

CHILDREN'S INTERPRETATION OF THE KOREAN REFLEXIVE PRONOUNS

CAKI AND CAKI-CASIN

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ABSTRACT

This dissertation explores the native Korean children's ability to distinguish between the two Korean reflexives, *caki* and *caki-casin*. In both intra-sentential binding and extra-sentential discourse binding, long distance binding can be possible for *caki* but not for *caki-casin*; and lexical-semantic information of verbs affects the interpretation of *caki* but not of *caki-casin*.

To assess knowledge of *caki* and *caki-casin*, four Truth-Value Judgment experiments were conducted with native Korean-speaking children (and adult controls). Experiment 1 and Experiment 2 examined whether Korean-speaking children's antecedent choices differ according to the reflexive types, in intra-sentential binding (Experiment 1) and extra-sentential discourse binding (Experiment 2). The results show the tendency that children allowed long-distance and local interpretation for *caki*, while they allowed local interpretation only for *caki-casin*, which is adult-like. This suggests that Korean-speaking children know the antecedent domains for the two reflexives.

Experiment 3 and Experiment 4 investigated whether semantic properties of the clause-mate verb play a role in the interpretation of *caki* but not of *caki-casin*, in intra-sentential binding (Experiment 3) and extra-sentential discourse binding (Experiment 4). The results reveal that the native Korean-speaking children did not show sensitivity to the semantic properties of the clause-mate verb in interpreting reflexive *caki*, which was unlike the adult controls. For *caki-casin*, however, the children allowed a local antecedent only, which was adult-like.

The four experiments show that Korean-speaking children at ages 4–6 come to know the antecedent domains for the two reflexives, but that the children are not fully developed in integrating semantic properties of the clause-mate verb into the interpretation of *caki*.

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LIST OF ABBREVIATIONS

NOM	Nominative case
ACC	Accusative case
COMP	Complementizer
COP	Copula
DAT	Dative case
DEC	Declarative mood
GEN	Genitive case
IND	Indicative mood
INF	Infinitive mood
LOC	Locative case
PRS	Present tense
PST	Past tense
REL	Relative(izer)
REP	Reported evidential
SES	Sentence ender suffix
SUBJ	Subjunctive mood
TOP	Topic particle

CHAPTER I

INTRODUCTION

There is no doubt that normally-developing children acquire their native language effortlessly, rapidly, universally and without error despite there being significant variation from language to language with respect to particular structures. One notable example of differences among languages comes from reflexives: Languages differ in the domain within which the antecedent of a reflexive can be located and in the factors that affect the interpretation of a reflexive. For example, the English reflexive seeks its antecedent within a minimal clause. Previous studies have found that native English-speaking children come to know that the English reflexive seeks an antecedent in that syntactic domain by the remarkably young age of 3 years (Chien & Wexler, 1990).

Korean has several reflexives, two of which are the focus of this dissertation: *caki* and *caki-casin*. When it occurs in direct object position, *caki-casin* patterns with the English reflexives: It seeks its antecedent within a minimal clause, and no other factor affects its interpretation. However, the reflexive *caki* can take an antecedent outside a minimal clause (even outside a sentence) as well as one inside a minimal clause. Moreover, various kinds of verbal semantic information affect the interpretation of *caki*, making *caki* different from both the Korean *caki-casin* and reflexives like those in English and other similar languages.

This dissertation investigates whether native Korean-speaking children aged 4 to 6 have already come to know the properties of *caki* and *caki-casin*. It first explores whether children (and adult controls) allow long-distance antecedent interpretation for *caki* and not for *caki-casin*.

Further, it examines the effects of verbal semantics on the interpretation of *caki* and *caki-casin* in child and adult populations.

This dissertation offers a novel approach to the acquisition of reflexives. First, it explores whether children distinguish between *caki* and *caki-casin* despite their phonological similarity and children's infrequent exposure to either form: A search of the Child Language Data Exchange System (CHILDES) database (MacWhinney, 2000) revealed *no* utterances that contained either *caki* or *caki-casin* in caregivers' speech (however, it must be acknowledged that the current CHILDES corpus for child Korean is very small—12 files, from 2;0.13 to 2;3.09—of speech from a mother-child dyad. The number of words in the mother's corpus is 28,714). Second, this study explores whether children learning Korean are sensitive to semantic properties of a clause-mate verb.¹ Previous studies (Jakubowicz & Olsen, 1988, and Olsen, 1992 on Danish; Hyams & Sigurjónsdóttir, 1990 and Sigurjónsdóttir & Hyams, 1992 on Icelandic) have reported that children are able to use this sort of information for the interpretation of reflexives in SVO languages, in which the verb occurs prior to the reflexive pronoun whose interpretation it influences. However, to date, no study has addressed this question for an SOV language, in which the verb occurs after the reflexive pronoun.

1.1 Organization

This dissertation is organized as follows. Chapter 2 first lays out the theoretical background on anaphor binding. It also provides a description of how the two Korean reflexives, *caki* and *caki-casin*, differ from each other in terms of the domains in which they can search for an antecedent and the role of semantic information in sentence-level and discourse-level

¹ The term “clause-mate verb” refers to a verb that occurs within the same clause as the reflexive in question. In what follows, the reflexive will typically be in the embedded clause of a biclausal sentence, and thus the clause-mate verb is the embedded verb.

binding.² Chapter 3 begins with an overview of some previous acquisition studies on reflexives in various languages. It then reviews previous Korean acquisition studies on *caki* and *caki-casin*, with an evaluation of the studies' strong and weak points. Chapters 4 and 5 present the motivation, research questions, and predictions of the present study as well as the details and results of a norming study. Chapters 6 and 7 constitute the main body of the dissertation where the methods and the results of the experiments are presented. Chapter 8 concludes the dissertation by providing a summary of the results and discussing the implications of the findings.

² By “discourse binding,” I mean a situation in which the antecedent for the reflexive pronoun lies in discourse outside the sentence containing the reflexive.

CHAPTER II

LINGUISTIC BACKGROUND

This chapter discusses the role of syntax and semantics in the interpretation of the Korean reflexives *caki* and *caki-casin*. I will first explain the structural difference between the two reflexives. I will then discuss how they differ from each other in terms of syntactic domain and the extent to which they are affected by semantic factors, i.e., semantic properties of the clause-mate verb.

2.1 Interpretation of Korean Reflexives

Across languages, there are two types of reflexives, simplex (e.g., Dutch *zich*, Korean *caki*) and complex (e.g., Dutch *zichzelf*, Korean *caki-casin*) (Reinhart & Reuland, 1993), and it has been noted that the two reflexives are different from each other in their syntactic properties (Pica, 1987).³ This section introduces the syntactic properties associated with the Korean simplex reflexives *caki* and complex reflexive *caki-casin*.

In Section 2.1.1, the two reflexives are compared in terms of the possibility of being bound long-distance (henceforth, LD) vs. locally, as well as the possibility of sentence-internal binding vs. sentence-external discourse binding. In Section 2.1.2, the two reflexives are compared in terms of whether the meaning of verbs affects the interpretation of *caki* and *caki-casin*.

³ One popular proposal on structural difference between simplex and complex reflexive is this: The simplex reflexive selects the head of DP, while the complex reflexive is composed of two heads, DP and NP (Reuland, 2001, p. 479).

2.1.1 Domains for the antecedent interpretation of *caki* and *caki-casin*.

2.1.1.1 Sentence-internal interpretation within Binding Theory.

The issue of how languages encode and interpret reflexives has been studied extensively in terms of syntactic restrictions. Within the traditional generative Government and Binding (GB) framework (Chomsky, 1981), Binding Principle A, stated in (1), assumes that reflexives are syntactically distinct from other kinds of referential expressions (e.g., pronouns or lexical noun phrases).⁴

(1) Binding Principle A

A reflexive is bound in its governing category.

(Chomsky, 1981, p. 188)

Binding requires co-indexation as well as c-command. A reflexive and its antecedent are co-indexed when they share the same reference. C-command (Reinhart, 1976) is a structural notion that has been proposed to be unique to language. There are various definitions of c-command, but suffice it to say that c-command obtains between two elements when a node that immediately dominates the first also dominates (immediately or otherwise) the second. The application of c-command to reflexives can be seen in (2), in which the NPs *Sheep* and *Cow* both c-command the reflexive pronouns.

⁴ The concepts of Binding and Governing Category are defined by Chomsky (1981) as follows:

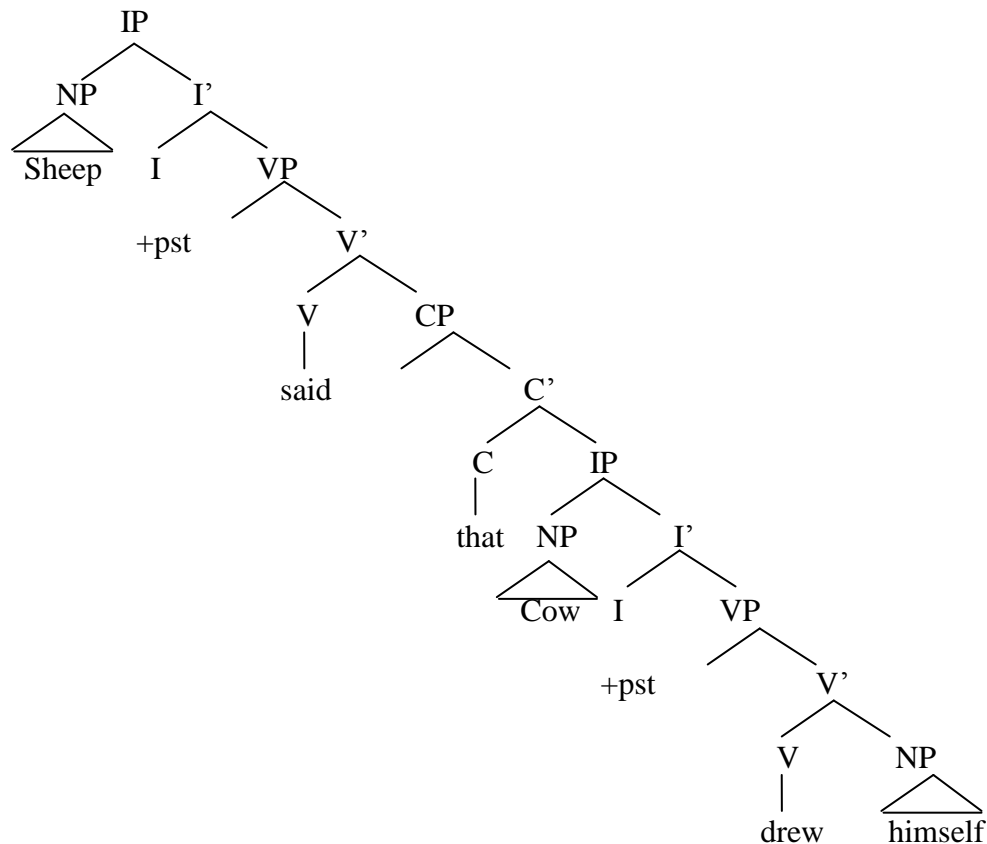
(i) Governing Category

β is a governing category for α if and only if β is the minimal category containing α , a governor of α , and a SUBJECT accessible to α

(ii) Binding

α binds β iff α and β are coindexed and α c-commands β , where coindexing requires non-distinctness in features

(2) *Sheep_i said that [Cow_j drew himself_{*i/j}].*



Why then does *himself* take only the NP *cow* as its antecedent? The traditional answer is the domain (‘governing category’) within which an English reflexive pronoun must find an antecedent corresponds to the minimal clause containing both the reflexive pronoun and a subject—hence the embedded clause in (2). Thus, *Sheep* cannot be the antecedent because it lies outside the governing category.

In contrast to the English reflexives, the Korean reflexive *caki* has a less restrictive governing category. The governing category for *caki* is any clause that contains a subject, even

the root clause. That is, *caki* is a reflexive that allows—and, indeed, prefers—an LD antecedent⁵ in the matrix clause, as seen in example (3):⁶

- (3) Yang- i_i [So- k_a_j *caki-lul* $_{i>j}$ kuly-ess-tako] malhay-ss-eyo.
 Sheep-NOM cow-NOM *self*-ACC draw-PST-COMP say-PST-SES
 ‘Sheep $_i$ said that Cow $_j$ drew self $_{i>j}$.’

Note that in (3), the reflexive *caki* can refer to the embedded clause subject *so* ‘cow’, a local antecedent, as well as to the matrix clause subject *yang* ‘sheep’, an LD antecedent, which is preferred (Choi & Kim, 2007; Kang, 1998, among many others).

On the other hand, as example (4) shows, the other Korean reflexive, *caki-casin*, allows only the local antecedent *so* ‘cow’ in a biclausal sentence, in the same manner as the English reflexive does. Thus, there exists a difference in the domains in which the two Korean reflexives, *caki* and *caki-casin*, look for an antecedent.

- (4) Yang- i_i [So- k_a_j *caki-casin-lul* $_{*i/j}$ kuly-ess-tako] malhay-ss-eyo.
 Sheep-NOM Cow-NOM *self*-ACC draw-PST-COMP say-PST-SES
 ‘Sheep $_i$ said that Cow $_j$ drew self $_{*i/j}$.’

⁵ The LD antecedent preference of *caki* in a biclausal sentence has received confirmation from both corpus (Kang, 1998) and experimental (Choi & Kim, 2007) studies.

⁶ This dissertation uses the following notations to indicate which, if either, of two antecedents is preferred: (i) $x>y$ means that the antecedent x is preferred over the antecedent y ; (ii) $x=y$ indicates that neither antecedent is preferred over the other.

One account for the variation of governing categories across different reflexives is the Governing Category Parameter (Manzini & Wexler, 1987). It was initially proposed to explain the crosslinguistic differences of governing categories which vary from language to language in the interpretation of reflexives. For example, the parametric differences between English reflexives and Korean reflexive *caki* (p. 422) are described in (5).⁷

- (5) **Governing Category Parameter (GCP):** *a* is a governing category for *b* iff *a* is the minimal category which contains *a* and has:
- a. a subject (e.g., English reflexives and Korean *caki-casin*)
 - b. a *root* Tense (e.g., Korean reflexive *caki*)

What seems more difficult for native Korean children (vs. native English children) is this: Native Korean must set up two different parameter values for the two different reflexives, *caki* and *caki-casin*, while native English children establish only one parameter value for the English reflexives.

So far, our discussion of the two Korean reflexives *caki* and *caki-casin* has been restricted to patterns in which the antecedent occurs within the sentence. We turn now to cases where the potential antecedent occurs outside of the sentence containing the reflexive.

⁷ Wexler and Manzini (1987) introduce five different parametric values for the locality variation: (i) subject; or (ii) an Infl; or (iii) a Tense; or (iv) a referential Tense; or (v) a root Tense. The Subset Principle concerns these parametric values, which we will be introduced in Chapter 3.

2.1.1.2 Sentence-external discourse binding.

Under some circumstances Korean permits an extra-sentential discourse interpretation for *caki* (Cho, 1996; Han & Storoshenko, 2012; Kang, 1988; Kim, 2000, among many others). A case in point is (6a) and (6b).

- (6) a. Yang- i_i kkalkkaltaymye wus-ess-eyo.
 Sheep-NOM joyfully laugh-PST-SES
 ‘Sheep $_i$ laughed a lot.’
 So-ka $_j$ *caki*-lul $_{i>j}$ wuskikyey kuly-ess-ki ttaymwun-i-lay-yo.
 Cow-NOM *self*-ACC comically draw-PST-COMP because-be-REP-SES
 ‘(It is) because Cow $_j$ drew self $_{i>j}$ comically.’
- b. Yang- i_i kkalkkaltaymye wus-ess-eyo.
 Sheep-NOM joyfully laugh-PST-SES
 ‘Sheep $_i$ laughed a lot.’
 So-ka $_j$ *caki-casin*-lul $_{*i/j}$ wuskikyey
 Cow-NOM *self*-ACC comically
 kuly-ess-ki ttaymwun-i-lay-yo.
 draw-PST-COMP because-be-REP-SES
 ‘(It is) because Cow $_j$ drew self $_{*i/j}$ comically.’

Note in particular that in the discourse context in (6a), a local option that co-occurs in a sentence with the reflexive *caki* is available. However, the reflexive allows not only the local antecedent *so* ‘cow’, but also the extra-sentential LD antecedent *yang* ‘sheep’ in the previous sentence

(O’Grady, 1987, 2013).⁸ This example, considered as a case of discourse binding, sheds light on the fact that even in discourse binding, the interpretation of *caki* is sensitive to the existence of two antecedents: It is discourse bound with its LD antecedent in the previous sentence and it also can take a sentence-internal local antecedent.⁹

In contrast to *caki*, the discourse in (6b) demonstrates that the binding domain of *caki-casin* is limited to the local antecedent (i.e., the local subject *so* ‘cow’), showing that the interpretation of *caki-casin* does not allow an antecedent across a sentence boundary. The observed variation between the reflexives with respect to whether they allow an extra-sentential LD antecedent in discourse binding supports the view that the two reflexives are substantially different from one another.¹⁰

⁸ Native Korean informants provided the judgment that the Korean reflexive *caki* has an extra-sentential LD antecedent preference. To the best of my knowledge, however, no study to date has examined the antecedent preference of *caki* at the discourse level.

⁹ Kang (1988, p. 419) argues that reflexives prefer to be interpreted within the sentence level; in order for the LD interpretation to be made, a strong discourse context is required. On the other hand, with regard to the reason why *caki* can refer to a local subject in the sentence, an LD subject in the sentence, and even an element outside the sentence, Gill (1999) argued that a discourse topic is placed in the topic position as a phonetically null form. That is, in her account, the discourse topic is still placed within the sentence.

