling over negation is obligatory for specific direct object DPs, but it is not allowed for non-specific direct object DPs. Unsworth observes that both adult and child L2 learners pass through the same optional scrambling stage, and claims that syntactic-semantic factors may play a more important role in Dutch scrambling acquisition than pragmatic knowledge. Unsworth continues to argue that since a specific interpretation cannot be transferred from the L1, the acquisition of the interpretive constraints on scrambling demonstrates that learners can overcome a poverty-of-the stimulus problem.

3.2. L1 and L2 Acquisition of Scrambling in Korean and Japanese

Languages like Korean and Japanese have different scrambling typology from Dutch and German in that scrambling in Korean and Japanese is not obligatory. Research on the acquisition of scrambling in Korean and Japanese has focused on the issues as to whether case morphology triggers scrambling in L1 or whether L1 children know syntactic structure of scrambling through understanding

reconstruction effects (B. Kang, 2005; Murasugi and Kawamura, 2004). B. Kang (2005) argues that the accusative Case marker triggers scrambling in Korean-speaking child L1, supporting the generalization that there is a relationship between an overt case marker and free word order. Pointing out that the acquisition of scrambling invokes a learnability issue since Korean children do not receive sufficient input of scrambling utterances from their mothers, Kang (2005) reports that children (2;2-3;2) generally acquire scrambling successfully at early age (i.e., age 3), after they succeed in an accusative test. Kang, thus, argues that children will acquire scrambling only if they acquire an overt accusative Case marker (see Boškovič, 2004).

Hayashibe (1975) examines how Japanese-speaking children (3;8-6;8) interpret the scrambled sentences, and reports that scrambling is acquired quite late in the development of grammar, arguing that children employ the thematic hierarchy, i.e., the first DP as agent and the second DP as patient. Otsu (1994) observes that 3-to-4 year-old Japanese-speaking children interpret scrambled sentences correctly when appropriate discourse contexts are provided. Otsu argues that performance of scrambling in child L1 depends on discourse contexts as a 'bridging function'. Murasugi and Kawamura (2004) also demonstrate that children (age 2 to 6) acquire scrambling at very early age (age 2) and, furthermore, children show the knowledge of the anaphor *zibun* through understanding of reconstruction effects in binding, indicating that children know syntactic structure of scrambling and binding relations.

4. The Study
4.1. Research Questions

I address three research questions in connection with the acquisition of NPI scrambling in Heritage Korean as follows:

(i) Do heritage Korean speakers maintain Korean-specific prpperties of NPI scrambling in Korean?

(ii) Do heritage Korean speakers show transfer effects from English?

(iii) Does age of onset of acquisition of English play a role in the degree of acquisition of NPI scrambling in Korean? That is, because of longer exposure to the heritage language and later onset of acquisition of the dominant language, do early sequential heritage Korean speakers (AOA 7-10) show overall more knowledge of Korean than simultaneous heritage Korean speakers (AOA 0-2)?

4.2. Method

Participants. A total of eighty-four adult participants (ages 18-42) were tested in three groups: twenty-five simultaneous heritage Korean speakers (AOA 0-2; mean age 20.0, ages 18-23), twenty-five early sequential heritage Korean speakers (AOA 7-10; mean age 20.0, ages 18-23)[3], and thirty-four native Korean speakers (mean age 31.3, ages 18-52) as the control group.

The fifty Korean simultaneous and early sequential heritage speakers residing in the United States were recruited. Most of the heritage Korean participants were college undergraduate students while two of them are a graduate student and a college graduate. The thirty-four fully native Korean speakers were recruited. The native Korean speakers were limited to those who had been in the United States less than one year at the time of testing (mean month 4.68, months 1-10), to reduce potential L2 English influence on L1 Korean.

Korean Proficiency Test. All participants completed a standardized Korean proficiency cloze test which included 20 items (a perfect score, 100), examining various properties of Korean grammar (vocabulary, case-marking, verbal morphology, conjunctions, reading comprehension, etc.). The Korean proficiency test was adopted from the Korean Program of the Sungkyun Language Institute at Sungkyunkwan University in Korea.[4]

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[3] For the present study, I delimit AOA ranges of "late L2 child learners" to 7-10, instead of Montrul's (2008) AOA ranges, 7-12, in order to avoid a potential onset of puberty in late childhood. Thus, the present study focuses on "middle" child L2 acquisition rather than "late" child L2 acquisition.

[4] The same proficiency test was used in J.-H. Kim (2007).

To investigate whether age of onset of acquisition of the dominant language (i.e., English) plays a role in NPI scrambling, heritage Korean participants with intermediate and advanced levels of Korean proficiency were screened for the present study. Thirty-four native Korean speakers also participated in the experiment as the control group.

Main Tasks. The main task in the present study was an acceptability judgment task. The acceptability judgment task consists of sentence types with a context-given question and answer format both in simple and complex sentences. In the acceptability judgment task, each experimental sentence was preceded by a prompt sentence that gives the context. The participants were instructed to judge whether a response sentence is natural or acceptable from a given question. The participants were asked to circle Y(es) or N(o), regarding the sentence types of responses containing the Korean NPI *amwuto* 'anyone' in the local and non-local scrambling conditions: NPI scrambling (i.e., short-distance and long-distance NPI scrambling).

Stimuli. The experiment tested with 20 sentence types either in simple or complex sentences. Each sentence type consists of 5 sentences. The acceptability judgment task in the experiment included a total of 100 test sentences with 50 grammatical sentences and 50 ungrammatical sentences. Among a total of 100 sentences, 40 of which were target items (25 grammatical and 15 ungrammatical), while the other 60 items were fillers and distractors. The numbers of the fillers and distractors were adjusted for grammatical and ungrammatical sentences (25 grammatical and 35 ungrammatical) to the numbers of the grammatical and ungrammatical sentences of the target items.