¹⁰ The existence of discourse binding is generally assumed in Japanese as well (Kuno, 1987; Sells, 1987), as demonstrated in the following example (ia-b) (Sells, 1987, p. 455):

(i) a. Taroo-wa_i totemo kanasigat-tei-ta.
 Taroo-TOP very sad-PST-SES
 ‘Taroo_i was very sad.’

b. Yosiko-ga_j Takasi-ga_k *zibun*-o_{i>j/k} hihansita noni bengosi-nakat-ta kara-da.
 Yosiko-NOM Takasi-NOM *self*-ACC criticized though defend-not-PST because-COP
 ‘(It is because) Yosiko_j did not defend (him) though Takasi_k criticized himself_{i>j/k}.’

The Japanese reflexive *zibun* is identified with *Taroo*, which is located outside the sentence in which *zibun* appears, showing that Japanese allows discourse binding.

2.1.2 Semantic factors involved in the interpretation of *caki* and *caki-casin*.

In this section, we will look at a factor, namely, semantic properties of the clause-mate verb, that affects the selection of the antecedent: Specifically, the facts indicate that when you have verb X, a local antecedent is preferred, but when you have verb Y, an LD antecedent is preferred, even though in both cases it is also possible for the other nominal to be the antecedent.

It has been claimed that there is an interaction between the choice of antecedent of the reflexive and semantic properties of the clause-mate verb (Cho, 2006; Choi & Kim, 2007; Han & Storoshenko, 2012). One piece of evidence comes from the fact that although *caki* manifests a default preference for a (sentence-internal) LD antecedent (Kang, 1998; Kim & Yoon, 2008), this preference can be mitigated by the choice of clause-mate verb, thereby allowing *caki* to be bound locally as well as at a distance, as shown in (7a) and (7b). Here we first consider only sentence-internal local/LD binding, but we will consider discourse binding below.

- (7) a. Yang- i_i [So- kaj *caki-lul* $_{i>j}$ **hochulhay**-ss-tako] malhay-ss-eyo.
 Sheep-NOM Cow-NOM *self*-ACC **summon**-PST-COMP say-PST-SES
 ‘Sheep $_i$ said that Cow $_j$ summoned self $_{i>j}$.’
- b. Yang- i_i [So- kaj *caki-lul* $_{i<j}$ **swumky**-ess-tako] malhay-ss-eyo.
 Sheep-NOM Cow-NOM *self*-ACC **hide**-PST-COMP say-PST-SES
 ‘Sheep $_i$ said that Cow $_j$ hid self $_{i<j}$.’

In (7a), the clause-mate verb *hochulhay*- ‘summon’ favors an interpretation in which *caki* is coreferential with the LD antecedent (i.e., the subject of the matrix clause); in (7b), in contrast, the meaning of the verb *swumkye*- ‘hide’ favors the local subject reading of the reflexive. The

contrast between (7a) and (7b) suggests that there are indeed differences in how an antecedent is chosen depending on the predicates that *caki* co-occurs with.

The significant role of the clause-mate verbs in determining an antecedent for *caki* is further supported by a recent experiment that used eye-tracking (Choi & Kim, 2007). Here are the actual test sentences (8a-b) they used in the study.

- (8) a. Halwu-nun Hoysawen- i_i [annaywen- i_j pyelankan
 One day-TOP Businessman-NOM helper-NOM suddenly
 caki-lul $_{i>j}$ **hoyphihay**-ss-tako] malhay-ss-ta.
 self-ACC avoid-PST-COMP say-PST-SES
 ‘One day, a businessman $_i$ said that a helper $_j$ suddenly avoided self $_{i>j}$.’
- b. Halwu-nun Hoysawen- i_i [annaywen- i_j pyelankan
 One day-TOP Businessman-NOM helper-NOM suddenly
 caki-lul $_{i<j}$ **kwasihay**-ss-tako] malhay-ss-ta.
 self-ACC boast-PST-COMP say-PST-SES
 ‘One day, a businessman $_i$ said that a helper $_j$ suddenly boasted about self $_{i<j}$.’
- (Choi & Kim, 2007, p. 264, Ex. 2&3)

The only difference between (8a) and (8b) is the verb in the embedded clause: *Kwasihay*- ‘boast’ in (8b) favors a local binding interpretation for *caki*, as compared with *hoyphihay*- ‘avoid’ in (8a) where the LD antecedent is preferred. Choi & Kim found that the sentences in which *caki* can be naturally bound by an LD antecedent (i.e., the matrix subject), as in (8a) had fast reading times overall (first-pass and re-reading). However, when the embedded verb favored coreference with

the local antecedent, as in (8b), the participants lingered significantly longer when they reached the embedded locally-oriented verb region (i.e., mean reading time difference at the embedded verb region: boast-type verbs 909ms vs. avoid-type verbs 1071ms). Choi and Kim (2007) interpreted this as evidence that the default preference of *caki* is the LD antecedent. The fast reading time with the sentences like (8a) indicates that participants expect *caki* to have an LD antecedent. When it doesn't, the parser has to revise its initial LD interpretation to the local interpretation and that is why they linger in the disambiguating region (the embedded verb) ($F_1(1,18) = 14.44, p = .01; F_2(1, 19) = 5.21, p = .03$).

Now, consider examples (9a) and (9b) in which *caki* in (7) has been replaced by *caki-casin*. Here we might expect the semantic properties of the clause-mate verb to have a similar effect as when the reflexive is *caki*.

- (9) a. Yang- i_i [So- k_a_j *caki-casin-lul* $_{*i/j}$ **hochulhay-ss-tako]**
 Sheep-NOM Cow-NOM *self*-ACC **summon**-PST-COMP
 malhay-ss-eyo.
 say-PST-SES
 ‘Sheep $_i$ said that Cow $_j$ summoned self $_{*i/j}$.’
- b. Yang- i_i [So- k_a_j *caki-casin-lul* $_{*i/j}$ **swumky-ess-tako]**
 Sheep-NOM Cow-NOM *self*-ACC **hide**-PST-COMP
 malhay-ss-eyo.
 say-PST-SES
 ‘Sheep $_i$ said that Cow $_j$ hid self $_{*i/j}$.’

In both (9a) and (9b), the reflexive *caki-casin* takes the local antecedent *so* ‘cow’ only, despite the meaning of the verb. This indicates that for *caki-casin*, the verb does not create a bias towards the choice of either the LD or local antecedent: Only the local antecedent is possible.

So far, the lexical effect on determining a within-sentence antecedent has been discussed. Crucially, the same lexical effect holds for the choice of an extra-sentential antecedent for each reflexive in discourse binding. Consider, for example, (10a-b) and (11a-b):

- (10) a. Yang- i_i kyengchalse-ey ka-ss-eyo.
 Sheep-NOM police station-LOC go-PST-SES
 ‘Sheep $_i$ went to the police station.’
- So-ka $_j$ *caki-lul* $_{i>j}$ **hochulha**-yss-ki ttaymwun-i-lay-yo.
 Cow- NOM *self*-ACC **summon**-PST-COMP because-be-PST-SES
 ‘(It was) because Cow $_j$ summoned self $_{i>j}$.’
- b. Yang- i_i maywu nolla-ss-eyyo.
 Sheep-NOM so surprise-PST-SES
 ‘Sheep $_i$ was so surprised.’
- So-ka $_j$ *caki-lul* $_{j>i}$ **swumky**-ess-ki ttaymwun-i-lay-yo.
 Cow- NOM *self*-ACC **hide**-PST-COMP because-be- PST-SES
 ‘(It was) because Cow $_j$ hid self $_{j>i}$.’

- (11) a. Yang- i_i kyengchalse-ey ka-ss-eyo.
 Sheep-NOM police station-LOC go-PST-SES
 ‘Sheep $_i$ went to the police station.’
- So-ka $_j$ *caki-casin-lul* $^{*i/j}$ **hochulhay**-ss-ki ttaymwun-i-lay-yo.
 Cow- NOM *self*-ACC **summon**-PST-COMP because-be- PST-SES
 ‘It was because Cow $_j$ summoned self $^{*i/j}$.’
- b. Yang- i_i maywu nolla-ss-eyyo.
 Sheep-NOM so surprise-PST-SES
 ‘Sheep $_i$ was so surprised.’
- So-ka $_j$ *caki-casin-lul* $^{*i/j}$ **swumky**-ess-ki ttaymwun-i-lay-yo.
 Cow- NOM *self*-ACC **hide**-PST-COMP because-be- PST-SES
 ‘(It was) because Cow $_j$ hid self $^{*i/j}$.’

In (10a), *caki* is strongly linked to the extra-sentential LD antecedent because of the meaning of the verb *hochulhay*- ‘summon’ (one does not normally summon oneself). In contrast, in (10b), the verb *swumky*- ‘hide’ favors the local antecedent interpretation; thus, the antecedent of *caki* in (10b) is preferentially coreferential with the local subject *so* ‘cow.’ In the case of *caki-casin* (11a-b), however, the choice of the verb does not play a role in the interpretation—only the local antecedent is possible in both cases.

As we have seen, the choice of the clause-mate verb appears to play a role in the interpretation of a reflexive not only in a biclausal sentences, but also in discourse binding. Moreover, the clause-mate verb’s effect is exactly the same in discourse binding as within-

sentence binding: the interpretation of *caki* is modulated by the type of clause-mate verb, whereas *caki-casin* does not show any such sensitivity.

To sum up, this section has discussed ways of differentiating the two Korean reflexives, *caki* and *caki-casin*, by looking at the location of a potential antecedent, and by looking at whether semantic properties of the clause-mate verb influence the interpretation of the reflexive.

Table 2.1 below summarizes this.

Table 2.1.
Interpretations of caki and caki-casin

	<i>Caki</i>	<i>Caki-Casin</i>
Local Antecedent	Permitted, disfavored	Yes
Long Distance, within sentence Antecedent	Permitted	*
Discourse antecedent	Permitted	*
Within-sentence binding sensitive to clause-mate verb	Yes	No
Discourse antecedent sensitive to clause-mate verb	Yes	No

In sum, the two Korean reflexives, *caki* and *caki-casin*, have different binding properties. *Caki-casin* patterns like English reflexives in that it is affected by only a syntactic factor (i.e., antecedent domain) for the selection of an antecedent; however, *caki* is affected by both syntactic (i.e., c-command) and semantic (i.e., semantic properties of the clause-mate verb) factors.

There have been various attempts to give an adequate account of Korean reflexives. In particular, the attempts have concentrated on the status of *caki*, whose pattern of interpretation is different from that of classic reflexives in languages such as English. Even though no unified account has yet been offered, by and large, these approaches to the problem of *caki* can be divided into four groups. In the first approach, *caki* is treated as an LD reflexive, under Principle A of the Binding Theory (Gill, 2005; Kim, 2000; Progovac, 1993; Sohng, 2004; Yang, 1989). Consider (12) below.

- (12) Chelswu-ka_i Yenghuy-ka_j caki-lul_{i>j} miweha-n-tako sayngkakha-n-ta.
 Chelswu-NOM Yenghuy-NOM *self*-ACC hate-PRS-COMP think-PRS-SES.
 ‘Chelswu_i thinks that Yenghuy_j hates self_{i>j}.’

(Kim, 2000, p.16, (24a))

The first approach holds that *caki* in (12) prefers an LD antecedent over a local one.

The second approach treats *caki* as a pronoun like *s/he* in English in that it can freely take an antecedent beyond the sentence (Cole, Hermon, & Sung, 1990). Consider (13) below.

- (13) ??John-un caki-lul miweha-n-ta.
 John-TOP *self*-ACC hate-PRS-SES
 ‘John hates self.’

(Cole, Hermon & Sung, 1990, p.19, (23a))

According to Cole, Hermon, and Sung (1990), (13) sounds unacceptable.¹¹ This unacceptability is explainable under the assumption that *caki* is a pronominal which should be free in its governing category.

The third approach treats *caki* as a pronominal anaphor that has both pronominal and anaphoric features. The main thrust of this account is that *caki* is a reflexive in that it requires an antecedent within a sentence, and at the same time, it is a pronoun that should be free in its minimal domain (Lee, 1987). Consider (14).

- (14) a. Chelswu-ka_i Yengswu-ka_j caki-lul_{i/j/*k}
 Chelswu-NOM Yengswu-NOM *self*-ACC
 kalikhie-ss-tako malhay-ss-ta.
 point-PST-COMP tell-PST-SES
 ‘Chelswu_i said that Yengswu_j pointed to self_{i/j/*k}.’
- b. Chelswu-ka_i Yengswu-ka_j ku-lul_{j/*j/k}
 Chelswu-NOM Yengswu-NOM *him*-ACC
 kalikhie-ss-tako malhay-ss-ta.
 point-PST-COMP tell-PST-SES
 ‘Chelswu_i said that Yengswu_j pointed to him_{i/*j/k}.’

(Lee, 1990, p. 147, (7))

Lee (1987) argues that if *caki* is a pure pronominal like *ku* ‘him’, the same kind of disjoint reference is expected for both (14a) and (14b). However, Lee observes that *caki* must find an

¹¹ However, my native Korean informants provided the judgment that this sentence sounds natural.

antecedent within the sentence in (14a), whereas the pronoun *ku* freely takes an antecedent outside the sentence in (14b).¹²

However, Lee notes that *caki* is like a pronoun in that it can refer to an LD antecedent across the clause boundary, as seen in (15) below.

- (15) John-un_i [caki-ka_j Mary-lul cohaha-n-tako] sayngkakha-n-ta.
John-TOP self-NOM Mary-ACC like-PRS-COMP think-PRS-SES
'John_i thinks he_j likes Mary.'

(Choi, 2013, p.30, (2))

Accordingly, Lee (1987) treats *caki* not as a pure anaphor, but as a pronominal anaphor whose features are [+anaphor, +pronominal].

Finally, there is an approach that treats *caki* as a logophoric pronoun,¹³ whose antecedent is the individual whose thought, speech, the source of information, or point of view is represented in the sentence (Cole & Sung, 1994; Im, 1987; Yoon, 1989).

¹² However, as we discussed with (6a), *caki* can take a sentence-external antecedent.

¹³ It has been known that logophoric pronouns are different from ordinary pronouns in terms of the syntactic rules which govern them. For example, ordinary pronouns are subject to Binding Principle B (Chomsky, 1981) which states that a pronoun should not be bound in its binding domain, but logophoric pronouns allow a local antecedent (Kishida, 2011).

- (16) a. John-*i* Mary-eykey_{*j*} *caki-ka*_{*i/*j*} am-i-la-ko malhay-ss-eyo.
 John-NOM Mary-DAT *self*-NOM cancer-be-DEC-COMP tell-PST-SES
 ‘John_{*i*} told Mary_{*j*} that self_{*i/*j*} has cancer.’
- b. John-*i* Mary-lopwuthe_{*j*} *caki-ka*_{*i/j*} am-i-la-ko tule-ss-eyo.
 John-NOM Mary-from *self*-NOM cancer-be-DEC-COMP hear-PST-SES
 ‘John_{*i*} heard from Mary_{*j*} that self_{*i/j*} has cancer.’

(Yoon, 1989, p.481, (9))

In (16a-b), *caki* can be bound by *John*, the matrix subject. However, *Mary* can be an antecedent for *caki* in (16b), not in (16a). According to Yoon (1989), this is because in (16b), the verb *tule*-‘hear’ presents *Mary* the source of information. Thus, he claims that *caki* is a logophor which is sensitive to the source of information.

As these conflicting views demonstrate, the status of *caki* remains unresolved. This dissertation does not adopt any one of these four theories, although, it is against explicitly rejects the approach to regard that treats *caki* as a pure pronominal. A piece of evidence that *caki* is not a pure pronominal is that *it* cannot take the genitive in (17) as its antecedent.

- (17) [Yengi-*ka*_{*i*} [Swuni-uy_{*j*} nonmwun]-eytayhay]
 Yengi-NOM Swuni-GEN paper-about
 *caki-uy*_{*i/*j*} chinkwu-eykey malhay-ss-ta.
 self-GEN friend-DAT talk-PST-SES
 ‘Yengi_{*i*} talked about Swuni’s_{*j*} paper to self’s_{*i/*j*} friend.’

(Cho, 2004, p. 25, (2))

In (17), the genitive *Swuni* cannot be the antecedent for *caki*. According to Cho (2004), this is because *caki* is a reflexive pronoun, which follows Principle A. Note that the genitive *Swuni* cannot c-command *caki*. Following Cho (2004), this dissertation acknowledges that *caki* has properties of reflexives, and thus it dubs *caki* as the Korean ‘reflexive’ *caki*.

CHAPTER III

ACQUISITION OF BINDING

This chapter reviews relevant research on the acquisition of binding in various languages in terms of the Subset Principle that has received much attention in the acquisition literature on reflexives. Both compatible and incompatible findings relating to the predictions of the Subset Principle are considered. I argue that the Subset Principle alone does not fully account for the acquisition of binding, exploring the role of semantic properties of the clause-mate verb. I then present a critical review of previous research on the acquisition of Korean *caki* and *caki-casin*. Finally, the issues that call for further research are discussed.

3.1 Acquisition of the Reflexive in Various Languages

3.1.1 The studies on syntactic domains: The Subset Principle.

One of the core questions in the acquisition of binding is how children come to know the binding properties of their individual language. In order to answer this question, researchers have largely focused on identifying and accounting for the similarities and differences of the binding phenomena in various languages. One possible answer to the question, and one that is typically assumed, is that binding properties of each language are acquired through a learning strategy called the Subset Principle (Berwick, 1985; Wexler & Manzini, 1987), which holds that children first begin by acquiring the most restrictive, smallest grammar compatible with the input—a

subset—and then broaden that grammar to a superset when faced with positive evidence¹⁴ in the input that the target grammar is different.¹⁵

With respect to the acquisition of LD reflexives (e.g., *ziji* in Chinese or *caki* in Korean), one idea was that the Subset Principle “predicts that children learning Chinese or Korean should take the local antecedent for the reflexive *ziji* or *caki* as unmarked” (Chien, Wexler, & Chang, 1993, p. 230), and that therefore “there would be a stage in which the Korean child only chooses the local value for the antecedent of the reflexive” (Lee & Wexler, 1987, p. 4). That is, the proponents of the Subset Principle *predict* a developmental pattern for the acquisition of the LD reflexives: First, children seek the reflexive’s antecedent in a local domain, that is, inside the clause where the reflexive occurs, because local binding is a subset of the superset that includes LD binding. Second, if a language permits reflexive antecedents in the LD domain, children will come to accept the LD interpretation later, after their knowledge of the binding domain is changed through input. For example, in the case of English-speaking children, whose language allows only local binding, the binding domain remains local because input does not trigger the expansion of the domain to include LD binding. By contrast, in languages such as Chinese, Danish, Icelandic, Japanese, and Korean that allow both local and LD binding, children should pass through two stages. First, in the absence of input to the contrary, there is a stage in which

¹⁴ The Subset Principle is concerned with the role of positive and negative evidence in child language acquisition (Berwick, 1985; Wexler & Manzini, 1987). From a theoretical standpoint, it has been claimed that negative evidence is not systematically available in language acquisition: e.g., it does not help children to correct an overgeneralized grammar (Pinker, 1989; Wexler & Culicover, 1980, among many others). The more relevant source of language data is positive evidence alone. In terms of acquisition of reflexives with respect to the Subset Principle, the Lexical Parameterization Hypothesis (Manzini & Wexler, 1987) claims that what children need to learn is merely the lexical properties of individual anaphor. The binding domain for Principle A is parameterized separately for each anaphor in a given language.

¹⁵ One good definition of the Subset Principle is this: “the learner must guess the smallest possible language compatible with the input at each stage of the learning procedure” (Clark & Roberts, 1993, p. 304-5).

only local interpretations of reflexives are permitted. Second, there is a gradual broadening to permit LD interpretations as the children receive more input.

However, what if children learning these languages are exposed to sentences exemplifying the LD interpretation from early in life? In principle, nothing rules out the possibility of resetting the parameter immediately, in which case there will be no discernible stage in which only the local interpretation is allowed.¹⁶

In fact, the results of previous studies on the acquisition of binding have been mixed with respect to the presence of a stage in which the children with LD reflexives language “only choose the local value for the antecedent of the reflexive” (Lee & Wexler, 1987, p. 4). While some studies’ results seem to be compatible with this state of affairs (Chien, Wexler, & Chang 1993 on Chinese; Okabe, 2008 on Japanese), the results of others are not (Jakubowicz & Olsen, 1988 and Olsen, 1992 on Danish; Hyams & Sigurjónsdóttir, 1990 and Sigurjónsdóttir & Hyams, 1992 on Icelandic). One account for the incompatible results might be that there are other factors that interact with the Subset Principle. The next section addresses this issue.

3.1.2 Previous acquisition studies testing syntactic domains.

Chien and Wexler (1990) reported that children have knowledge on the locality condition of English reflexives. They conducted a series of experiments to examine children’s knowledge of the local interpretation of the English reflexive. The study consisted of three act-out tasks (two Simon-Says games and one party game), and a yes/no judgment task. In the act-out experiments, children aged 2;6 to 6;6 were asked to perform the action in the sentences they heard, which had two potential antecedents, as shown in Example (18).

¹⁶ Thanks to Bonnie Schwartz and William O’Grady for raising these issues with me.

- (18) a. *Kitty_i says that Sarah_j should point to herself^{*_{i/j}}.*
b. *Snoopy_i says that Adam_j should point to himself^{*_{i/j}}.*

Notice that in (18a) and (18b), the reflexives match the gender of both the matrix subject (e.g., *Kitty*) and the embedded subject (e.g., *Sarah*), preventing the children from using gender as a cue to find the antecedent of the reflexive. The overall results of the three experiments showed that children were able to correctly select the local antecedent at a young age (3;6–4 yrs: 80% correct; 4;6–5 yrs: 90% correct) and that, by around age 6, this learning was completed.

In the subsequent yes/no comprehension judgment experiment, children were presented with a picture and then asked a comprehension question, as in example (19) and Figure 3.1.

- (19) This is Mama Bear; this is Goldilocks.
Is Mama Bear touching *herself*?

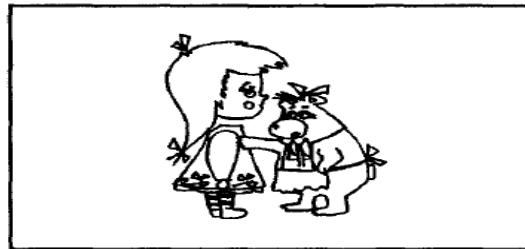


Figure 3.1. Sample picture from Chien and Wexler (1990).

The results showed that even 3-year-olds responded correctly at high rates (negative target response: 96.97%; positive target response: 92.80%). That is, the results of both the act-out tasks and the comprehension task demonstrated that children have acquired the property of English that the reflexive selects the antecedent in a local domain from around the age of 3 years.

In a similar vein, Otsu (1981) found that English-speaking children rely on structural relations (i.e., c-command) to find the antecedent. He conducted a study in which 60 English-speaking children aged 3;1–7;1 completed an act-out task. The children heard short stories and were asked to use toys to perform an action from the story (i.e., “Show me who tickled who”). A test sentence from the experiment is given in (20).

(20) *The elephant_i next to the hippo_j tickled himself_{i/*j}.*

In (20), there are two possible antecedents of the reflexive: *the elephant* and *the hippo*. The children manifested a strong tendency (71%–83% of the time) to choose *the elephant* as the antecedent of the reflexive, which suggests that their interpretation of the reflexive is adult-like (Otsu, 1981). This shows that children generally ignore the linearly closer antecedent, *the hippo*, and pick the antecedent that c-commands the reflexive,¹⁷ thereby obeying the structural constraints on binding.

Children’s adult-like knowledge in interpreting the antecedent of the English reflexive has also been attested from studies using on-line, time-sensitive techniques. Two recent eye-movement-during-listening studies examined children’s on-line comprehension of the English reflexive. First, Sekerina, Stromswold, and Hestvik (2004) tested 16 English-speaking children aged from 4;9 to 7;10 to examine children’s on-line comprehension of the English reflexive. In the experiment, which employed a forced-choice picture selection task, participants heard four sentences, as in (21). They were then shown two pictures (see Figure 3.2), one that depicted the sentence-internal referent interpretation and another that depicted the sentence-external referent

¹⁷ In fact, the subject NP that c-commands the reflexive is not *the elephant* alone, but *the elephant next to the hippo*; however, the referent of *the elephant to the hippo* is *an elephant*, not *a hippo*.

interpretation, and were asked to point to the picture that correctly described the situation in the sentence they had heard.

(21) Preamble: In these pictures, you see a boy, a man and a box.

Fixation: Now look at the cross.

Request: Now point to the picture where the boy has placed the box behind
himself.

Follow-up: Now point to the boy with the cap on.

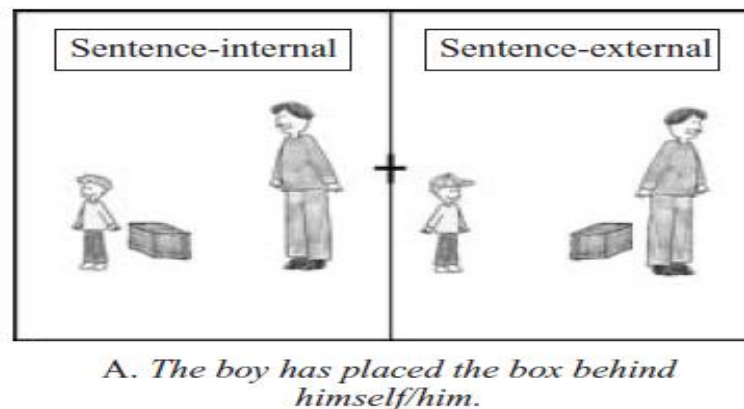


Figure 3.2. Sample picture from Sekerina, Stromswold, and Hestvik (2004).

Pointing responses and eye movements in the picture selection task were analyzed. The results of the analysis of pointing responses revealed that the children overwhelmingly preferred the local antecedent (i.e., the boy) in 94% of the cases (adults: 97%). The analysis of the eye-movement data compared the proportion of fixations on the picture consistent with the sentence-internal interpretation to the proportion of fixations on the picture consistent with the sentence external interpretation. For the children, the percentage of fixations on the picture showing the local antecedent at the critical region (2475 ms), which begins at the onset of the reflexive, was 61%, while for adults it was 65%. The region was further divided into two segments—segment I:

2475-3475ms and segment II: 3475-4475ms. The proportion of correct fixations to the local antecedent during the first segment was 57% and during the second segment was 62% (adults: 63% and 69% respectively). All in all, the results of the analysis of the children's moment-by-moment processing revealed that although the children's response to the local antecedent was slow, they were able to correctly interpret the reflexive, indicating that children's on-line processing of the reflexive is adult-like. This also indicates that children were indeed reading the sentences and not guessing or responding based upon other cues.

Clackson, Felser, and Clashen (2011) conducted an online processing experiment with 40 English-speaking children aged 6 to 9. In the study, a sentence accompanied by a picture was presented to the children, as shown in (22) and Figure 3.3.

- (22) *Peter_i* was waiting outside the corner shop. He watched as *Mr. Jones_j* bought a huge box of popcorn for *himself_{i/j}* over the counter.

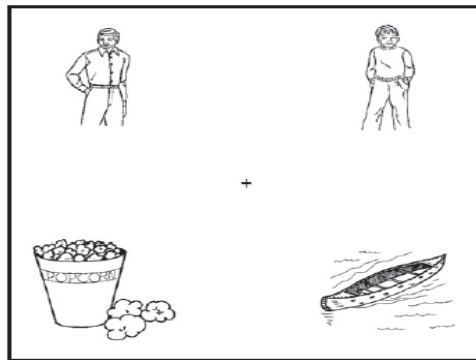


Figure 3.3. Sample picture from Clackson, Felser, and Clashen (2011).

The test sentences in (22) contain two potential antecedents for the reflexive *himself*, the non-local antecedent *Peter* and the local antecedent *Mr. Jones*. Of the two, the former does not satisfy the c-command relation in respect to the reflexive, while the latter does.

The study analyzed the children's eye fixations on the two possible antecedents in milliseconds a 2000ms period immediately following the onset of the reflexive. The children seemed to temporarily consider the non-local competitor as the possible antecedent for the reflexive, with their looks during the first 700 ms going to the picture of *Peter* in response to hearing the reflexive. However, after 700 ms, their looks to the local antecedent, *Mr. Jones*, increased remarkably and remained stable through the rest of the time window. Considering the children's ultimate interpretation with regard to the reflexive, they were apparently sensitive to the locality component of Principle A—the English reflexive takes an antecedent within the same minimal clause.

Patterns of reflexive acquisition consistent with the Subset Principle have also been claimed with children whose native languages allow LD interpretation for reflexives. Okabe (2008) conducted an experiment with 28 Japanese-speaking children (age 4 to 6) and 5 native adult controls to test whether they could interpret sentences containing the LD reflexive *zibun* 'self' in an adult-like way—allowing both antecedents, but preferring the interpretation with the LD antecedent.¹⁸ The study employed a Truth Value Judgment Task (Crain & Thornton, 1998, henceforth, TVJT) with two different types of stories: LD antecedent–favoring stories and local antecedent–favoring stories. Short picture-stories were presented to the children and then followed by a test sentence, such as that in (23).

¹⁸ This is one of the experiments in Okabe's dissertation, which explored the acquisition of biclausal structures in Japanese. Although the main focus of the dissertation was not to examine children's comprehension of the LD reflexive, their sensitivity to the LD binding properties of the reflexive *zibun* 'self' in biclausal constructions was investigated.

(23)	Buta-wa _i	[[kuma -ga _j	<i>zibun-no</i> _{i>j}	keeki-o
	Pig-TOP	bear-NOM	<i>self</i> -GEN	cake-ACC
	tabe-ta]-no]-o	mi-ta.		
	eat-PST-COMP-ACC	see-PST		

‘The pig_i saw that the bear_j ate self_{s_{i>j}} cake.’

For (23), the LD antecedent-favoring story displayed the *bear* eating the *pig*’s big cake while the *pig* was looking at the scene; the local antecedent-favoring story showed the *bear* eating his own cake while the *pig* was looking at the scene. Overall, the study’s results showed that in interpreting the reflexive *zibun*, the children accepted the two readings at different rates for the two different types of stories (i.e., for LD antecedent–favoring stories, the children chose the LD antecedent 71% of the time; for local antecedent–favoring stories, they chose the local antecedent 93% of the time). Based on the study’s results, Okabe (2008) argued that the children had a slight bias toward the local antecedent over the LD antecedent for *zibun*.

However, what is also noteworthy is the data from adults: Okabe further suggested a parallel adult preference for the local antecedent over the LD antecedent, based on the data from the five adults. They favored the LD antecedent 80% of the time for LD subject–favoring stories, and the local antecedent 100% of the time for local subject–favoring stories. Although the number of adults is not large enough to make a generalizable claim, the result is attention-grabbing because *zibun* is generally thought to have an LD antecedent preference (Abe, 1997; Katata, 1991). It is therefore surprising that the adults manifested a local antecedent preference for *zibun*. In fact, the adults’ local antecedent preference found in this experiment suggests that the same preference on the part of Japanese children says nothing about whether the children

first pass through a stage in which they are more restrictive, accepting only the local binding of reflexives, and then progress to a stage in which they accept the non-local setting. Accordingly, for these reasons, it is unclear whether the results reported for Japanese children support the Subset Principle.

Children’s preference for the local antecedent was also claimed in a study by Chien, Wexler, and Chang (1993). They investigated the acquisition of the Chinese LD reflexive *ziji* ‘self’ with 80 Chinese children between the ages of 3 and 8. See (24) and Figure 3.4, for an example of the test items.

- (24) Milaoshu_i mengjian daxingxing_j na-zhe
Mickey.Mouse dream gorilla hold-DUR
ziji-de_{i>j} zhaopian.
self-POSS picture
‘Mickey Mouse_i dreamed that Gorilla_j is holding self’s _{i>j} picture.’

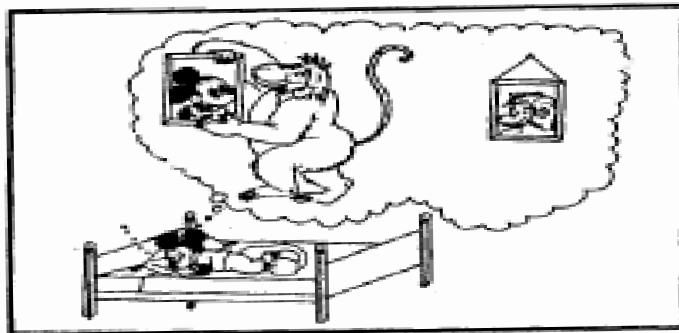


Figure 3.4. A sample item from Chien, Wexler, and Chang (1993).

A yes/no judgment task was followed by the test sentences: The children saw cartoon pictures, and then they were expected to answer “yes” or “no” to a question about the picture (e.g., “Mickey mouse dreamed that Gorilla is holding self’s picture, yes or no?”). The results showed that the children strongly accepted the local interpretation about 75% of the time and they accepted the LD interpretation about 41% of the time, thereby showing a preference for the local interpretation.

However, the adult controls in Chien, Wexler, and Chang’s study also preferred the local interpretation (87%) over the LD interpretation (39%). This parallel adult result again suggests that we cannot attribute children’s performance to a delay in setting the parameter. In fact, the strong preference of adults for a local antecedent for *ziji* is quite curious in that *ziji* is generally thought to be an LD reflexive, with a strong preference for the LD interpretation, like Japanese *zibun*. That is, as in Okabe’s (2008) study, whether the local antecedent preference in children is due to a learning principle, the Subset Principle, or not remains an open question.

Su (2004) also investigated the acquisition of the Chinese LD reflexive *ziji* ‘self’. She conducted a TVJT with 25 native Chinese children aged 4;2–5;6, along with adult native speakers as controls. Su reported the same strong local preference both in children and in adults, where the children had a significantly lower acceptance rate (4%) for the LD antecedent than the adults (27%). However, the acceptance rate (27%) of adults is still very low given that *ziji* is thought to be an LD reflexive, with a strong preference for the LD interpretation.

A possible account of the patterns of child and adult data reviewed above is that there may be extraneous factors intervening in the interpretation of the LD reflexive *ziji* in those studies. The next section addresses this issue with a review of studies that have examined the

interaction of various factors in the interpretation of reflexives. In particular, it focuses on the influence of verb meaning in the interpretation of reflexives.

3.1.3 Previous acquisition studies testing semantic factors.

Studies on children's acquisition of the Danish LD reflexive *sig* 'self' provide evidence in support of both the Subset Principle (Jakubowicz & Olsen, 1988) the role of lexical properties of verbs in the interpretation of *sig* (Olsen, 1992). The interpretation of *sig* varies depending on the nature of the verb that occurs with the reflexive and the finiteness of the embedded clause (Jakubowicz, 1994). When *sig* co-occurs with a verb denoting an action that need not affect the theme argument (e.g., *criticize, respect, love, talk to, point to*) in a nonfinite embedded clause, it allows both the LD and the local antecedent, with a preference for the LD antecedent, and the reflexive in this case patterns like a pure pronominal. In contrast, if *sig* occurs with a verb denoting an action that affects the theme argument (e.g., *wash, brush, cover, defend, protect*) in a finite embedded clause, the local interpretation of the reflexive is only legitimate and it is characterized as a pure anaphor. Consequently, Danish *sig* acts like a pronominal anaphor that has the features [+anaphoric, +pronominal] rather than a pure anaphor (Bickerton, 1987; Chomsky, 1982, among many others).

Jakubowicz and Olsen (1988) tested whether there is a stage in which Danish children choose only a local antecedent for the LD reflexive *sig*. They conducted a sentence picture-matching task with Danish children aged 3;0–3;5. An example of the sentences used in the experiment is given in (25).

- (25) Minnie_i beder_j Ida om at pege på sig_{ij}
 Minnie asks Ida to point at self
 ‘Minnie_i asks Ida_j to point at self_{ij}.’