The sentences in (7a-c) below are the sentence types to test the locality condition in object NPI scrambling.

(7) a. Locality after Scrambling (Simple Sentences)
    ✓*amwuto* Minki-ka *t* mit-ci *an*-h-ass-e
     anyone M-NOM   trust-CI NEG-do-PST-DEC
     'Minki did not trust ANYONE.'
     (Lit.) 'ANYONE, Minki did *not* trust.'

  b. Locality after Scrambling (Short-distance Scrambling)
    ✓[na-nun [*amwuto* Minki-ka *t* mit-ci *an*-h-ass-ta-ko**]**   sayngkak-ha-y]
     I-TOP   anyone   M-NOM   trust-CI NEG-do-PST-DEC-COMP   think-do-DEC
     'I think that Minki did not trust ANYONE.'
      (Lit.) 'I think that ANYONE, Minki did *not* trust.'

  c. Non-locality after Scrambling (Long-distance Scrambling)
    ?✓[*amwuto* [na-nun [Minki-ka *t* mit-ci *an*-h-ass-ta-ko]   sayngkak-hay]]
      anyone I-TOP   M-NOM   trust-CI NEG-do-PST-DEC-COMP   think-do-DEC
      'I think that Minki did not trust ANYONE.'
       (Lit.) 'ANYONE, I think that Minki did *not* trust.'

In (7a-c), the NPI *amwuto* and the negator *an* are clausemate in the base sentences (i.e., at D-structure). Even if the scrambled NPI and the negator do not co-occur in the same clause after scrambling, the NPI can reconstruct to the base position such that the sentence remains grammatical. The scrambled NPI *amwuto* and negator *an* in (7a-b) are in the local licensing domain on the surface (i.e., at S-structure). However, the scrambled NPI *amwuto* and negator *an* in (7c) do not remain in the local licensing domain on the surface, but the NPI scrambled sentence becomes grammatical. The grammaticality of the scrambled sentence in the non-local NPI licensing domain as in (7c) is obtained since the scrambled NPI *amwuto* reconstructs to the base position.

5. Results
5.1. Korean Proficiency Test

Mean scores in percentage of the Korean proficiency test for both heritage Korean speaker groups and the native Korean control group are shown in Table 1.

Table 1. Mean acceptability on the Korean proficiency test (in percentage) of the simultaneous heritage Korean speakers, early sequential heritage Korean speakers and native Korean speakers

Group		N	Mean	SD	Range
Simultaneous Heritage Speakers	(HKI)	25	71.0	14.1	50-95
Early Sequential Heritage Speakers	(HKII)	25	81.0	11.47	50-95
Native Korean Speakers	(NK)	34	96.8	4.1	85-100

A one-way ANOVA (Analysis of Variance) showed that there was a significant between-subjects difference ($F(2, 81) = 47.848$, $p < .0001$). Post-hoc comparisons by the Bonferroni adjustment revealed that the performance of the simultaneous heritage Korean speakers (HKI) was lower than that of the early sequential heritage Korean speakers (HKII) and of the native Korean controls (NK). HKI was significantly different from both HKII ($p=.003$) and NK ($p < .0001$). The performance of the early simultaneous Korean speakers (HKII) was lower than that of native speakers (NK) and HKII was significantly different from NK ($p < .0001$). In comparison between HKI and HKII, since HKI and HKII were significantly different from each other ($p = .003$) in the proficiency test, age effects exist in acquisition of Korean in general.

Thus, the present study investigates whether incomplete knowledge of Korean in general and age effects between HKI and HKII suggested by the proficiency test results will correlate with the mean acceptability scores on the main tasks for NPI object scrambling in Korean.

5.2. Fillers: Ordinary DP Scrambling

Fillers consist of sentences where ordinary DPs scramble and filler items were presented to compare participants' acceptability of NPI scrambling in the target items.

(8) Ordinary DP Scrambling: Simple Sentences (Short-distance Scrambling)
    (a) Short-distance DP Scrambling (OSV)
        (e.g., *Chelswu-ACC Yenghuy-NOM hit*.)

(9) Ordinary DP Scrambling: Complex Sentences
    (a) Short-distance DP Scrambling
        (e.g., *I think that Yenghuy-ACC Chelswu-NOM met*.)

    (b) Long-distance DP Scrambling
        (e.g., *Yenghuy-ACC I think that Chelswu-NOM met*.)

Results for the filler items are presented in Table 2.

Table 2. Mean acceptability of DP scrambling

Sentence Types	HKI (n = 25) Mean (SD) Range	HKII (n = 25) Mean (SD) Range	NK (n = 34) Mean (SD) Range
Short-distance DP Scrambling in Simple Sentences	74 (30.4) 0-100	77 (37.3) 0-100	94 (15.2) 40-100
Short-distance DP Scrambling in Complex Sentences	69 (29.5) 0-100	68 (34.6) 0-100	92 (13.0) 60-100
Long-distance DP Scrambling in Complex Sentences	53 (39.1) 0-100	54 (35.5) 0-100	75 (32.8) 0-100

The mean acceptability of the object DP scrambling conditions is presented in Figure 1.
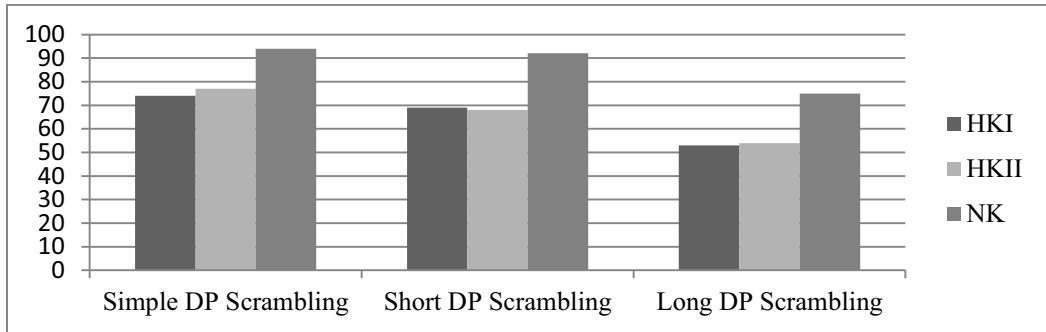
Figure 1. The mean acceptability of the object DP scrambling conditions

To determine the group-differences, one-way ANOVAs were conducted on the types of filler sentences. Grammatical fillers showed significant differences between the groups. Results for short-distance DP scrambling in simple sentences (OSV) showed significant differences between the groups $(F(2, 81) = 4.728, p = .011)$. Post-hoc comparisons by the Bonferroni adjustment revealed that there was a significant difference between simultaneous heritage speakers (HKI) and native speakers (NK) $(p = .020)$, while there was a marginal significance between early sequential heritage speakers (HKII) and native speakers (NK) $(p = .063)$. Results for ungrammatical short-distance VP scrambling (SVO) showed significant differences between the groups $(F(2, 81) = 9.494, p < .0001)$. Post-hoc comparisons by the Bonferroni adjustment revealed that there were significant differences between HKI and NK $(p = .003)$, and between HKII and NK $(p = .001)$.

Results for short-distance DP scrambling in complex sentences showed a significant difference between the groups $(F(2, 81) = 8.513, p < .0001)$. Post-hoc comparisons by the Bonferroni adjustment revealed that there were significant differences between HKI and NK $(p = .003)$, and between HKII and NK $(p = .002)$. Results for long-distance DP scrambling showed a significant difference between the groups $(F(2, 81) = 3.708, p = .029)$. However, post-hoc comparisons by the Bonferroni adjustment revealed that there were marginal differences between HKI and NK $(p = .065)$, and between HKII and NK $(p = .081)$. Throughout the filler sentence types (DP scrambling), there were no significant differences between heritage speaker groups.

Thus, results on grammatical DP scrambling both in simple and complex sentences indicate that simultaneous speakers pattern with early sequential speakers and that both heritage speaker groups were less accurate in DP scrambling than native speakers. In terms of long-distance DP scrambling, native speakers showed a lower acceptability than in short-distance DP scrambling both in simple and complex sentences. Scrambling distance also plays a role in the acceptability of all three groups.

5.3. NPI Scrambling

Eight sentence types of the target items in NPI scrambling (object NPIs) were originally tested in the experiment. This paper only includes NPI scrambling where base NPI sentences are locally licensed at D-structure:

(10) NPI Scrambling: Local NPI Licensing at D-structure
    (a) Simple Sentences: Short-distance Scrambling
    (e.g., *Anyone Chelswu did not hit*.)

    (b) Complex Sentences: Short-distance Scrambling
    (e.g., *I that anyone Chelswu did not hit believe*.)

    (c) Complex Sentences: Long-distance Scrambling
    (e.g., *Anyone I that Chelswu did not hit believe*.)

The sentence types of NPI scrambling of the base local licensing conditions (Simple NPI Scrambling, Short NPI scrambling, and Long NPI Scrambling) were provided to compare how participants identify the grammaticality of NPI scrambling in different levels of scrambling distance. Results for the local base conditions in NPI scrambling are presented in Table 3.

Table 3. Mean acceptability of the local base conditions in NPI scrambling

Sentence Type	HKI (n = 25) Mean (SD)	HKII (n = 25) Mean (SD)	NK (n = 34) Mean (SD)
NPI Scrambling in Simple Sentences	63 (31.5)	42 (30.7)	72 (33.0)
NPI Scrambling in Short-distance in Complex Sentences	76 (32.7)	66 (36.3)	87 (26.0)
NPI Scrambling in Long-distance in Complex Sentences	62 (34.1)	54 (35.4)	68 (34.5)

Figure 2 shows the mean acceptability of the local conditions in NPI scrambling.
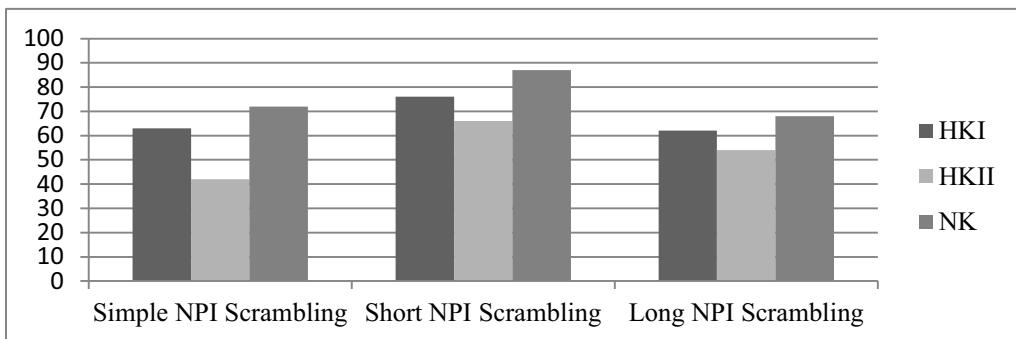

Figure 2. The mean acceptability of the local base conditions in NPI scrambling

5.3.1. Simple NPI and Short NPI Scrambling

When scrambling of NPI licensing in simple sentences (Simple NPI Scrambling) was compared to scrambling of NPI licensing in short-distance in complex sentences (Short NPI Scrambling), there was a significant effect for sentence type ($F(1, 81) = 32.210$, $p < .0001$). The effect for group was significant ($F(2, 81) = 5.831$, $p = .004$). However, there was no significant interaction between sentence type and group. Post-hoc comparisons by the Bonferroni adjustment revealed that there was a significant difference between HKII and NK ($p = .003$). There were no significance differences between HKI and HKII or between HKI and NK.