The results showed that although adults had a 100% acceptance for LD binding, only 7% of the children’s responses accepted the LD antecedent. This clear difference between Danish adults and children suggests that a strong local antecedent preference is initially in place in the acquisition of the Danish reflexive *sig*. The study further observed a developmental pattern as children mature, with the rate of choosing the LD antecedent increasing to 70% by age 9, an observation that supports the Subset Principle.

Olsen (1992) examined the role of lexical constraints of verbs in the interpretation of *sig*. She tested 20 Danish children aged 3;0–9;11 with two different linguistic contexts—one context involving an ‘affectedness verb’ in a finite embedded clause (i.e., only allowing a local antecedent) and the other context involving a ‘nonaffectedness verb’ in a nonfinite embedded clause (i.e., allowing both LD and local interpretations). Two elicited production tasks were employed: Children were shown a picture that depicted an action with one of the two types of verbs, and then asked the question as in (26).

- (26) Hvad er det X bede-r Y om at gøre?
 What is the X ask-PROG Y to do?
 ‘What is X asking Y to do?’

The study found that in the nonaffectedness verb–nonfinite embedded clause condition (i.e., allowing both LD and local interpretations), young children produced sentences with the LD *sig* fairly rarely (3 yrs: 5%; 4 yrs: 0%; 5 yrs: 2%). The oldest children in the study, the 9-year-olds, produced the LD *sig* only 30% of the time, and even adults also showed relatively low production of sentences with the LD *sig* (38%). In both the adults’ and the children’s data, the LD *sig* was replaced with a pronoun or the name of the matrix subject. In contrast, in the affectedness verb–finite embedded clause condition (i.e., only allowing a local antecedent), even children around 3 years old produced sentences consistent with the local interpretation, using *sig* productively (although percentages of sentences with *sig* varied according to the verb: e.g., *comb* 60%; *dry* 98%; *shave* 85%; *wash* 50%). These results show behavior beyond the predictions of the Subset Principle because the Subset Principle predicts children’s early local interpretation for reflexives. Note that *sig* was rarely used in the nonaffectedness verb–nonfinite embedded clause condition. If the Subset Principle alone had played a role, the children should have a local interpretation for *sig*, regardless of the conditions.

The findings from the research of Jakubowicz and Olsen (1988) and Olsen (1992) reveal that Danish children are sensitive to structural properties as well as to the interaction of lexical verbs and finiteness in their interpretation of the reflexive *sig*. It is noteworthy that such syntactic and semantic interactions are also attested in the interpretation of the Icelandic reflexive *sig*.

In Icelandic, the verbal category of mood in the complement clause (i.e., subjunctive, infinitive, and indicative) influences the interpretation of a reflexive pronoun in that clause. For example, when the reflexive *sig* occurs with a verb such as *raka* ‘shave’ in a subjunctive or infinitive clause, it takes either an LD antecedent or a local antecedent. However, in an indicative sentence, *sig* must take a local antecedent. Example sentences are given in (27).

- (27) a. Jón_i segir að Pétur_j rak-i sig_{i/j}
 John says that Peter shaves-SUBJ self
 ‘John_i says that Peter_j shaves self_{i/j}.’
- b. Jón_i segir Pétur_j að rak-a sig_{i/j}
 John tells Peter to shave-INF self
 ‘John_i tells Peter_j to shave self_{i/j}.’
- c. Jón_i veit að Pétur_j raka-r sig_{*i/j}
 John knows that Peter shaves-IND self
 ‘John_i knows that Peter_j shaves self_{*i/j}.’

In contrast, when verbs such as *gefa* ‘give’, which create a strong bias toward an LD antecedent, are used with *sig* in a subjunctive or infinitive clause, the interpretation of *sig* favoring the LD antecedent is much stronger than it is with *raka*-type verbs (e.g., þvo ‘wash’, þurrka ‘dry’, greiða ‘comb’, and klóra ‘scratch’), as in (28a-b); *sér* is a dative case–marked reflexive.

- (28) a. Jón_i segir að Pétur_j gef-i sér_{i>j} disk
 John says that Peter gives-SUBJ self a plate.
 ‘John_i says that Peter_j gives self_{i>j} a plate.’
- b. Jón_i skipaði Pétur_j að gef-a sér_{i>j} disk
 John tells Peter to give-INF self a plate.’
 ‘John_i tells Peter_j to give self_{i>j} a plate.’

However, in a case where the verb *gefa* is used with *sig* in an indicative complement clause, as shown in the sentence in (29), there is an interpretation breakdown because of two competing factors. The LD antecedent is preferred by the verb *gefa*, while a local antecedent is preferred with the indicative clause, making the sentence very unnatural. In this case, if the local antecedent is intended, in order to make the sentence natural, the simple reflexive *sig* should be replaced with the complex reflexive *sjálfan sig* (Hyams & Sigurjónsdóttir, 1990).

- (29) Jón_i sér að Pétur_j gefu-r *sér / sjálfan sig_{i<j} disk
 John sees that Peter gives-IND self a plate
 ‘John_i sees that Peter_j gives self_{i<j} a plate.’

Along with the lexical effects of the two different verb classes on the interpretation of *sig*, another property of this Icelandic reflexive is of particular interest. The LD use of *sig* in subjunctive or infinitive clauses is distinct in the sense that *sig* in the subjunctive can refer to an antecedent whose perspective or point of view is represented in the sentence, indicating that *sig* in the subjunctive is assigned the feature [+pronominal], making it a pragmatics-dependent logophor, as we see in (30).

- (30) ? Jón er masókisti. Það gleður Jón_i [að ég mun-i
 John is a masochist. It pleases John_i that I will-SUBJ
 lemja sig_i, í hausinn með spýtu á morgun].
 hit self (= John) in the head with a stick tomorrow.
 'John is a masochist. It pleases John that I will hit self in the head with a stick
 tomorrow.'

(Sigurjónsdóttir & Hyams, 1992, p.372, (17))

In (30), *sig* can refer to a matrix object whose referent is the individual whose perspective or point of view is represented in the sentence.

Moreover, as demonstrated in (31a) and (31b), *sig* can take a non-c-commanding genitive NP as its antecedent, if the antecedent represents the person whose opinion or wish is reported on.

- (31) a. [_{NP} Skoðun Önnu_i] er [_{CP} að sig_i vant-i hæ fileika].
 opinion Anna's is that self (= Anna) lacks-SUBJ talents
 'Anna's opinion is that self lacks talents.'
- b. Jón sagði Ara [_{PP} frá ósk Þórs_i] um [_{CP} að Pétur
 John told Ari about wish Þór's about that Peter
 Sýnd-i sér_i, virðingu].
 Showed-SUBJ self (= Þór) respect
 'John told Ari about Þór's wish that Peter showed sig respect.'

(Sigurjónsdóttir & Hyams, 1992, p.373, (18))

By contrast, the LD binding of *sig* in infinitive complements is not affected by pragmatics, suggesting that it is interpreted by syntactic rules. That is, the mechanism that governs the LD use of *sig* differs depending on whether it occurs in a subjunctive complement clause or in an infinitive clause (Maling, 1984; Reinhart & Reuland, 1993; Thráinsson, 1991).

Table 3.1 summarizes the two factors, semantic properties of the clause-mate verb and mood of the complement clause in which the verb appears, that affect the interpretation of *sig*.

Table 3.1.
Interpretation of sig

Lexical information ¹⁹	Mood of the complement clause	Interpretation of <i>sig</i>
<i>raka</i> ‘shave’ verbs	Subjunctive	Either LD or local antecedent
	Infinitive	Either LD or local antecedent
	Indicative	Local antecedent only
<i>gefa</i> ‘give’ verbs	Subjunctive	Strong preference for LD antecedent
	Infinitive	Strong preference for LD antecedent
	Indicative	Impossible to interpret the antecedent

The results of Hyams and Sigurjónsdóttir’s (1990) experiment on children’s sensitivity to the lexical properties of verbs in connection with locality variation for the reflexive *sig* are particularly interesting. This study’s participants were Icelandic-speaking children ages 2;6–6 years, divided into seven groups at six-month intervals (i.e., G1: 2;6–2;12, G2: 3;0–3;6, G3: 3;6–3;12, G4: 4;0–4;6, G5: 4;6–4;12, G6: 5;0–5;6, and G7: 5;6–5;12). An act-out task was used to

¹⁹ The key difference between these verbs is that *raka* ‘shave’ verbs are related to an action normally performed on oneself, whereas *gefa* ‘give’ verbs are normally directed toward someone else.

test the children on their performance with *sig* in subjunctive and infinitive sentences with strongly LD antecedent–preferring verbs such as *gefa*, as in (29).

The findings of the experiment can be summarized as follows: First, across all sentence types, most of the children in the two youngest age groups, G1 (2;6–2;12) and G2 (3;0–3;6) failed to give a response to the test sentences; the data of these groups therefore did not provide reliable results. Second, however, the children between 3;6 and 6;0 clearly showed that they preferred the LD antecedent both in a subjunctive complement clause (65% to 80% of the time) and in an infinitive clause (65% to 85% of the time). They chose the local antecedent only 20% to 30% of the time in a subjunctive complement clause and 20% to 25% of the time in an infinitive clause. Third, as the children’s age increases, their preference for the LD antecedent in both clauses also increases. The adult control participants almost all preferred the LD antecedent for *sig* (90% in a subjunctive clause and 97% in an infinitive clause), suggesting that the older children’s interpretation of the reflexive *sig* with the LD antecedent–preferring verb is similar to that of adults, although not yet completely adult-like.

In addition to their study on children’s choice of an antecedent when an LD antecedent–preferring verb is used, Sigurjónsdóttir and Hyams (1992) examined Icelandic children’s knowledge of verbs that take either an LD or a local antecedent, such as *raka*. The participants were 55 Icelandic children, ages 3;3–6 years, and 10 adults as a control group. The study used both an act-out task and a modified TVJT. Their response patterns differed depending on whether the clauses containing the verbs were subjunctive or infinitive. In the subjunctive, just like adults, most of the children allowed both a local and an LD reading of *sig*, whereas in the infinitive, most children accepted only the local interpretation (50%–72% of the time). In the

indicative, which allows the local antecedent only, 70%–100% of the children’s responses preferred the local interpretation for *sig*.

The studies on Icelandic children’s acquisition of the reflexive show that the Subset Principle alone is not sufficient to account for the results. Nevertheless, taken as a whole, they show that Icelandic children recognize that the choice of antecedent varies according to the particular verb, suggesting that children indeed know the significant role of semantic properties of the clause-mate verb effects in interpreting the reflexive. Furthermore, even young Icelandic children demonstrated their sensitivity to verbs’ lexical properties, interpreting *sig* correctly as either a pronominal anaphor or as a pure reflexive at early stages of grammatical development.

Numerous studies on languages that allow a reflexive to take an LD antecedent as well as a local antecedent have tried to verify whether the grammar initially chosen by the child is the most restrictive one compatible with the input data. Table 3.2 summarizes the results of the studies on children’s and adults’ interpretations for the reflexives.

Table 3.2.
Results of the studies on reflexive antecedent interpretations in child and adult language

Language	Interpretation of a monomorphemic reflexive		Children’s Age
	Adults	Children	
Japanese (Okabe, 2008)	Local antecedent	Local antecedent	4;00–6;00
Chinese (Chien, Wexler, & Chang 1993)	Local antecedent	Local antecedent	3–8
Danish (Jakubowicz & Olsen, 1988; Olsen, 1992)	LD/Local antecedent	LD/Local antecedent	3;00–3;05; 3;0–9;11
Icelandic (Hyams & Sigurjónsdóttir, 1990; Sigurjónsdóttir & Hyams, 1992)	LD/Local antecedent	LD/Local antecedent	4;00–6;06; 3;3–6

The previous studies suggest that the Subset Principle holds as a default, but that other factors intervene. In some studies, for example, it is reported that children allow LD binding if lexical constraints point in that direction (Jakubovicz & Olsen, 1988 and Olsen, 1992 for Danish; Hyams & Sigurjónsdóttir, 1990 and Sigurjónsdóttir & Hyams, 1992 for Icelandic).

Thus, one clear finding from the previous studies is this: Children are sensitive to both structural properties and semantic properties in the interpretation of reflexives. As shown in the studies with Japanese and Chinese children, structural properties play an important role in reflexive interpretation ; at the same time, as shown in the studies with Danish and Icelandic children, semantic factors, semantic properties of the clause-mate verb, also play an important role in reflexive interpretation.

3.2 Acquisition of Korean reflexives *caki* and *caki-casin*

3.2.1 Previous acquisition studies testing syntactic factors.

In line with the acquisition studies involving other languages that allow LD binding, most acquisition studies on Korean reflexives have been devoted to exploring children's knowledge of the structural properties of the reflexives. Studies on Korean have tested (i) whether children first pass through the most restricted subset of the parameter and then progress to include the LD setting (Lee & Wexler, 1987); (ii) whether children rely on a c-command relation in their interpretation of the binding domain (Lee & Wexler, 1987); and (iii) whether children's interpretations of the Korean reflexives are subject to the grammatical hierarchy (Cho, 1985). Most studies focus on the interpretation of *caki* rather than *caki-casin* because the LD property of *caki* has been considered more intriguing for testing the Subset Principle.

Lee and Wexler (1987) investigated whether there is a stage when Korean children choose a local binding interpretation for the LD-preferring Korean reflexive *caki*. Lee and Wexler conducted an act-out task with native Korean-speaking children aged 3–6. An example item from the task is given in (32).

- (32) Koyangi-ka_i malha-**ki**-lul [Mary-ka_j *caki*-lul_{i>j}
 Cat-NOM say-NMLZ-ACC Mary-NOM *self*-ACC
 mancy-ess-tako] kulay-ss-tae
 touch-PST-COMP that-PST-REP
 ‘The cat_i said that Mary_j should touch herself_{i>j}.’

The study found that children chose the local antecedent of *caki* about 60% of the time at age 3;7 and almost 100% of the time between ages 4;7 and 6;6. On the other hand, adults chose the local antecedent (40%) less frequently than the LD antecedent (60%). Lee and Wexler claim that the results follow the predictions of the Subset Principle.²⁰

However, this claim seems to contradict their results in two ways. First, the young children made the local interpretation only 60% of the time. According to the authors’ prediction, the children would be expected to choose the local interpretation close to 100% of the time, because the authors expect a stage when young children allow only a local antecedent. Second, the proportion of local antecedent interpretations gradually increases as the children get older (i.e., from 60% to 100%). However, the authors predict the opposite pattern of development: that

²⁰ The following is their prediction with respect to the Subset Principle: “there would be a stage in which the Korean child only chooses the local value for the antecedent of the reflexive” (Lee & Wexler, 1987, p. 4). However, I discussed that the Subset Principle can account for the developmental pattern, but does not predict it, following Bonnie D. Schwartz.

children first pass through a stage in which only the local interpretation is permitted and gradually move on to allowing the LD interpretation. For these reasons, the results of Lee and Wexler's study, counter to their argument, do not appear to provide supportive evidence for the Subset Principle.

It is also worth noting that the study suffers from a previously unnoticed methodological flaw. Sentences like the example in (31) were wrongly assumed to have a structure comparable to the biclausal English sentence given in the translation. In fact, in the Korean sentence, the nominalizer *-ki* is added to the verb *malha* 'say', transforming it into a noun (i.e., *malhaki* 'speaking'). Thus, the phrase *koyangika malhakilul* is not a matrix clause and should be considered an adverbial phrase, translated as 'according to Cat' rather than 'Cat said that...'. Consequently, the results of the study are based on inappropriate test sentences, and it is thus still unclear to what extent Korean children prefer the LD antecedent for the reflexive *caki*. Therefore, whether Korean children start with a local interpretation and gradually move on to an LD interpretation or prefer the LD antecedent initially is a question that still remains unanswered.

Leaving the methodological shortcoming aside, the results of the study are noteworthy in that first, the results of the children differ by group and differ from the results of the adults. An account of this asymmetry for the proponents of the Subset Principle would be the following: 4- to 6-years old are sensitive to the structural binding, c-command relation. Accordingly, they chose the local antecedent that c-commands *caki*, while, the 3-year olds randomly chose an antecedent for the reflexive.

Second, the finding that the children (in particular, the children between ages 4;7 and 6;6) differ from the results of the adults supports the view that children draw only on syntactic factors in interpreting the Korean reflexive. In interpreting the LD reflexive *caki*, adults treat *caki*

as a logophor rather than as a pure reflexive which would prefer an antecedent that provides the source of the information, leading them to be more likely to accept the LD antecedent that does not c-command *caki*. However, the children treat *caki* as a pure reflexive, leading them to choose the local antecedent of *caki* almost 100% of the time.

Recently, Kim (2012) examined the acquisition of four Korean reflexives (age range=6–7), *caki*, *casin*, *caki-casin*, and pronoun *casin*. One of the example test sentences which were used to test *caki* is shown in (33):

- (33) Mickey-ka_i Minnie-eykey_j [PRO *caki*-eykey kong-ul
 Mickey-NOM Minnie-DAT *self*-DAT ball-ACC
 cwula-ko] malhay-yo.
 give-COMP say-SES
 ‘Mickey told Minnie that (PRO) gave ball to self’

The sentence has a methodological problem in that it was designed to test how children interpret an antecedent for *caki*, but ultimately, it tested two factors at the same time, the controller of PRO and the antecedent of *caki*. Thus, it does not give a clear picture with regard to the acquisition of binding in Korean.

Furthermore, the results of tests with potentially problematic stimuli exacerbated the issue. The study found that children’s preference varied according to the tasks. In particular, for example, the LD antecedent was preferred for *caki* in Experiment 1 (the party game), while in Experiment 2 (the Simon-says game), the local antecedent was preferred for *caki*; *caki-casin* in Experiment 1 showed either equal LD and local antecedent preference or a slight LD antecedent

preference, whereas in Experiment 2, the children preferred a local binding interpretation for *caki-casin*. In sum, for these reasons, Kim’s (2012) study does not provide the necessary empirical evidence about the acquisition of binding in Korean.

Lee and Wexler (1987) further examined whether children’s local binding is subject to a minimal distance strategy or to a grammatical constraint with an experiment using sentences such as those in (34a-b).