In order to investigate scrambling-distance complexity, follow-up repeated measures ANOVAs were conducted with sentence type in each group. HKI ($F(1, 24) = 5.885$, $p = .023$) and HKII ($F(1, 24) = 17.799$, $p < .0001$) showed significant differences. NK also showed a significant difference within the sentence types ($F(1, 33) = 10.007$, $p = .003$).

Results show that sentence complexity of the same short-distance NPI scrambling conditions in simple and complex sentences seems to play a role in the acceptability of all three groups.

5.3.2. Simple NPI and Long NPI Scrambling

When scrambling of NPI licensing in simple sentences (Simple NPI Scrambling) was compared to scrambling of NPI licensing in long-distance in complex sentences (Long NPI Scrambling), there was a significant effect for group ($F(2, 81) = 4.202$, $p = .018$). However, there were no significant effects for sentence type and for interaction between sentence type and group. Post-hoc comparisons by the

Bonferroni adjustment revealed that there was a significant difference between HKII and NK (p = .015). There were no significance differences between HKI and HKII, or between HKI and NK.

With respect to sentence type with Simple NPI Scrambling and Long NPI Scrambling, there was a significant difference in HKII (F(1, 24) = 4.320, p = .049). However, there were no significant differences in HKI and NK within the sentence types.

Results show that scrambling distance of simple and long-distance in complex sentences does not seem to play a role in the acceptability of simultaneous heritage speakers (HKI) and native speakers.

5.3.3. Short NPI and Long NPI Scrambling

When scrambling of NPI licensing in short-distance in complex sentences (Short NPI Scrambling) was compared to scrambling of NPI licensing in long-distance in complex sentences (Long NPI Scrambling), there was a significant effect for sentence type (F(1, 81) = 27.445, p < .0001). The effect for group was marginally significant (F(2, 81) = 2.438, p = .094). However, there was no significant interaction between sentence type and group. Post-hoc comparisons by the Bonferroni adjustment revealed that there was a marginally significant difference between HKII and NK (p = .092). There were no significance differences between HKI and HKII or between HKI and NK.

With respect to sentence type with Simple NPI Scrambling and Long NPI Scrambling, there were significant differences in HKI (F(1, 24) = 8.397, p = .008) and NK (F(1, 33) = 19.925, p < .0001), while HKII showed a marginally significant difference HKI (F(1, 24) = 4.076, p = .055).

Results show that scrambling distance of short-distance and long-distance in complex sentences plays a role in the acceptability of all three groups. Thus, scrambling distance overall seems to play a significant role in all three groups' knowledge of NPI scrambling.

However, results also revealed that all three groups were more accurate in short-distance scrambling of the embedded clauses in complex sentences than in short-distance scrambling in simple sentences and long-distance in complex sentences. In other words, since there is no case-marker with the Korean NPI *amwuto*, it may be harder for speakers to interpret scrambled NPI without a case-marker in the initial position of the sentence. It is possible that an uncase-marked NPI to the left of matrix subject is incorrectly interpreted as a subject NPI such that the sentence is considered as ungrammatical.

Thus, in terms of acceptability of NPI scrambling, it is not just sentence complexity or even distance of NPI scrambling that play a role in speakers' acceptability but speakers' interpretation strategy of preference to an initial DP with a case marker in the sentence.

5.3.4. One-way ANOVA Results of NPI Scrambling

In order to test how much both heritage speaker groups' acceptability of NPI scrambling of NPI licensing conditions is different from that of native speakers, one-way ANOVAs were conducted on the three sentence types of NPI scrambling of the NPI conditions both in simple and complex sentences (i.e. short-distance and long-distance). A one-way ANOVA with NPI scrambling in simple sentences (Simple NPI Scrambling) showed that there was a significant difference between the groups (F(2, 81) = 6.460, p = .002). Pairwise comparisons by the post-hoc Bonferroni adjustment revealed that there was a significant difference between HKII and NK (p = .002) and there was a marginally significant difference between HKI and HKII (p = .071). There was no significant difference between HKI and NK. Since a marginal significance stems from higher acceptability by HKI, not by HKII, the results do not support presence of the presence of age effects.

A one-way ANOVA with NPI scrambling in short-distance in complex sentences (Short NPI Scrambling) showed that there was a significant difference between the groups (F(2, 81) = 3.413, p = .038). Pairwise comparisons by the post-hoc Bonferroni adjustment revealed that there was a significant difference between HKII and NK (p = .033). However, there were no significant differences between HKI and HKII, or between HKI and NK.

Lastly, a one-way ANOVA with NPI scrambling in long-distance in complex sentences (Long NPI Scrambling) showed that there was no significant difference between the groups. Age effects between HKI and HKII were not detected.

Results from one-way ANOVAs show that although HKII showed a significant difference from NK in Simple NPI Scrambling and Short NPI Scrambling, HKI did not show any difference from NK throughout the all three sentence types. That is, HKIs' acceptability of NPI scrambling of the locality base condition is higher than HKII such that HKI allows NPI scrambling to the same degree as NK. In comparisons with simultaneous heritage speakers (HKI) and early sequential heritage speakers (HKII), there were overall no significant differences, except for a marginal significance in Simple NPI Scrambling. Age effects between HKI and HKII were not detected in NPI scrambling of local NPI base sentences.

Thus, results indicate that both heritage Korean speaker groups (especially, simultaneous heritage speakers (HKI)) know the language-specific property of NPI scrambling of local NPI base sentences in Korean, and the results show that to somewhat similar degree simultaneous heritage Korean speakers (HKI) maintain the use of NPI scrambling in local licensing in the base sentences, less affected by the dominant language (English). Age effects between HKI and HKII were not detected in NPI scrambling of local NPI base sentences.

5.4. Comparison between NPI Scrambling and DP Scrambling
5.4.1. Simple NPI Scrambling and Simple DP Scrambling

The mean acceptability of the NPI scrambling and object DP scrambling conditions in simple sentences is presented in Figure 3.
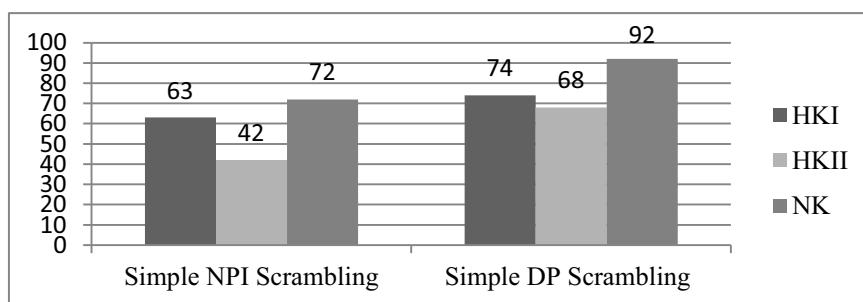

Figure 3. Mean acceptability of the NPI scrambling and DP scrambling conditions in simple sentences

A repeated measures ANOVA was conducted to compare the simple NPI scrambling condition (Simple NPI Scrambling) and the simple object DP scrambling condition (Simple DP Scrambling). There was a significant effect for sentence type ($F(1, 81) = 39.048$, $p < .0001$). The effect for group was also significant ($F(2, 81) = 6.614$, $p = .002$) and there was a significant interaction between sentence type and group ($F(2, 81) = 3.475$, $p = .036$). Post-hoc comparisons by the Bonferroni adjustment revealed that there was a significant difference between HKII and NK ($p = .002$). Difference between HKI and NK was marginally significant ($p = .086$).

With respect to sentence type with Simple NPI Scrambling and Simple Object DP Scrambling, HKII showed a significant difference ($F(1, 24) = 28.157$, $p < .0001$), while HKI showed a marginally significant difference ($F(1, 24) = 2.991$, $p = .097$). NK also showed a significant difference within the sentence types ($F(1, 33) = 14.328$, $p = .001$).

Thus, results indicate that all three groups overall know the difference between local simple NPI scrambling and simple object DP scrambling. That is, all three groups overall showed less acceptability of NPI scrambling than of DP scrambling. Both heritage speaker groups showed less acceptability than native speakers.

5.4.2. Short NPI Scrambling and Short DP Scrambling in Complex Sentences

The mean acceptability of the local short-distance NPI scrambling and short-distance DP scrambling conditions in complex sentences is presented below in Figure 4.
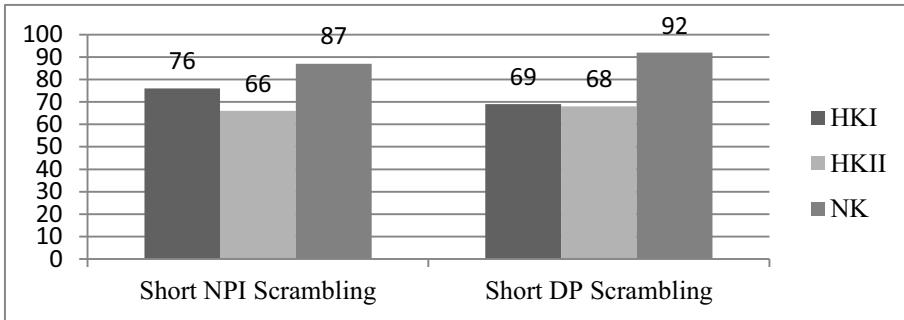
Figure 4. Mean acceptability of the short-distance NPI scrambling and short-distance
DP scrambling conditions in complex sentences

A repeated measures ANOVA was conducted to compare the short-distance NPI scrambling condition (Short NPI Scrambling) and the short-distance object DP scrambling condition (Short DP Scrambling). There was a significant effect for group (F(2, 81) = 7.565, p = .001). However, the effects for sentences type and interaction between sentence type and group were not significant. Post-hoc comparisons by the Bonferroni adjustment revealed that there were significant differences between HKI and NK (p = .021), and between HKII and NK (p = .001).

With respect to sentence type with Short NPI Scrambling and Short DP Scrambling, there were no significant differences throughout all three groups.

Thus, results indicate that all three groups allow short-distance NPI scrambling and short-distance DP scrambling in complex sentences to the same degree. Both heritage speaker groups pattern differently from native speakers. That is, both heritage speaker groups showed less acceptability than native speakers.

5.4.3. Long NPI Scrambling and Long DP Scrambling

The mean acceptability of the long-distance NPI scrambling and long-distance DP scrambling conditions in complex sentences is presented in Figure 5.
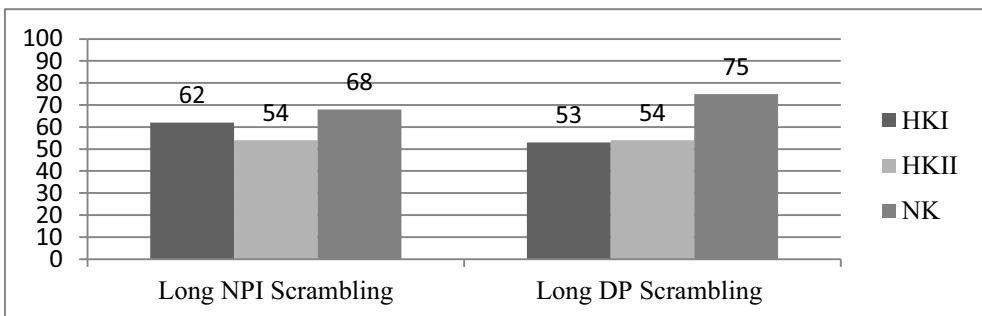

Figure 5. Mean acceptability of the long-distance NPI scrambling and long-distance
DP scrambling conditions.