- (34) a. Mary-ka_i [Kom-i_j choaha-nun] hama-eykey caki-uy_{i/*j}
 Mary-NOM bear-NOM like-REL hippo-DAT *self*-GEN
 sachin-lul chu-ess-ta.
 picture-ACC give-PST-SES
 ‘Mary_i gave a picture of herself_{i/*j} to the hippo that the bear_j likes.’
- b. Mary-ka_i caki-uy_{i/*j} sachin-lul [Kom-i_j choaha-nun]
 Mary-NOM *self*-GEN picture-ACC bear-NOM like-REL
 hama-eykey chu-ess-ta.
 hippo-DAT give-PST-SES
 ‘Mary_i gave a picture of herself_{i/*j} to the hippo that the bear_j likes.’

In both example sentences, the LD matrix subject, *Mary*, c-commands *caki*, while the embedded subject, *kom* ‘bear’ does not c-command *caki*. These two sentences differ from each other in terms of the distance between the c-commanding antecedent and the reflexive *caki*. In (34a), the c-commanding antecedent is far from the reflexive *caki* due to the intervening relative clause including *kom* ‘bear’. In (34b), the c-commanding antecedent is adjacent to *caki*. The results of

the experiment revealed that children’s tendency to choose the c-commanding subject was as high as 65% to 80% in items like (34a) and from 70% to 98% in items like (34b). This suggests that the children looked for the antecedent of the reflexive *caki* on the basis of the c-command relation in the reflexive domain rather than of linear configuration.

Lee (1990) conducted a TVJT with biclausal sentences to examine the point at which the LD interpretation becomes available in child language. The sentence in (35) is an example.

- (35) Grand Papa-ka_i Pinocchio-ka_j caki-lul_{ij}
 Grand Papa-NOM Pinocchio-NOM self-ACC
 kaliki-ess-tako sayngkakhay-ss-ta.
 point to-PST-COMP think-PST-SES
 ‘Grand Papa_i thought that Pinocchio_j pointed to self_{ij}.’

The results showed that children between 6;6 and 8;0 preferred the LD antecedent (60%–90%) over the local antecedent (40%–65%) for *caki* while adults mostly accepted both local and LD antecedents. Based on these results, Lee argues that the LD interpretation for *caki* comes to be accepted around age 6.

Another experiment that tests children’s syntactic knowledge with regard to the choice of an antecedent for the reflexive is Cho (1985), who explored whether children’s interpretation of *caki* interacts with the grammatical hierarchy (i.e., subject > in/direct object > genitive). It has been noted that when there are two NPs in a sentence, the NP higher in the hierarchy is more likely to be the antecedent for a reflexive (Cho, 1985; O’Grady, 1987). Cho conducted a question-answer comprehension task with 60 Korean children from ages 4;1 to 11;7. Three types

of sentences (i.e., SO type: subject>object; GO type: genitive<object; SG type: subject>genitive), as in (36a-c), were used for test items, with each item followed by a question (e.g., “In whose room did it happen?”; “Who did the pushing?”).

- (36) a. SO type: subject>object
- | | | | | |
|------------|---------------|--------------------------|----------|--------------|
| Tom- i_i | Mary-lul $_j$ | <i>caki-uy</i> $_{i/*j}$ | cip-eyse | mil-ess-ta |
| Tom-NOM | Mary-ACC | <i>self</i> -GEN | home-LOC | push-PST-SES |
- ‘Tom $_i$ pushed Mary $_j$ at self’s $_{i/*j}$ home.’
- b. GO type: genitive<object
- | | | | |
|--------|-----------------|---------------------|--------------------------|
| Nay-ka | [[i ai-uy] $_i$ | tongsayng-lul] $_j$ | <i>caki-uy</i> $_{i/*j}$ |
| I-NOM | the child-GEN | brother-ACC | <i>self</i> -GEN |
- cip-eyse mil-ess-ta
home-LOC push-PST-SES
- ‘I pushed this child’s $_i$ brother $_j$ at self’s $_{i/*j}$ home.’
- c. SG type: subject>genitive
- | | | | |
|------------|--------------|----------|--------------------------|
| Tom- i_i | John-uy $_j$ | cip-eyse | <i>caki-uy</i> $_{i/*j}$ |
| Tom-NOM | John-GEN | home-LOC | <i>self</i> -GEN |
- moca-lul manci-ess-ta
hat-ACC touch-PST-SES
- ‘Tom $_i$ touched self’s $_{i/*j}$ hat in John’s $_j$ home.’

The findings from the experiment indicated that, across the age range, the rate of correct interpretation for *caki* was higher in SO and SG types of sentences than in the GO type. This

shows that *caki* is subject-oriented, as has been attested in many studies with children (C.M. Lee, 1973; D.W. Lee, 2010; Montrul, 2010, among many others).

3.2.2 Previous acquisition studies testing semantic factors.

While a great deal of research has been conducted on syntax-associated factors in the acquisition and interpretation of the Korean reflexives, semantic factors have rarely been addressed. To my knowledge, Cho (1992) conducted the only study to test semantic factors in the interpretation of the Korean reflexive *caki*.

The Korean reflexive *caki* has been described in the literature as susceptible to semantic factors such as the source of information or the logophoric center (Kuno, 1987; Sells, 1987; Yoon, 1989, among many others).²¹ Assuming this view, Cho (1992) tested the effect of logophoricity on the children's interpretation of *caki*. She noted that the Korean reportive suffix *-tay* 'be reported' in the predicate makes the definite source of information anonymous. The prediction of the experiment was that when *-tay* is used, *caki* would be less likely to refer to a logophoric subject. See (37) for an example.

²¹ In defining a logophor, whether or not the antecedent is the individual whose thought, speech, point of view, and so forth is represented in the sentence is an important factor (Clements, 1975; Kuno, 1987). Specifically, logophoric antecedents can be categorized as SOURCE, CENTER, or PIVOT with the following characteristics (Sells, 1987, p. 457):

SOURCE: one who is the intentional agent of the communication;

SELF: one whose mental state or attitude the content of the preposition describes; and

PIVOT: one with respect to whose (space-time) location the content of the proposition is evaluated.

(37)	Koyangi-ka _i	malha- ki -lul	[Mary-ka _j
	cat-NOM	say-NMLZ-ACC	Mary-NOM
	<i>caki</i> -lul _{i=j}	mancy-ess-tako]	kulay-ss-tay.
	<i>self</i> -ACC	touch-PST-COMP	that-PST-REP

‘The cat_i said that Mary_j should touch self_{i=j}.’

Cho conducted a question-answer task with native Korean-speaking children at ages 6;0–12;0. The results demonstrated that while adults preferred the LD antecedent (60%) over the local antecedent (40%), the children at ages 6;0–8;0 preferred the local binding interpretation (at rates of 60%–64%). At ages 10;0–12;0, the children’s interpretation pattern was adult-like, with the preference for the local binding interpretation reduced to 38% of the time. Cho claimed that the local antecedent preference observed in the experiment can be attributed to children’s insensitivity to logophoricity, making the logophoric subject a less likely referent for *caki*. Another possible explanation for this finding is that children are not yet fully familiar with the function of the verbal suffix *-tay*.

However, this experiment has some flaws. First, as in Lee and Wexler’s (1987) study, the stimuli used in the experiment are problematic. As already discussed, the phrase *koyangika malhakilul* is not a matrix clause and should be considered an adverbial phrase, translated as ‘according to Cat’ rather than ‘Cat said that...’ Second, the results are compatible with the prediction of the Subset Principle. Thus, once again it is difficult to say whether the results are a reflection of the Subset Principle or of logophoricity.

3.2.3 Evaluation.

Sections 3.2.1 and 3.2.2 critically reviewed the existing studies on the acquisition of Korean reflexives. In sum, first, previous research has focused more on syntactic aspects (i.e., c-command relations; and grammatical relations) and less on semantic aspects of the predicate in the interpretation of the reflexives. Second, previous research has focused more on *caki* and less on *caki-casin*. In contrast, this dissertation focuses on issues that previous research has largely ignored—children’s ability (i) to use semantic properties of the clause-mate verb in the interpretation of Korean reflexives and (ii) to distinguish *caki* and *caki-casin*. This section discusses why focusing on these issues is of theoretical interest.

As already discussed, there have been almost no studies that systematically test whether children’s interpretation of Korean reflexives is affected by semantic properties of the clause-mate verb even though, as has been pointed out in the literature, the interpretation of Korean reflexive *caki* is also affected by syntactic considerations (see Chapter 2). A question arises as to whether native Korean-speaking children can use semantic properties of the clause-mate verb in the interpretation of reflexives, as Danish- and Icelandic-speaking children have been shown to do. At first glance, the prediction that Korean-speaking children can use semantic properties of the clause-mate verb, just like Danish- or Icelandic-speaking children do, seems reasonable. However, a notable difference between Danish/Icelandic and Korean is in their word order: SVO and SOV, respectively. That is, when processing a biclausal sentence, Icelandic/Danish-speaking children encounter the verb before they come upon the reflexive pronoun, while Korean-speaking children encounter the reflexive before they come upon the verb. See (38a-b) below.

- (38) a. **Sub(matrix)** **Sub(embed)** **reflexive** **verb(embed)** **Verb(matrix)**
 John-i Peter-ka caki-lul mil-ess-tako malhaysseyo.
 John-NOM Peter-NOM self-ACC push-PST-COMP said
 ‘John said that Michael beat self.’
- b. **Sub(matrix)** **verb(matrix)** **sub(embed)** **verb(embed)** **reflexive**
 Jón_i segir að Pétur_j gef-i sér_{i>j} disk
 John says that Peter gives-SUBJ self a plate.
 ‘John_i says that Peter_j gives self_{i>j} a plate.’

Korean speakers must encounter *caki* before they encounter an LD-favoring verb like *mil-* ‘push’ in (38a), while Danish and Icelandic speakers process *sig* after they encounter an LD-favoring verb like *gefa* ‘give’ in (38b). That is, native Korean-speaking children should arguably use syntactic domain information (e.g., both LD subject and local subject are identified as potential antecedents) before encountering the clause-mate verb whose semantic properties can influence the choice of antecedent. In contrast, native Danish- or Icelandic-speaking children first process the semantic properties of the clause-mate verb that affects the interpretation of the reflexive, and then process the syntactic domain information in the reflexive. No reanalysis need take place in Danish- or Icelandic-speaking children’s processing of reflexives. However, reanalysis may be necessary in Korean-speaking children’s processing of reflexives, if the children make an initial decision on the interpretation of the reflexives and the semantic properties of the following clause-mate verb is not compatible with their initial decision.

Trueswell, Sekerina, Hill, and Logrip (1999) reported that children have little or no ability to revise initial parsing commitments. If native Korean-speaking children make an initial

decision on the interpretation of *caki*, and the semantic properties of the following clause-mate verb is not compatible with that decision, can the children revise their initial commitment? No study to date has investigated to what extent children who are native speakers of SOV languages use semantic properties of the clause-mate verb for the interpretation of reflexives.

Second, there is little research on *caki-casin*, as opposed to *caki*, in the acquisition literature. A question arises as to whether children can come to know the difference between *caki* and *caki-casin* in biclausal sentential binding and discourse binding. It is noteworthy that the two forms look similar at the surface level. Crucially, children experience infrequent exposure to *caki* and *caki-casin* in either biclausal sentential binding or discourse binding contexts. A search of the Child Language Data Exchange System (CHILDES) database (MacWhinney, 2000) revealed *no* utterances that contained either *caki* or *caki-casin* in caregivers' speech.²² If the child learns from the input, they need some input, and as CHILDES shows, there is no input (at least with respect to reflexives). This strongly indicates that the chances of finding an antecedent bias being induced by the input are very low. So how does the child even form a generalization? And if they do, surely they must do so late in their development because of the paucity of data.

Answers to two questions shed light on language development and language acquisition. The first question is concerned with whether children's reflexive interpretation patterns are the same across languages. If the patterns are the same (regardless of languages), native Korean-speaking children at ages 4–6 should show the same sensitivity to semantic factors as Icelandic-speaking children at ages 4–6 (Hyams & Sigurjónsdóttir, 1990; Sigurjónsdóttir & Hyams, 1992). The second question is concerned with whether native Korean-speaking children at ages 4–6 come to know the properties of *caki* and *caki-casin* in spite of infrequent input exposure.

²² However, as mentioned previously, I acknowledge that the sample size is very small.

The next section presents the research questions and the predictions of the present study. It also explains how this research experimentally investigates the research questions (i.e., whether the interpretations of *caki* vs. *caki-casin* are subject to syntactic and semantic factors).

CHAPTER IV

PRESENT STUDY

This chapter first outlines the motivation for this study, and then presents specific research questions and hypotheses. Section 4.1 concerns the motivation and Section 4.2, the research questions and hypotheses.

4.1 Motivation for the Dissertation

The dissertation aims to provide new experimental data on native Korean-speaking children's interpretation of Korean reflexive pronouns in biclausal sentences and in discourse. In particular, it examines the influence of two factors on the reflexives' interpretation. The first is the type of reflexive (*caki* vs. *caki-casin*), focusing on the domain within which the reflexives are interpreted. In addition to investigating whether Korean children know the distinct properties of *caki* and *caki-casin*, as described in Chapter 2, the dissertation explores whether the interpretation of *caki* (but not *caki-casin*) is influenced by semantic properties of the clause-mate verb. That is, the preference to take an antecedent can be modulated by the meaning of a verb in the embedded clause. Hence, in order to investigate whether native Korean-speaking children use semantic properties of the clause-mate verb for the interpretation of *caki* vs. *caki-casin*, the effect of the clause-mate verb are investigated. There are 3 types: (i) verbs that seem to favor reflexive antecedents that are outside the clause, such as the subject of a higher main clause, or a discourse topic outside the sentence (henceforth, distant antecedent–biased verbs [DAV]); (ii) verbs that favor a local antecedent that is a subject in an embedded clause in a biclausal sentence (henceforth, local antecedent–biased verbs [LAV]); and (iii) some verbs that impose no preference for either an LD antecedent or a local antecedent (henceforth, neutral verbs). This

study is novel at least in three respects. First, although it has been reported that semantic properties of the clause-mate verb play an important role in children's interpretation of the reflexive in SVO languages (e.g., Hyams & Sigurjónsdóttir, 1990; Olsen, 1992; Sigurjónsdóttir & Hyams, 1992), such factors have not been systematically tested with respect to the interpretation of reflexives by children with SOV languages. As discussed, a question arises as to whether children with SOV languages use semantic information of clause-mate verbs for the interpretation of reflexives, even though verbs appear after reflexive pronouns. Second, there have been no studies that have systematically tested whether native Korean children distinguish the properties of *caki* vs. *caki-casin*. Previous studies on the acquisition of the Korean reflexives have focused exclusively on *caki*, and thus this study is novel in that it explores children's interpretation of both *caki* and *caki-casin*. Third, this dissertation is the first attempt to look at discourse binding. As discussed, *caki* can refer to a local subject or an LD subject in the sentence, and even an element outside the sentence. No study to date has investigated whether young native Korean children already know that *caki* can refer to a sentence-external element.

4.2 Research Questions and Hypotheses

The specific research questions motivating the present study are as follows:

- 1) For native Korean-speaking children, does the type of reflexive (i.e., *caki* vs. *caki-casin*) affect the reflexive interpretation in a biclausal sentence and in a discourse?
- 2) For native Korean-speaking children, does the type of clause-mate verb (i.e., DAV vs. LAV) induce a particular bias towards the choice of one or the other antecedent?
- 3) Do native Korean-speaking children have the same interpretation preferences as adults do for *caki* and *caki-casin*?

According to Guasti (2002), children at the age of 4 know the bulk of their first language grammar. Similarly, Chien & Wexler showed that reflexives and principle A are acquired relatively early, so a reasonable null hypothesis is that Korean children have acquired the properties of their reflexive system early. Based on these studies, this dissertation hypothesizes that children at ages 4–6 are adult-like in the interpretation of reflexives, with respect to two factors: (i) reflexive type in a biclausal sentence and in discourse and (ii) type of clause-mate verb.

The following shows the hypothesis and prediction based on each factor.

- Factor 1: Reflexive type

- Hypothesis: Children are like adults in the interpretation of reflexives. The effect of reflexive type will be evident in the children's choice of an antecedent in biclausal sentences and in discourse.

- Prediction: If the hypothesis is confirmed, children will know that the two reflexives are distinct from one another in terms of locality; all other things being equal, their interpretation of *caki* will allow either an LD (main-clause subject in a biclausal sentence; extra-sentential discourse topic) or a local antecedent, whereas their interpretation of *caki-casin* will allow only a local antecedent both in sentence-level binding and in discourse-level binding, as set out in Table 4.1.

Table 4.1.
A summary of predicted responses

		LD antecedent	Local antecedent
<i>Reflexive type</i>	<i>Caki</i>	✓	✓
(neutral verbs)	<i>caki-casin</i>	*	✓

Note. ✓ = possible; * = impossible

•Factor 2: Lexical effect (the choice of a clause-mate verb)

- Hypothesis: Children are like adults in the interpretation of reflexives. The effect of the clause-mate verb will be evident in children's choice of antecedent for *caki*, but not *caki-casin*.

- Prediction: If the hypothesis is confirmed, *caki* will favor an LD antecedent (main-clause subject in a biclausal sentence; extra-sentential discourse topic) with a DAV and a local antecedent with an LAV. In contrast, *caki-casin* will always take a local antecedent.

These predictions are summarized in Tables 4.2 and 4.3.

Table 4.2.
Possibility of an LD antecedent (i.e., main-clause subject in a biclausal sentence; extra-sentential discourse topic)

	<i>caki</i>	<i>caki-casin</i>
Distant antecedent–biased verbs (DAV)	✓	*
Local antecedent–biased verbs (LAV)	*	*

Note. ✓ = possible; * = impossible

Table 4.3.
Possibility of a local (clause-mate) antecedent

	<i>caki</i>	<i>caki-casin</i>
Distant antecedent–biased verbs (DAV)	*	✓
Local antecedent–biased verbs (LAV)	✓	✓

Note. ✓ = possible; * = impossible

To test each of these hypotheses, two sets of TVJT experiments were designed. The first set of experiments examines sentence-level binding by using biclausal test sentences; the second set examines discourse-level binding by using pairs of monoclausal test sentences in particular types of contexts. Specifically, Experiments 1 and 2 examine the interpretation of the reflexive type (*caki* vs. *caki-casin*) in two distinct discourse contexts (distant antecedent–favoring context vs. local antecedent–favoring context). The details and results of these experiments are presented in Chapter 6. Experiments 3 and 4 test the interaction of reflexive types and verb types (distant antecedent–biased verbs vs. local antecedent–biased verbs), again in two different discourse contexts (distant antecedent–favoring context vs. local antecedent–favoring context). The details and results of these experiments are presented in Chapter 7. The verbs used in the experimental stimuli were categorized into the three verb types based on the results of an acceptability judgment task with native-speaker adults ($n = 32$), which is presented in Chapter 5. A summary of the experimental design is presented in Table 4.4.

Table 4.4.
Overview of experiments

Experiment	Binding domain	To be tested in each experiment	Task
1	Sentence-level	<ul style="list-style-type: none"> • Reflexive type (<i>caki</i> vs. <i>caki-casin</i>) 	TVJT
2	Discourse-level	<ul style="list-style-type: none"> • Reflexive type (<i>caki</i> vs. <i>caki-casin</i>) 	TVJT
3	Sentence-level	<ul style="list-style-type: none"> • Reflexive type (<i>caki</i> vs. <i>caki-casin</i>) • Verb type (DAV vs. LAV) 	TVJT
4	Discourse-level	<ul style="list-style-type: none"> • Reflexive type (<i>caki</i> vs. <i>caki-casin</i>) • Verb type (DAV vs. LAV) 	TVJT

CHAPTER V

A NORMING STUDY

Chapter 5 presents a norming study that was conducted in order to inform the selection of the verbs (i.e., distant antecedent-biased verbs, local antecedent-biased verbs, and neutral verbs) used in the experimental items.

5.1 A Norming Study: Determining Verb Types

5.1.1 Design.

As illustrated in Chapter 2, the meaning of the clause-mate verb influences the choice of an antecedent of *caki* (Cho, 2006; Choi & Kim, 2007; Han & Storoshenko, 2012). This chapter introduces the design and results of an acceptability judgment task (AJT) that investigates which verbs pattern as distant antecedent verbs, which pattern as local antecedent verbs, and which verbs pattern as neutral verbs.

The AJT crucially capitalizes on a feature of *caki* that restricts the reference of its antecedent to third person subjects (Choi & Kim 2007; Kang, 1998; Kim & Yoon, 2008). For example, in a bi-clausal sentence in which one subject is third person and the other subject is first person, *caki* takes the third person subject only, no matter whether it is the matrix or embedded subject.

- (39) a. 3rd person matrix subject and 1st person embedded subject
- Yang-i [nay-ka_j caki-lul_{i/*j} mil-ess-tako] malhay-ss-eyo.
 Sheep-NOM I-NOM self-ACC push-PST-COMP say-PST-SES
 ‘Sheep_i said that I_j pushed self_{i/*j}.’
- b. 1st person matrix subject and 3rd person embedded subject
- ? Nay-ka_i [Yang-i_j caki-lul_{*i/j} mil-ess-tako] malhay-ss-eyo.
 I-NOM Sheep-NOM self-ACC push-PST-COMP say-PST-SES
 ‘I_i said that Sheep_j pushed self_{*i/j}.’

In (39a-b), the only eligible antecedent for *caki* is *yang* ‘sheep’, the third person subject. Thus, *caki* refers to the LD antecedent in (39a) and to the local, clause-mate antecedent in (39b). However, note that the verb *milta* ‘push’ in the embedded clause in (39a-b) strongly encourages an LD antecedent interpretation – it is pragmatically less likely that someone would push himself/herself, , and so a local antecedent is dispreferred. A difficulty in processing is expected in (39b) because the verb *milta* ‘push’ encourages the LD antecedent interpretation, while the only possible interpretation is the clause-mate antecedent. Thus there are at least two non-syntactic factors that influence the selection of the antecedent of *caki*: the third person restriction, and the pragmatic preference for a local vs. long-distant antecedent.

This fact allows us to strategically manipulate the person features of the matrix and embedded subjects to probe the antecedent preference of the verb. For example, if the matrix subject is third person and the embedded subject is first person, then a sentence with a verb that favors an LD antecedent (DAV) should be judged as highly acceptable, while a sentence with a verb that favors a local antecedent (LAV) should be rated low because the local antecedent is in

the first person and is not a possible antecedent. Conversely, when the matrix subject is in the first person and the embedded subject in the third person, then a sentence with a verb that favors an LD antecedent should be rated very low because that matrix (first person) subject is not a permissible antecedent. However, a sentence with a verb that favors the local antecedent should be rated as highly acceptable because the local antecedent is in the third person and is a possible antecedent *caki*. For example, if a verb prefers an LD antecedent (i.e., DAV), the acceptability rating will be high when the LD subject is third person while it will be low when the LD subject is first person. If a verb prefers a local antecedent (i.e., LAV), the acceptability rating will be high when the subject of the embedded clause is third person, but low when the subject of the embedded clause is first person. If a verb is neutral in taking an LD or local antecedent, the acceptability rating will be high regardless of whether the third person subject is in a matrix subject position or an embedded subject position. That is, the AJT ratings classify DAV, LAV, and neutral verbs.

Table 5.1 summarizes the norming study's conditions, which vary the person of the matrix subject and the embedded subject in biclausal sentences with DAV, LAV, and neutral verbs.

Table 5.1.
Outline of the norming study

Verb type	Person in the matrix subject and in the embedded subject	Expected results (acceptability)
DAV	3rd-1st condition	Highly acceptable compared to that of 1st-3rd condition
	1st-3rd condition	Less acceptable compared to that of 3rd-1st condition
LAV	3rd-1st condition	Less acceptable compared to that of 1st-3rd condition
	1st-3rd condition	Highly acceptable compared to that of 3rd-1st condition
Neutral verbs	3rd-1st condition	Equally highly acceptable in both 3rd-1st condition and
	1st-3rd condition	1st-3rd condition

Note. Sample stimulus for the 3rd-1st condition: ‘**Sheep**_{*i*} said that **I**_{*j*} pushed *self*_{*i*}’; for the 3rd-1st condition: ‘**I**_{*i*} said that **Sheep**_{*j*} pushed *self*_{**i*_{*j*}.’}

5.1.2 Participants.

A total of 32 native Korean adult speakers (age range = 21 to 27) participated in the experiment. All were college students recruited from universities in Seoul, South Korea.

5.1.3 Materials.

Two types of bi-clausal sentences including accusative-marked *caki* in the embedded clause were used as test items: third person LD matrix subject with first person local embedded subject (henceforth, 3rd-1st condition) and first person LD matrix subject with third person local embedded subject (henceforth, 1st-3rd condition), as in (39a-b). Ten verbs (i.e., *milecwuta* ‘push’, *tulecwuta* ‘lift’, *ccochakata* ‘chase’, *swumta* ‘hide’, *pyencanghata* ‘disguise’, *kkwumita* ‘make up’, *kulita* ‘draw’, *kalikhita* ‘point’, *anta* ‘hug’, and *kkocipta* ‘pinch’) were used in both sentence

types,²³ which created 20 experimental items. In addition to the 20 test items, there were 2 practice items and 40 fillers. The 40 filler items consisted of 20 acceptable sentences and 20 unacceptable or low-acceptability sentences for a balance with the test items.²⁴ A complete set of all test items can be found in Appendix A.

The presentation of the test items was randomized. Two versions of the AJT were created, with the order of the items in one reversed in the other. Half of the participants were given the sentences in the initial randomized order, while the other half were given the sentences in reversed randomized order. A six-point Likert scale was used for the acceptability ratings. An example of a target sentence used in the experiment is shown in (40):

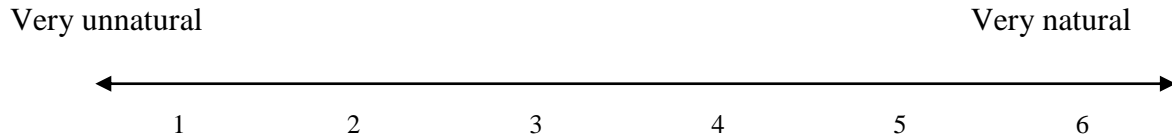
²³ There are other possible verbs that could be used to test how verbs influence the selection of an antecedent for a reflexive. However, I selected the verbs that were judged to be familiar to young children (Lee, Kwon & Jeong, 1980).

²⁴ Two sets of filler items are seen in (i) and (ii).

- (i) a. Ku sensayngnim-un haksayng-i motwu hwullyungha-tako sayngsakhay-ss-eyo
 the teacher-TOP students-NOM all good-COMP think-PST-SES
 ‘The teacher thought all the students were good.’
- b. */? Ku sensayngnim-un haksayng-i hwullyungha-tako motwu sayngsakhay-ss-eyo
 the teacher-TOP students-NOM good-COMP all think-PST-SES
 ‘The teacher thought all the students were good.’
- (ii) a. Chelswu-nun hyeng-hanthey yeyppun khatu-lul ponay-ss-eyo
 Chelswu-TOP brother-DAT pretty postcard-ACC send-PST-SES
 ‘Chelswu sent a pretty postcard to the brother.’
- b. ? Chelswu-nun hyeng-ul yeyppun khatu-lul ponay-ss-eyo
 Chelswu-TOP brother-ACC pretty postcard-ACC send-PST-SES
 ‘Chelswu sent the brother a pretty postcard.’

Of the 4 example fillers, (ia) and (iia) are acceptable sentences. However, in particular, the sentence in (ib) has low acceptability or is unacceptable due to the mismatch of agreement between the quantifier *motwu* ‘all’ and its antecedent *ku sensayngnim-un* ‘the teacher’. (iib) is a double object construction, which is allowable in Korean, but less acceptable than the dative construction in (iia).

- (40) Yang- i_i [nay-ka $_j$ *caki-lul* $_{i/*j}$ mil-ess-tako] malhay-ss-eyo.
 Sheep-NOM I-NOM *self*-ACC push-PST-COMP say-PST-SES
 ‘Sheep $_i$ said that I $_j$ pushed self $_{i/*j}$.’



5.1.4 Procedure.

The AJT was a “paper and pencil” type test in which the sentences to be judged were presented to the participants as a whole. The participants were individually tested in a quiet room. They read the instructions explaining the goal and the procedure of the experiment, and then completed the two practice trials. They were then given the list of sentences and asked to rate the naturalness of each sentence on a scale of 1 (very unnatural) to 6 (very natural). The task lasted less than 20 minutes.

5.1.5 Results.

Every participant answered consistently on the fillers, and thus no participant’s data were excluded from the analysis. This section first discusses the criteria that are used to identify the 3 types of verbs. It then presents the results of the acceptability ratings and divides the verbs into the 3 types.

First, to decide what was acceptable or unacceptable, I applied 3.5 as a cut-off because it is the midpoint of the 6-point Likert scale. For the decisions on the three verb types, see Table 5.2.

Table 5.2.
The criteria for categorizing the verbs into the three types

		DAV	LAV	Neutral verbs
Acceptability rating	3rd-1st condition	acceptable	unacceptable	acceptable
		(over 3.5)	(below 3.5)	(over 3.5)
	1st-3rd condition	unacceptable	acceptable	acceptable
		(below 3.5)	(below 3.5)	(over 3.5)

Table 5.2 shows that (i) a verb is considered DAV when participants rated sentences involving the verb at over 3.5 (i.e., acceptable) in the 3rd-1st condition but below 3.5 (i.e., unacceptable) in the 1st-3rd condition; that (ii) a verb is considered LAV when participants rated sentences involving the verb at over 3.5 in the 1st-3rd condition but below 3.5 in the 3rd-1st condition; and that (iii) a verb is considered neutral when participants rated sentences involving the verb at over 3.5 in both conditions. Table 5.3 shows the results.

Table 5.3.
Mean ratings of the potential target verbs

Items	Mean Ratings	
	3rd-1st condition	1st-3rd condition
<i>milecwuta</i> ‘push’	5.1 (SD = .818)	2.4 (SD = .948)
<i>tulecwuta</i> ‘lift	4.9 (SD = .963)	2.2 (SD = .738)
<i>cchochakata</i> ‘chase’	5.1 (SD = .734)	2.3 (SD = .902)
<i>swumta</i> ‘hide’	2.8 (SD = 1.078)	4.2 (SD = 1.221)
<i>pyencanghata</i> ‘disguise’	2.9 (SD = 1.088)	4.2 (SD = 1.221)
<i>kkwumita</i> ‘make up’	2.7 (SD = 1.148)	4.4 (SD = 1.134)
<i>kulita</i> ‘draw’	5.2 (SD = .767)	4.2 (SD = 1.091)
<i>kalikhita</i> ‘point’	5.1 (SD = .801)	4.1 (SD = 1.058)
<i>anta</i> ‘hug’	5.1 (SD = .707)	4.3 (SD = 1.061)
<i>kkocipta</i> ‘pinch’	5.0 (SD = .803)	3.8 (SD = .950)

Note: Rating is on a scale of 1-6 where 1 is very unnatural and 6 is very natural.

Table 5.3 indicates that the acceptability ratings differed in the two conditions according to the verbs. For example, for the verb *milecwuta* ‘push’, participants gave higher ratings when it was used in the 3rd-1st condition (5.1), and lower ratings when it occurred in the 1st-3rd condition (2.4), which indicates that the verb is a DAV. In contrast, for the verb *kkwumita* ‘make up’, the acceptability rating is 2.7 (within the range of unacceptable) for the 3rd-1st condition, but 4.4 (within the range of acceptable) for the 1st-3rd condition, which indicates that the verb is a LAV. For the verb *kulita* ‘draw’, the acceptability rating is 5.2 (within the range of acceptable) in the 3rd-1st condition, and 4.2 (within the range of acceptable) in the 1st-3rd condition, which

suggests that the verb *kulita* ‘draw’ is a neutral verb. The overall results for all 10 verbs are further broken down by the three types in Figures 5.1–5.3.

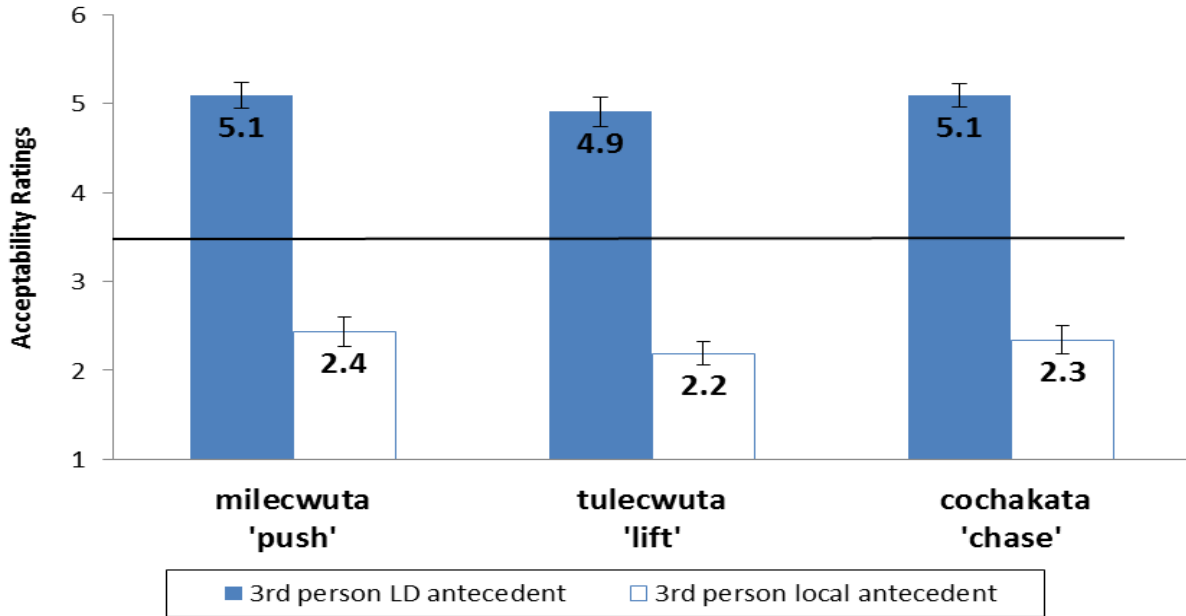


Figure 5.1. Acceptability ratings of DAV; error bars represent standard errors.

As can be seen in the figure, the DAV category included 3 verbs: *milecwuta* ‘push,’ *tulecwuta* ‘lift,’ and *cochakata* ‘chase’. The ratings of the sentences with these verbs and a 3rd person LD antecedent are all over 3.5 (5.1, 4.9, and 5.1 respectively), whereas when the sentence has the 3rd person in the embedded subject, the acceptability ratings are 2.4 for *milecwuta* ‘push’, 2.2 for *tulecwuta* ‘lift’, and 2.3 for *cochakata* ‘chase’ (out of 6). The ratings of the sentences with a 3rd person LD antecedent and a 3rd person local antecedent were compared using a paired samples *t*-test, which shows that there is a difference in the acceptability of the DAV in the two sentence types: ($t_1(31) = 15.736; p < .001$; $t_2(2) = -9.945; p < .01$).