A repeated measures ANOVA was conducted to compare the long-distance NPI scrambling condition (Long NPI Scrambling) and the long-distance DP scrambling condition (Long DP Scrambling). There was a significant effect for group (F(2, 81) = 3.171, p = .047). However, the effects for sentences type and interaction between sentence type and group were not significant. Post-hoc comparisons by the Bonferroni adjustment revealed that there was a marginally significant difference between HKII and NK (p = .070).

With respect to sentence type with Long NPI Scrambling and Long DP Scrambling, there were no significant differences throughout all three groups.

Thus, results indicate that all three groups allow short-distance NPI scrambling and short-distance DP scrambling in complex sentences to the same degree. Heritage speakers (especially, simultaneous speakers) pattern with native speakers. That is, heritage speakers allowed both NPI and DP scrambling as much as native speakers did. Thus, all three groups show the same degree of acceptability of both scrambling properties.

To sum up, in simple sentences, all three groups know the difference between NPI scrambling and object DP scrambling. In comparison between groups, heritage speakers (especially, HKII) showed less acceptability than native speakers. Both heritage speaker groups know the difference to the same degree.

On the other hand, in complex sentences, all three groups know the similarities between short and long-distance local NPI scrambling and short and long-distance object DP scrambling. In comparison between groups, early sequential heritage speakers (HKI) showed less acceptability than native speakers. Both heritage speaker groups know the similarities to the same degree.

6. Discussion
6.1. Heritage Language Maintenance

From the results of the syntactic properties of object NPI scrambling in Korean, the Heritage Language Maintence hypothesis is partially supported, in that heritage Korean speakers show somewhat similar patterns with native Korean speakers, or less affected acceptability in the salient Korean-specific NPI properties of object NPI scrambling. However, both heritage speaker groups overall show significant differences from native speakers in ordinary DP scrambling.

6.2. Dominant Language Transfer

With regard to the Dominant Language Transfer, the NPI scrambling results do not seem to support the hypothesis. Unlike ungrammatical long-distance object NPI licensing, evidence of potential transfer from English non-local NPI licensing (S-J Kim 2012), heritage Korean speakers (especially, HKI) did not show less acceptability compared to native Korean speakers in NPI scrambling. Thus, the results may indicate that transfer effects were not found in NPI scrambling in Heritage Korean.

On the contrary, potential transfer effects may occur when syntactic properties in Korean are different from English properties as in other type of scrambling, i.e., case-marked ordinary DP scrambling. Ordinary DP scrambling in the fillers was not successfully acquired by both heritage speaker groups. Thus, the absence of scrambling properties in English potentially influences the acquisition of ordinary DP scrambling in Heritage Korean. That is, the acquisition of the Korean properties different from English word order is potentially affected by dominant language transfer. However, in addition to syntactic differences, there are possible other reasons why heritage speakers pattern differently from native speakers. Heritage speakers may not fully acquire pragmatic use of scrambling unlike native speakers. Even though they have the knowledge of scrambling from the given contexts, they prefer not to use scrambling.

Even though the absence of scrambling in English potentially affects the acquisition of ordinary DP scrambling in Korean, potential transfer effects do not seem to occur in scrambling of NPIs. However, notice that no significant differences between heritage speakers and native speakers came from low acceptability from native speakers as the control group. If NPI scrambling is compared with DP scrambling, there were no significant differences in heritage speakers (especially simultaneous heritage speakers), either. In other words, ordinary DP scrambling patterns with NPI scrambling in Heritage Korean. Thus, it is hard to tease apart whether there are no potential transfer effects in the acquisition of NPI scrambling or whether there are potential transfer effects in the acquisition of NPI scrambling like the acquisition of DP scrambling but native speakers as the control group did not perform on NPI scrambling as well as they did on DP scrambling.

6.3. Age Effects

Although there was a marginally significant difference between simultaneous heritage speakers (AOA, 0-2) and early sequential heritage speakers (AOA, 7-10) in local NPI scrambling in simple sentences (Local Simple Scrambling), the results do not support Age Effects because simultaneous heritage speakers showed higher acceptability than early sequential heritage speakers. Age effects were not detected in filler sentences (ordinary DP scrambling) either. However, age effects were found selectively in the distractor sentences (i.e., ungrammatical *wh*-in situ and ungrammatical causative case morphology). Thus, although age effects are not supported in the acquisition of NPI scrambling, age effects can be selectively borne out depending on the properties of morphology and syntax.

6.4. L1 Attrition

Potential L1 attrition by early sequential heritage speakers might be statistically inferred in NPI scrambling in simple sentences, based on the results of early sequential heritage speakers' lower acceptability of the condition than that of the simultaneous heritage speakers (p = .071†). However, L1 attrition is hard to determine because as we saw early sequential heritage speakers pattern with simultaneous speakers in ordinary DP scrambling. Thus, this is not the issue of L1 attrition in scrambling in general. More specifically, the issue lies in why early sequential show significantly lower acceptability of NPI scrambling in simple sentences. The acquisition of NPI scrambling concerns not only with scrambling itself but also with the NPI property of no case morphology. Thus, it is suggested that early sequential heritage speakers show more conservative views of case morphology in interpretation of scrambled NPI sentences than simultaneous heritage speakers.

6.5. NPI Scrambling and DP Scrambling

In ordinary object DP scrambling, both heritage speaker groups showed less acceptability than native speakers and there were no significant differences between heritage speaker groups. In object NPI scrambling, simultaneous heritage speakers (HKI) showed the same acceptability as native speakers. However, early sequential speakers (HKII) generally showed less acceptability than native speakers. In comparisons between NPI scrambling and ordinary DP scrambling, results showed that NPI scrambling patterns with DP scrambling in short and long-distance scrambling in complex sentences. However, NPI scrambling patterns differently from DP scrambling in short-distance scrambling in simple sentences.