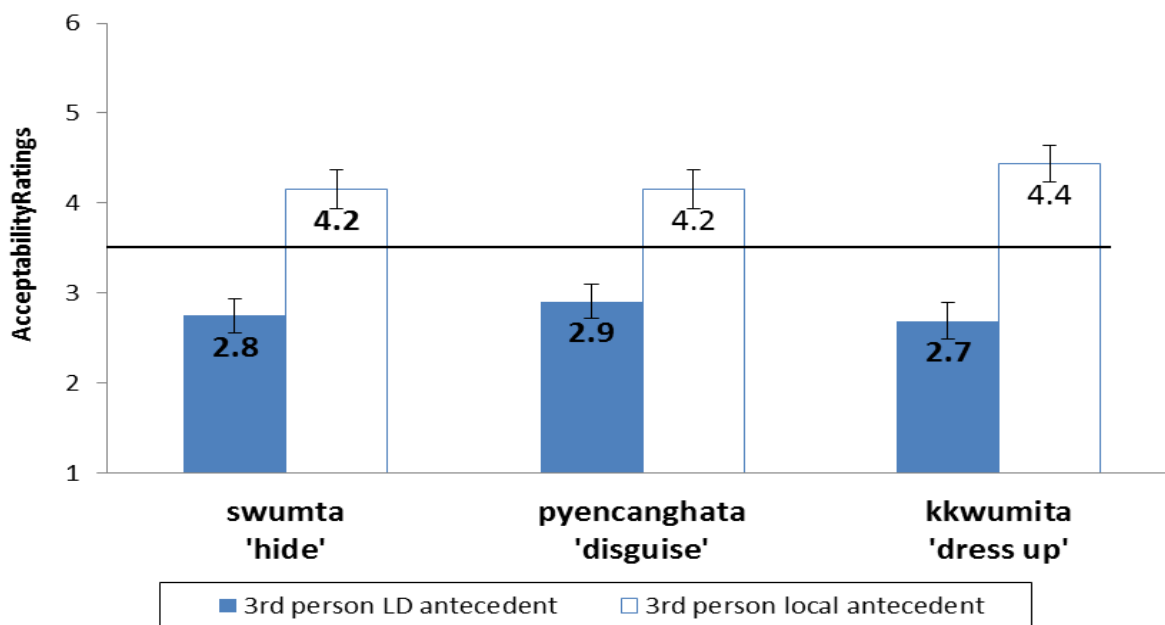


Figure 5.2. Acceptability ratings of LAV; error bars represent standard errors.

Figure 5.2 shows the ratings of 3 LAV: *swumta* ‘hide’, *pyencanghata* ‘disguise’, and *kkwumita* ‘make up’.²⁵ These three verbs are consistently rated below 3.5 when the sentences have a 3rd person LD antecedent (2.8 for *swumta* ‘hide’; 2.9 for *pyencanghata* ‘disguise’; 2.7 for *kkwumita* ‘make up’) and over 3.5 points when there is a 3rd person local antecedent (4.2 for *swumta*

²⁵ It is worth noting that these verbs take a BODYPART as their direct object. Safir (1996) proposes that anaphoric dependencies denote relations (SELF and identity relation), by investigating an array of anaphoric atoms including SAME, BODYPART, OTHER, OWN, and MET(onymy) (which includes SELF). These anaphoric atoms influence the interpretation of reflexives and pronominals. For example, the English counterpart of BODYPART anaphora are “almost always considered idiomatic and which always involve an overt pronominal that is bound by a coargument” (p. 582). See (ia-c) for examples.

- (i) a. John raised her/**his** hand.
- b. John opened her/**his** eyes.
- c. John batted *her/**his** eyes.

(Safir, 1996, p. 582, Ex.45a-c)

Every verb in (ia-c) is the same in terms of how many arguments the verb requires and the pronominal tends to be bound by the coargument, *John*. What is distinct to varying degrees is a physical gesture interpretation. For (ia-b), the possessor of the hand and eyes does not have to be the same as the agent raising and opening them. However, the relation between the possessor of the eyes and the agent batting them should be the same. The examples in (ia-c) clearly indicate that the meaning of verbs affects anaphor interpretation.

‘hide’; 4.2 for *pyencanghata* ‘disguise’; 4.4 for *kkwumita* ‘make up’). A paired samples *t*-test confirms that there is a significant difference in the acceptability of sentences with these verbs according to where the 3rd person antecedent occurs: ($t_1(31) = -8.285$; $p < .001$; $t_2(2) = 98.271$; $p < .001$).

Note that the overall acceptability of LAVs seems to be lower than that of DAVs, and the difference in conditions (black versus white bars) is less than with the DAVs. This is likely to be accounted for by the property that *caki* manifests a default preference for an LD antecedent (Choi & Kim, 2007; Yang, 1983). That is, although the LAVs in the embedded clause favor a local interpretation for the reflexive, it must compete with the LD-preferring property of the reflexive itself, indicating that a readjustment from the LD antecedent preference to the local antecedent interpretation is called for. This leads to the overall lower acceptability of LAVs, which take a local antecedent as the result of a process of readjustment, whereas DAVs easily take the LD antecedent. In addition, the low acceptability of LAVs also causes the rating gap between a 3rd person LD antecedent and a 3rd person local antecedent to be smaller with LAVs than with DAVs.

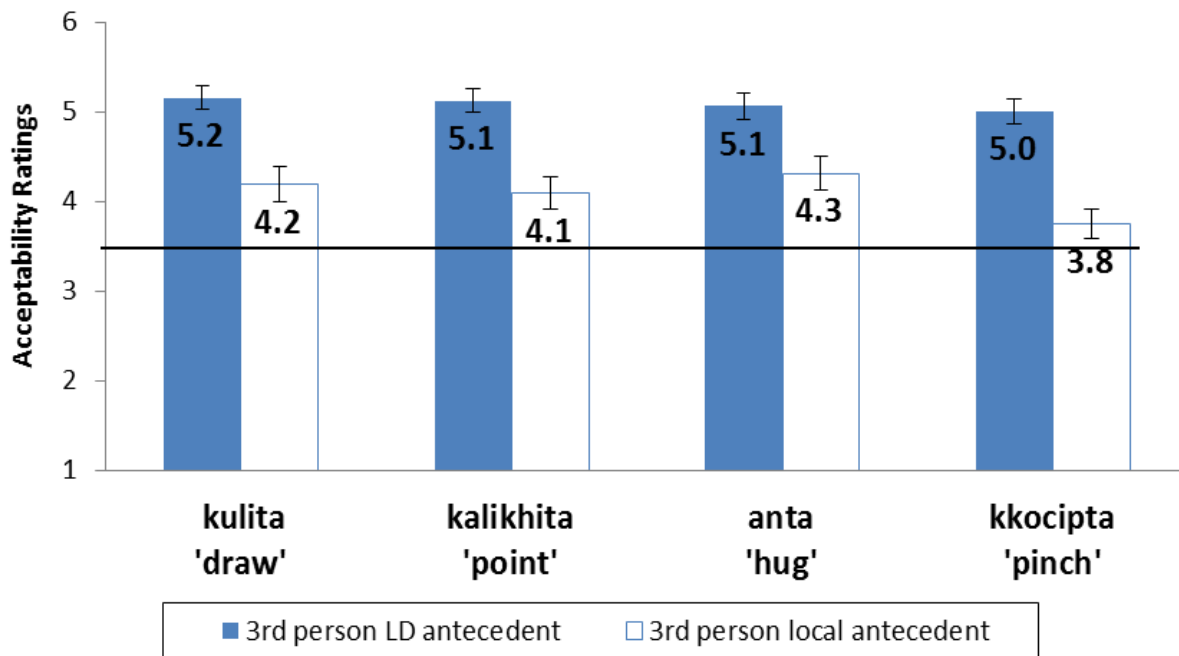


Figure 5.3. Acceptability ratings of the neutral verbs; error bars represent standard errors.

As shown in Figure 5.3, the ratings for the verbs in the category of neutral verbs are all over the 3.5 cut-off point. These verbs are *kulita* ‘draw’, *kalikhita* ‘point’, *anta* ‘hug’, and *kkocipta* ‘pinch’. However, a paired samples *t*-test shows that an LD antecedent interpretation sounds significantly more natural than a local antecedent interpretation for these verbs ($t_1(31) = 9.092$; $p < .001$; $t_2(3) = 10.976$; $p < .002$). This does not indicate that the verbs are in the DAV category. Rather, it reflects that *caki* is a reflexive with a preference for the LD interpretation (Choi & Kim 2007; Kang, 1998; Kim & Yoon, 2008). The fact that the neutral verbs are distinct from the DAV is shown in the following analysis: The ratings of the neutral verbs with a third person local antecedent condition were significantly different from those of the DAV with a third person local antecedent ($t_1(31) = 15.000$; $p < .001$; $t_2(5) = -11.360$; $p < .001$).²⁶

²⁶ The neutral verbs are also different from the LAV: The ratings of the neutral verbs with a third person LD antecedent were significantly different from those of the LAV with a third person LD antecedent ($t_1(31) = 16.175$; $p < .001$; $t_2(5) = -33.824$; $p < .001$).

5.1.6 Discussion.

Overall, the results of the acceptability rating study reveal that the acceptability ratings for the 3rd-1st and the 1st-3rd conditions differ depending on type of clause-mate verb. As expected for the DAV in the 3rd-1st condition, the participants rated these sentences as highly acceptable. By contrast, the LAV in the 1st-3rd condition was accepted at higher rates than in the 3rd-1st condition. With regard to the neutral verbs, they were rated highly in both the 3rd-1st and the 1st-3rd conditions. It is clear that in Korean, the information of the verbs interacts with the person-feature in regulating the off-line interpretation of *caki*, resulting in different acceptability ratings. Results from the off-line acceptability judgment task also provide evidence that in this, Korean is like Icelandic (Hyams & Sigurjónsdóttir, 1990) and a number of other European languages, which, as far as I know, had not previously been noted.

CHAPTER VI

ANTECEDENT DOMAINS

This chapter presents experiments examining children's interpretation of the two reflexives, *caki* and *caki-casin*, in sentence-level and discourse conditions. Section 6.1 explores whether native Korean-speaking children's antecedent choices differ according to reflexive types in biclausal sentences. Section 6.2 examines whether native Korean children allow extra-sentential discourse binding for the two reflexive types. The results of the two experiments are summarized and discussed in Section 6.3.

6.1 Experiment1: Intra-sentential binding

6.1.1 Participants.

Twenty-eight monolingual Korean native-speaker children (mean age = 5;7; age range = 5;1–6;2) and 30 native-speaker adult controls participated in this experiment. Data from two children, one five-year-old, and one six-year-old, were excluded from the analyses because their accuracy rates on the fillers were within the range of chance. The remaining 26 children and all 30 adult controls answered at least 10 of the 12 filler questions correctly (83%). All children were attending a kindergarten in Seoul, Korea at the time of testing.

6.1.2 Procedure.

A TVJT (Crain & Thornton, 1998) was employed to test participants' judgments on the target sentences. In the TVJT, the participants heard stories that were accompanied by pictures via PowerPoint and were then asked to decide whether a given test sentence accurately described

the story, by responding ‘true’ or ‘false’. ‘True’ indicated that the statement matched the story, and ‘false’ that the statement did not match the story. Each child was tested individually in a quiet room; the entire test session for each child did not exceed 20 minutes.

6.1.3 Materials.

A 2 x 2 design was created for the TVJT, varying the type of reflexive (*caki* vs. *caki-casin*) and two contexts (LD antecedent context vs. local antecedent context). Two contextual pairs were designed to match the long distance reading of the reflexive (LD antecedent context) or the local reading of the reflexive (local antecedent context). For example, for a test sentence like *Duck said that Bee pointed to self*, the LD context illustrates the *Bee* (subject of the sentence in which the reflexive occurs) pointing to the *Duck* (the subject of the matrix clause, and thus a more distant potential antecedent, see Figure 6.1). In contrast, the local antecedent context depicts the *Dinosaur* pointing to him / herself (see Figure 6.2). The figures also explain what each response type, ‘true’ or ‘false’, indicates in terms of antecedent interpretation.

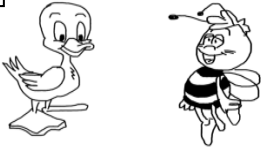
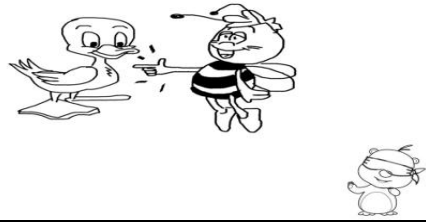
LD antecedent context	
<div style="border: 1px solid black; display: inline-block; padding: 2px;">1</div> 	<div style="border: 1px solid black; display: inline-block; padding: 2px;">2</div> 
Here are Duck and Bee.	Bee is doing something. Blindfolded Rupy asks Duck what is going on.
<p>Test sentence</p> <p>Oli-ka_i kkwulpel-i_j <i>caki/caki-casin-lul</i>_{ij} kalikhy-ess-tako malhay-ss-eyo.</p> <p>Duck-NOM Bee-NOM <i>self</i>-ACC pointed to-PST-COMP say-PST-SES</p> <p>‘Duck_i said that Bee_j pointed to self_{ij}.’</p> <p>Response type and antecedent interpretation</p> <p>True = LD antecedent interpretation (i.e., Duck_i said that Bee_j pointed to Duck_i)</p> <p>False = Local antecedent interpretation (i.e., Duck_i said that Bee_j pointed to Bee_j)</p>	

Figure 6.1. Sample pictures (with texts) of LD antecedent context with *caki/caki-casin* for intra-sentential binding.

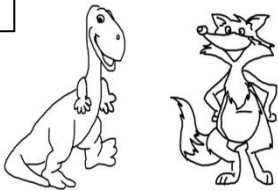
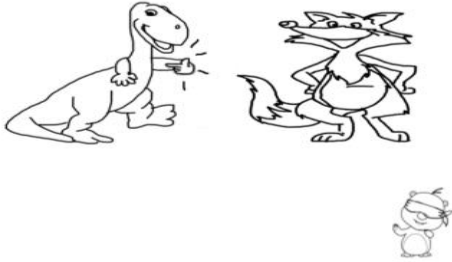
Local antecedent context	
<div style="border: 1px solid black; display: inline-block; padding: 2px;">1</div> 	<div style="border: 1px solid black; display: inline-block; padding: 2px;">2</div> 
Here are Fox and Dinosaur.	Dinosaur is doing something. Blindfolded Rupy asks Fox what is going on.
<p>Test sentence</p> <p>Yewu-ka_i konglyong-i_j caki/caki-casin-lul_{ij} kalikhy-ess-tako malhay-ss-eyo.</p> <p>Fox-NOM Dinosaur-NOM self-ACC pointed to-PST-COMP say-PST-SES</p> <p>‘Fox_i said that Dinosaur_j pointed to self_{ij}.’</p> <p>Response type and antecedent interpretation</p> <p>True = Local antecedent interpretation (i.e., Fox_i said that Dinosaur_j pointed to Dinosaur_j)</p> <p>False = LD antecedent interpretation (i.e., Fox_i said that Dinosaur_j pointed to Fox_i)</p>	

Figure 6.2. Sample pictures (with texts) of local antecedent context with *caki/caki-casin* for intra-sentential binding

Thus a ‘true’ response indicated an LD antecedent interpretation in the LD context, but a local interpretation in the local context, and vice versa for false responses.

Each child was tested on a total of 26 stories: 2 warm-ups, 12 experimental stories, and 12 filler stories. The 12 experimental stories were composed of four conditions with three tokens

in each. Four neutral verbs (i.e., *kulita* ‘draw’, *kalikhita* ‘point’, *anta* ‘hug’, and *kkocipta* ‘pinch’) were used for the 12 test items, balanced for Match and Mismatch conditions.²⁷ The critical and filler items were presented in a random order. Four lists were created.

6.1.4 Results.

Results were analyzed in the following way. If a participant chose a ‘true’ response, s/he was considered as accepting the binding relation in the sentence exemplified by the story. A ‘false’ response was taken to mean the rejection of the binding relation in the sentence. A score of 1 was assigned to ‘true’ responses, while a score of ‘0’ was assigned to ‘false’ responses. The participants’ responses were then averaged and a mean percentage score was calculated for each participant and condition. Repeated measures ANOVAs and paired samples *t*-tests were conducted to determine the statistical significance of the data from the adult controls and the children. See Figure 6.3 for the data of the adults.

²⁷ The verbs were chosen from common verbs that children know, which made it hard to find neutral verbs. I found only four such verbs. Thus, each participant encountered the four verbs three times in the test. To avoid any potential familiarity effects from multiple uses of the same verbs in a single test, different animal names were used for the three items with the same verb. In addition, the three items with the same verb in the same test varied the context and reflexive. For example, *kalikhita* ‘point’ was used with *caki* (LD context), *caki* (local context), and *caki-casin* (LD context) in List 1; *caki* (local context), *caki-casin* (LD context), and *caki-casin* (local context) in List 2; *caki-casin* (LD context), and *caki-casin* (local context), and *caki* (LD context) in List 3; and *caki-casin* (local context), *caki* (LD context), and *caki* (local context) in List 4.