The results indicate that like native speakers, both heritage speaker groups know the similarities and difference between NPI scrambling and DP scrambling. The difference may stem from speakers' interpretation strategy that speakers prefer a case-marked matrix subject DP to an uncase-marked matrix subject NPI in NPI scrambling. In other words, an uncase-marked NPI may cause ambiguity in parsing grammatical functions of DPs in the scrambled sentence. Thus, NPI scrambling is different from ordinary DP scrambling in that (i) NPIs are not case-marked, which causes ambiguous interpretations when NPIs scramble to the left of the matrix subject position and (ii) scrambled NPIs still need to be clausemate with negation both at D-structure and S-structure.

7. Conclusion and Some Theoretical Implications

The results of the present study provide some theoretical implications to the research of heritage language acquisition. The current study of negative polarity items (NPIs) in Heritage Korean is generally in line with the findings of the literature in heritage language acquisition.

In terms of the acquisition of NPI scrambling, since the results show that heritage Korean speakers overall know the NPI scrambling as much as native controls, it was argued that the Korean-specific property of NPI scrambling is also maintained by heritage Korean speakers, assuming that there is no potential transfer from English. However, as pointed out, these results were challenged by the acceptability of native controls and by comparison with the results of ordinary DP scrambling in the fillers. I suggested that since NPI scrambling is even challenging to native Korean speakers because

native Korean speakers along with heritage Korean speakers find it harder to interpret scrambled sentences with uncased-marked NPIs. The results of case-marked ordinary DP scrambling in the fillers confirm that native controls showed native acceptability of short-distance ordinary scrambling in simple and complex sentences. Thus, if native speakers' variability came from potential ambiguity because of no case markers to interpret scrambled sentences and if they relied more on given contexts to obtain the grammaticality of scrambled NPI sentences, more elaborated discourse contexts are needed to compare the acceptability of native speakers (and heritage speakers) in the future study.

Unlike obligatory scrambling triggered by "specificity" (or "referentiality") in Dutch and German (Barbier, 2000; Unsworth, 2005; Schaeffer, 2000), scrambling in Korean and Japanese is not obligatory and scrambling may occur when a case marker (e.g. the accusative Case marker) play a role in interpreting the scrambled sentences (B. Kang, 2005). Since scrambling is acquired in early age (around age 3) (B. Kang, 2005; Otsu, 1994) or even in earlier age (age 2) (Murasugi and Kawamura, 2004) in Korean and Japanese, and scrambling is a language-specific property, heritage Korean speakers in the present study were predicted to acquire (or maintain) accusative case-marked ordinary DP scrambling in the fillers. Acceptability in ordinary DP scrambling by heritage speakers can be accounted for by the nature of non-obligatory scrambling, and/or by insufficient input including instruction of scrambling. Notice that (object) DP scrambling in Korean is neither obligatory nor canonical, and scrambled sentences are even considered as uneducated such that the use of scrambled sentences is generally not preferred or even discouraged, especially in written speech in Korean. Furthermore scrambling is not instructed at school. It is also possible that there may be potential transfer effects from English word order. Thus, it is not clear to tease apart what factors may cause lower acceptability in scrambling when the properties are non-canonical.

With respect to age effects, the results in the present study turn out to be of more interest to the age effects in heritage language acquisition in general. In connection with age effects and input, as is already pointed out (Polinsky, 1997; Montrul, 2005), early exposure to heritage language does not guarantee success in all areas of grammar, because of the interrupted acquisition of and the reduced amount of input to the heritage language. Simultaneous heritage Korean speakers in my study also show some subtle differences from native speakers in NPI scrambling, even if there were no significant differences between heritage speakers and native controls. With regard to effects of age of onset of the dominant language (e.g., English) between different heritage language speaker groups, Kim et al. (2009) show that results from late sequential heritage Korean speakers (AOA, 11-19) are similar to those from native speakers, indicating that simultaneous heritage Korean speakers show dominant language transfer or incomplete acquisition. J.-H. Kim (2007) also shows that simultaneous heritage Korean speakers are more similar to native Korean speakers than English learners of Korean, although both groups show some transfer effects. Thus, results in J.-H. Kim (2007) and Kim et al. (2009) indicate that age of onset of the dominant language (e.g., English) or bilingualism (e.g., English and Korean) plays a significant role in heritage language acquisition.

On the contrary, the findings of age effects in the present study were different from those from J.-H. Kim (2007) and Kim et al. (2009), in that simultaneous heritage speakers did not differ from early sequential heritage speakers (AOA, 7-10). One might consider the fact that the group categories of the sequential heritage speakers in comparison are different (e.g., late vs. early sequential). However, notice that age effects were detected in the proficiency test and some distractors (e.g., morpho-syntactic properties: passives, causative, relative clauses). The results indicate that there are potential age effects between simultaneous and early sequential heritage speakers in the acquisition of Korean grammar in general. However, age effects did not display in the acquisition of scrambling. Despite early sequential heritage speakers' lower acceptability of NPI scrambling (of grammatical base sentences), the differences between simultaneous and early heritage speakers were not significant. Ordinary DP scrambling in the fillers also shows that both heritage speaker groups showed lower acceptability in cased-marked DP scrambling than native speakers, and that both heritage speaker groups patterned similarly.

Thus, age effects may selectively play a role in the acquisition of different morpho-syntactic properties and complex structures (e.g., relative clauses[5]). Based on the observations, it is suggested that age effects may display when the morpho-syntactic properties are complex and harder to acquire. Further research is needed whether and how simultaneous and early sequential heritage speakers differ in the acquisition of various morpho-syntactic properties.

In terms of L1 attrition, although early sequential heritage speakers (HKII) show lower acceptability than native speakers in NPI (and DP) scrambling, it is also difficult to determine whether potential L1 attrition causes lower acceptability of HKII in scrambling, because there is no adequate comparison group[6] to evaluate whether early sequential heritage speakers already acquired the scrambling properties at their early age.

In the heritage grammar of NPI scrambling, simultaneous heritage speakers overall allow NPI scrambling as much as native speakers do. NPI scrambling is of importance in terms of heritage speakers strategies of the interpretations of NPI scrambling. In NPI scrambling of grammatical base NPI sentences, like Native Korean, reconstruction effects take place in long-distance NPI scrambling in Heritage Korean.

Future directions of the study will include further investigations of acquisition of scrambling of negative polarity properties (NPIs) in Korean. It is suggested that to investigate whether different levels of NPI animacy play a role in improving the interpretations of NPI scrambling in Korean, scrambling of an inanimate NPI *amwukesto*, "anything" needs to be examined. Thus, it is hoped that further investigations will provide more understanding of syntactic properties and heritage language acquisition of negative polarity items (NPIs).

References

Barbier, Isabella. (2000). An experimental study of scrambling and object shift in the acquisition of Dutch. In Susan M. Powers and Cornelia Hamann (Eds.), *The acquisition of scrambling and cliticization* (pp. 41-69). Dordrecht: Kluwer.

Bošković, Željko. (2004). Left branch extraction, structure of NP, and scrambling. ms., University of Connecticut.

Choe, Hyon-Sook. (1988). *Restructuring parameters and complex predicates: A transformational approach*. Unpublished doctoral dissertation, MIT.

Choi, Jinyoung. (2007). *Free choice and negative polarity: A compositional analysis of Korean polarity sensitive items*. Unpublished doctoral dissertation, University of Pennsylvania.

Hahn, Kyung-Ja Park. (1981). *The development of negation in one Korean child*. Unpublished doctoral dissertation, University of Hawaii.

Hayashibe, Hideo. (1975). Word order and particles: A developmental study in Japanese. *Descriptive and Applied Linguistics 8*, 1-18.

Kang, Bosook. (2005). A learnability puzzle in scrambling. *Proceedings of the 29 Annual Boston University Conference on Language Development* (pp. 331-340). Somerville, MA: Cascadilla Press.

Kim, Hi-Sun Helen. (2005). *Processing strategies and transfer of heritage and non-heritage learners of Korean*. Unpublished doctoral dissertation, University of Hawaii.

Kim, Jong-Bok. (1995). *The grammar of negation: A lexicalist, constraint-based perspective*. Unpublished doctoral dissertation, Stanford University.

Kim, Ji-Hye. (2007). *Binding interpretations in adult bilingualism: A study of language transfer in L2 learners and heritage speakers of Korean*. Unpublished doctoral dissertation, University of Illinois.

Kim, Ji-Hye, Montrul, Silvina, and Yoon, James. (2009). Binding interpretations of anaphors by Korean heritage speakers. *Language Acquisition 16*, 3-35.

Kim, Kyung-Kook. (2001). *Korean negation and the licensing condition on negative polarity items*. Unpublished doctoral dissertation, University of Hawaii.

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[5] H.-S. Kim (2005) also shows that heritage Korean speakers performed better than L2 (Korean) learners on relative clause in Korean. However, O'Grady et al. (2001) find that heritage speakers were not different from L2 learners in relative clauses in Korean.

[6] Polinsky (2011) address L1 attrition in the acquisition of relative clauses in Heritage Russian. Polinsky compares child heritage speakers with adult heritage speakers.

Kim, Sok-Ju (2012) *The syntax and acquisition of negative polarity items in heritage Korean*. Unpublished doctoral dissertation, University of Kansas.

Montrul, Silvina. (2005). Second language acquisition and first language loss in adult early bilinguals: Exploring some differences and similarities. *Second Language Research, 21*, 199-249.

Montrul, Silvina. (2008). *Incomplete acquisition in bilingualism: Re-examining the age factor*. John Benjamins Publishing Company.

Murasugi, Keiko and Kawamura, Tomoko. (2004). On the acquisition of scrambling in Japanese. *Language and Linguistics 5*, 131-151.

O'Grady, William, Lee, Miseon, and Choo, Miho. (2001). The acquisition of relative clauses by heritage and non-heritage learners of Korean as a second language: A comparative study. Journal of *Korean Language Education*, 283-294.

Otsu, Yukio. (1994) Early acquisition of scrambling in Japanese. In Teun Hoekstra and Bonnie D. Schwartz (Eds.), *Language acquisition studies in generative grammar* (pp. 253-264). John Benjamins Publishing Company.

Park, Soon-Hyuck. (1994). *A- and a-bar dependencies and minimalism in movement theories: Scrambling and binding.* Unpublished doctoral dissertation, University of Wisconsin-Madison.

Polinsky, Maria. (1997). American Russian: Language loss meets language acquisition. In Wayles Browne, Ewa Dornisch, Natasha Kondrashova, and Draga Zec (Eds.), *Annual Workshop on Formal Approaches to Slavic linguistics. The Cornell Meeting, 1995*. Ann Arbor: Michigan Slavic Publications.

Polinsky, Maria. (2011). Reanalysis in adult heritage language: New evidence in support of attrition. *Studies in Second Language Acquisition, 33,* 305-328.

Polinsky, Maria and Kagan, Olga. (2007). Heritage languages: In the 'wild' and in the classroom. *Language and Linguistics Compass, 1*(5), 368-95.

Schaeffer, Jeannette C. (2000). *The acquisition of direct object scrambling and clitic placement: Syntax and pragmatics*. Amsterdam/Philadelphia: John Benjamins.

Sohn, Keun-Won. (1995). *Negative polarity items, scope, and economy*. Unpublished doctoral dissertation, University of Connecticut.

Song, Min Sun. (2003). *The first and second language acquisition of negative polarity items in English and Korean*. Unpublished doctoral dissertation, University of Hawaii.

Unsworth, Sharon. (2005). *Child L2, adult L2, child L1: Differences and similarities. A study on the acquisition of direct object scrambling in Dutch*. Lot dissertation series, Utrecht, the Netherlands.

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