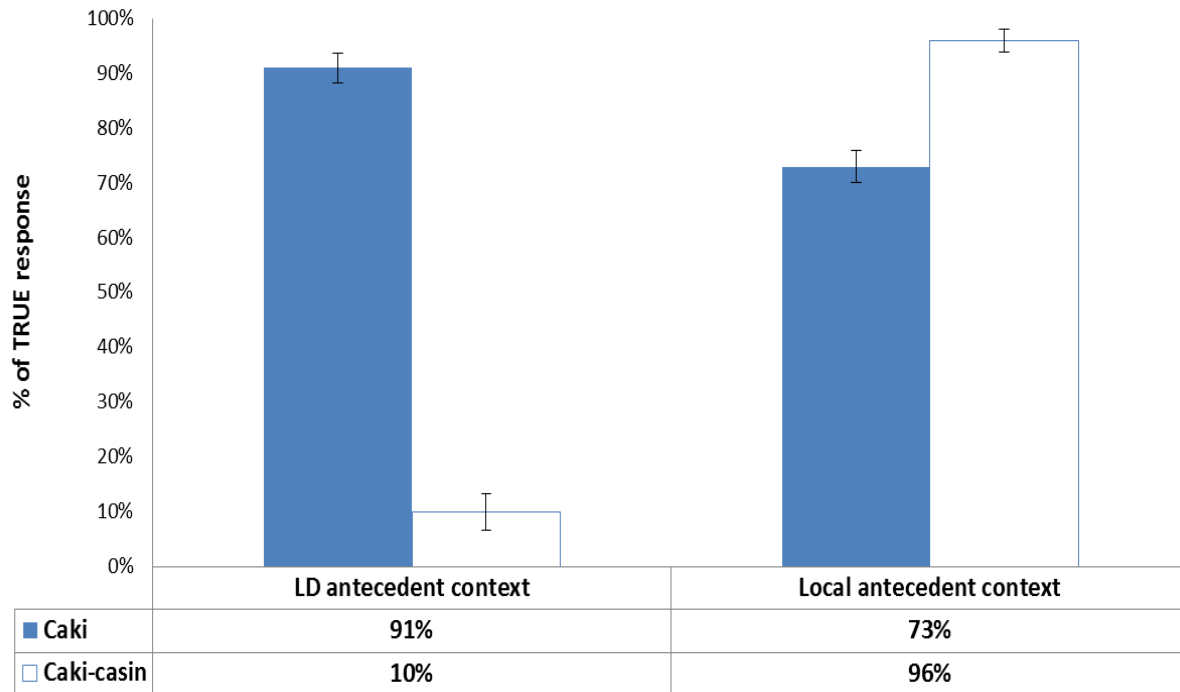


Figure 6.3. Antecedent interpretation of *caki* and *caki-casin* depending on context for intra-sentential binding: Adults; error bars represent standard errors.

Figure 6.3 indicates that in the condition where the picture represented an LD interpretation, the adults accepted the LD antecedent for *caki* 91% (SD=14%) of the time, while they accepted the LD antecedent for *caki-casin* only 10% (SD=15%) of the time, suggesting that the adult native-speaker controls did not allow an LD antecedent for *caki-casin*. In the local antecedent context, the adults accepted *caki* as the local antecedent 73% (SD=18%) of the time for *caki*, while they accepted *caki-casin* as the local antecedent 96% (SD=11%) of the time. In sum, overall, the adults allowed both LD interpretation and local interpretation for *caki*, but they had a slight preference for the LD interpretation (91% vs. 73 %, respectively). However, for *caki-casin*, the adults strongly favored the local interpretation.

The differences between the acceptance rates for *caki* and *caki-casin* in both contexts were analyzed with a repeated measures ANOVA: The results show main effects of reflexive

type ($F_1(1, 29) = 76.778, p < .001; F_2(1, 3) = 1876.223, p < .001$) and context type ($F_1(1, 29) = 212.002, p < .001; F_2(1, 3) = 179.704, p < .001$), and an interaction between reflexive type and context type ($F_1(1, 29) = 338.490, p < .001; F_2(1, 3) = 506.336, p < .001$). The main effects of reflexive type and context type are due to the low acceptance rate (10%) of the condition using *caki-casin* and an LD antecedent context (i.e., collapsed across the contexts, acceptance rates are over 80% for *caki* vs. under 60% for *caki-casin*; collapsed across the reflexives, the acceptance rates are over 80% for local-antecedent contexts vs. under 60% for the LD antecedent contexts). The interaction effect comes from the fact that in the LD antecedent context, the adult participants allow *caki* but disallow *caki-casin*. A paired sample *t*-test, a planned comparison, was conducted to find out whether there were significant differences between the LD antecedent context and the local antecedent context with *caki* (i.e., 91% vs. 73%) and between the LD antecedent context and the local antecedent context with *caki-casin* (i.e., 10% vs. 96%). The difference between LD and local binding of *caki* was significant ($t_1(29) = 4.287, p < .001; t_2(3) = 11.878, p < .01$), which means the adults had an LD binding preference for *caki*. The results with *caki-casin* in two contexts were significant ($t_1(29) = -27.893, p < .001; t_2(3) = -18.642, p < .001$).

As for the children, the results were similar, although not quite as stark. See Figure 6.4 for the data of the children, with discussion below.

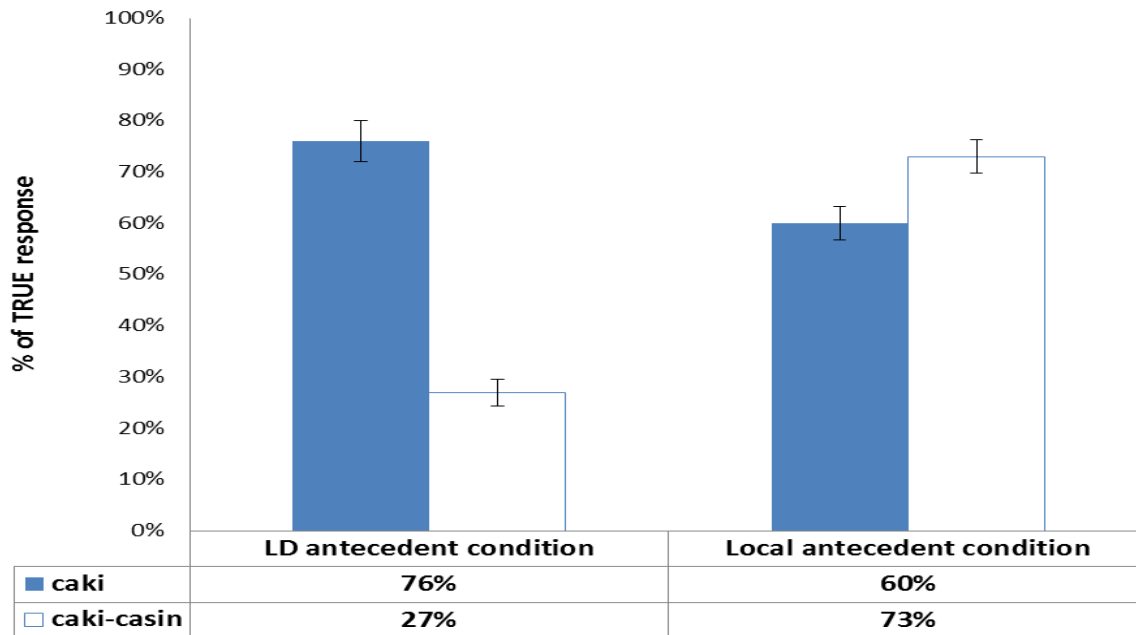


Figure 6.4. Antecedent interpretation of *caki* and *caki-casin* depending on context for intra-sentential binding: Children; error bars represent standard errors.

Figure 6.4 shows the rate of true responses in experiment 1 (the remaining responses were all ‘false’).²⁸ It indicates that the children accepted *caki* in the LD contexts 76% (SD=20%) of the time, allowing the LD interpretation. Their acceptance rate for *caki-casin* in the LD antecedent contexts was merely 27% (SD=16%); This shows that children disprefer the LD interpretation for *caki-casin*. In addition, the children allowed both the LD interpretation and the local interpretation for *caki*, showing a slight preference for the LD interpretation (76% and 60%; SD=13%, respectively), much like the adults. However, for *caki-casin*, the children had a strong preference for the local interpretation 73% (SD=16%) of the time.

A repeated measures ANOVA showed significant main effects of reflexive type ($F_1(1, 25) = 47.573, p < .001$; $F_2(1, 3) = 11.298, p = .044$) and context type ($F_1(1, 25) = 19.890, p < .001$;

²⁸ All the children responded either True or False. Figure 6.4 shows the percentage of the ‘true’ responses: 76% for *caki*-LD antecedent condition, 60% for *caki*-local antecedent condition, 27% for *caki-casin*-LD antecedent condition, and 73% for *caki-casin*-local antecedent condition.

$F_2(1, 3) = 10.675, p = .047$), and an interaction effect between reflexive type and context type ($F_1(1, 25) = 75.393, p < .001; F_2(1, 3) = 569.247, p < .001$). The main effects of reflexive type and context type are due to the low acceptance rate (27%) of the condition using *caki-casin* in the LD antecedent context (i.e., collapsed across the contexts, acceptance rates are over 60% for *caki* vs. around 50% for *caki-casin*; collapsed across the reflexives, the acceptance rates are over 60% for the local antecedent context vs. around 50% for the LD antecedent context). The interaction effect comes from the fact that in the LD antecedent context the children allow *caki*, but generally disallow *caki-casin*. Interactions were further analyzed with a paired sample *t*-test. Planned comparisons reveal that the difference between LD and locally bound *caki* (i.e., 76% vs. 60%) was significant ($t_1(25) = 2.900, p = .008; t_2(3) = 3.323, p = .045$), which suggests the children like *caki* more when the LD antecedent context is given, but they also like *caki* when the local context is provided. Also, the difference between LD and local binding of *caki-casin* (i.e., 27% vs. 73%) was significant ($t_1(25) = -10.126, p < .001; t_2(3) = -9.074, p = .003$), which means that children do not allow *caki-casin* in the local antecedent context.

6.2 Experiment 2: Extra-sentential discourse binding

6.2.1 Participants.

The participants in this experiment were a group of 31 native Korean-speaking children (mean age = 5;6; age range = 4;8–6;2) who had not participated in the previous experiment. In addition, 40 adult native speakers served as a control group in the experiment. The data of 2 children (both four-year-olds) were removed from the analysis due to their poor performance with filler items, leaving the data from 29 children. All the adult participants gave correct responses on filler items 100 percent of the time.

6.2.2 Procedure and materials.

The materials and procedure used in Experiment 2 were identical to those of Experiment 1 (i.e., 12 items with 4 verbs), except for the test sentence type. Experiment 2 investigates extra-sentential discourse binding, so one possible antecedent is the extra-sentential LD antecedent and the other is the clause-mate local antecedent. A sample set of stories for *kulita* ‘draw’ is presented in Figures 6.5 and 6.6. In Figure 6.5, there are two characters: Zebra and Elephant. Zebra draws a picture of Elephant, and Elephant laughs heartily. The test sentence is the equivalent of ‘(Elephant laughs loudly) because Zebra drew self’, where the only true reading is one which involves the antecedent of the reflexive being outside the test sentence.


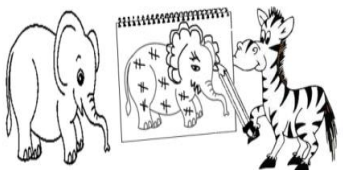
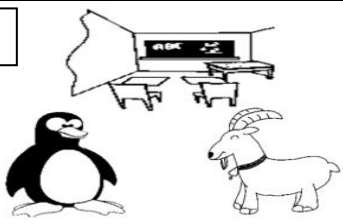
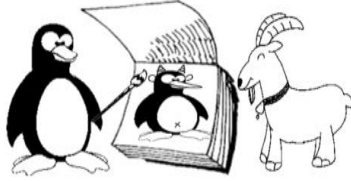
LD antecedent context	
<div style="border: 1px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;">1</div> 	<p>Zebra and Elephant are drawing a picture in an art class.</p>
<div style="border: 1px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;">2</div> 	<p>Test sentence</p> <p>Kapcaki Khokkili-ka_i kkalkkaltaymye Suddenly, Elephant-NOM_i joyfully wus-ess-eyo. Hmm... laugh-PST-SES. Hmm... ‘Elephant_i laughed joyfully.’</p> <p>Ellwukmal-i_j caki/caki-casin-lul_{i/j} wuskiey Zebra-NOM <i>self</i>-ACC comically kulyesski ttaymwun-i-lay-yo. drew because-be-REP-SES ‘(It was) because Zebra_j drew self_{i/j} comically.’</p>
<p>Response type and antecedent interpretation</p>	
<p>True = Extra-sentential LD interpretation (i.e., Zebra_i drew Elephant_j comically)</p>	
<p>False = Local antecedent interpretation (i.e., Zebra_i drew Zebra_i comically)</p>	

Figure 6.5. Sample pictures (with texts) of LD antecedent context with *caki/caki-casin* for extra-sentential discourse binding.

In Figure 6.6, the story involves two characters, Penguin and Goat. Penguin draws a funny picture of himself and Goat laughs joyfully. The test sentence is the equivalent of '(Goat laughed) because Penguin drew self', where the only true reading is one which involves the antecedent of the reflexive being the overt subject within the test sentence.

Local antecedent context

<p>1</p> 	<p>Penguin and Goat are drawing a picture in an art class.</p>
<p>2</p> 	<p>Test sentence</p> <p>Kapcaki Yemso-ka_i kkalkkaltaymye</p> <p>Suddenly, Goat-NOM_i joyfully</p> <p>wus-ess-eyo. Hmm...</p> <p>laugh-PST-SES. Hmm...</p> <p>‘Goat_i laughed joyfully.’</p> <p>Pheyngkwun-i_j caki/caki-casin-lul_{i/j} wuskiey</p> <p>Penguin-NOM self-ACC comically</p> <p>kulyesski ttaymwun-i-lay-yo</p> <p>drew because-be-REP-SES</p> <p>‘(It was) because Penguin_j drew self_{i/j} comically.’</p>

Response type and antecedent interpretation

True = Local antecedent interpretation (i.e., Penguin_i drew Penguin_i comically)

False = Extra-sentential LD interpretation (i.e., Penguin_i drew Goat_j comically)

Figure 6.6. Sample pictures (with texts) of local antecedent context with *caki/caki-casin* for extra-sentential discourse binding.

6.2.3 Results.

In the data analysis, the mean proportions of ‘true’ responses from the adult controls and from the children were calculated. The data of the adults is shown in Figure 6.7.

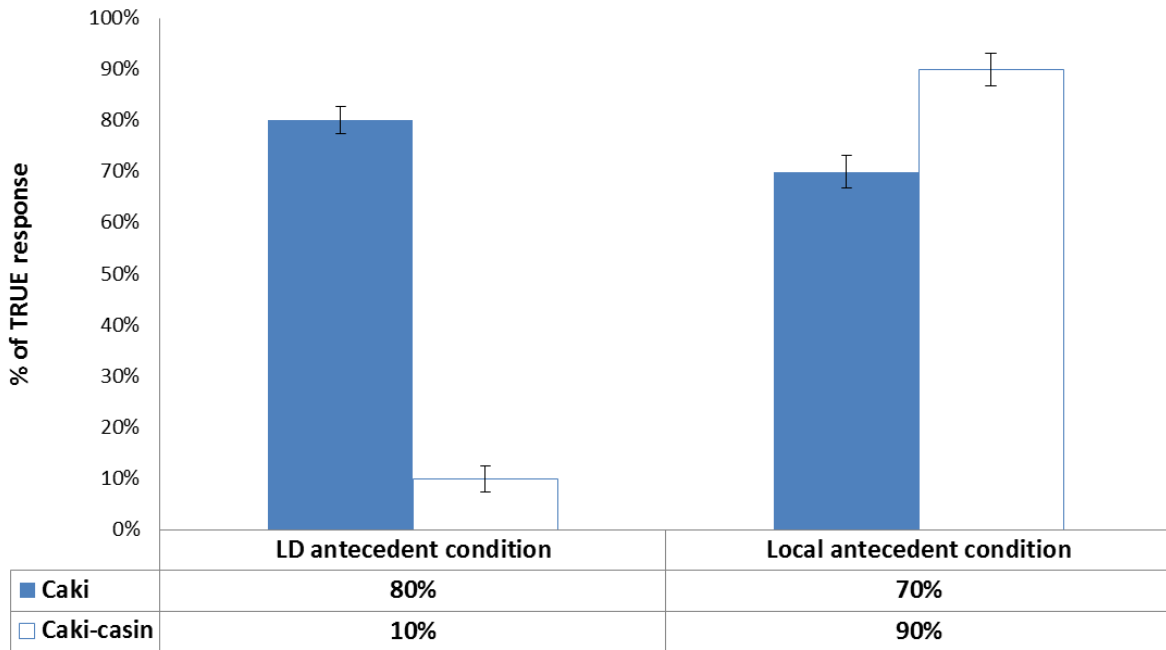


Figure 6.7. Antecedent interpretation of *caki* and *caki-casin* depending on context for extra-sentential discourse binding: Adults; error bars represent standard errors.

Figure 6.7 shows that adults accepted *caki* in the LD antecedent contexts 80% (SD=16%) of the time, allowing the extra-sentential LD interpretation. However, they rarely accepted *caki-casin* in the LD antecedent contexts (acceptance rate = 10%; SD=15%), which indicates that the LD interpretation was not allowed for *caki-casin*. In addition the acceptance rate for *caki* in the local antecedent contexts was only 70% (SD=19%), but still suggesting that it genuinely does allow two readings (the local interpretation and the extra-sentential LD interpretation), and that at least some of the time, the extra-sentential LD interpretation is preferred. *Caki-casin*, on the other hand, seems to exclusively be a local anaphor (90%; SD=19%).

For the statistical analysis, a repeated measures ANOVA was conducted and revealed main effects of reflexive type ($F_1(1, 39) = 58.542, p < .001; F_2(1, 3) = 155.866, p < .01$) and context type ($F_1(1, 39) = 164.728, p < .001; F_2(1, 3) = 157.763, p < .01$). It also showed a significant interaction effect between reflexive type and context type ($F_1(1, 39) = 322.001, p < .001; F_2(1, 3) = 1875.947, p < .001$). The main effects of reflexive type and context type are due to the low acceptance rate (10%) of the condition using *caki-casin* in the distant-antecedent context (i.e., collapsed across the contexts, acceptance rates are over 70% for *caki* vs. around 50% for *caki-casin*; collapsed across the reflexives, the acceptance rates are around 80% for local-antecedent context vs. under 50% for the LD antecedent context). The interaction effect comes from the fact that in the LD antecedent context the adult participants allow *caki*, but disallow *caki-casin*. Interactions were further analyzed with a paired sample *t*-test. Planned comparisons reveal that the difference between LD and locally bound *caki* (i.e., 80% vs. 70%) was significant ($t_1(39) = 3.591, p < .01; t_2(3) = 3.806, p = .032$), which means the adults had an LD binding preference for *caki*. In addition, the difference between LD and local binding of *caki-casin* (i.e., 10% vs. 90%) was significant ($t_1(39) = -18.735, p < .001; t_2(3) = -26.291, p < .001$), which means that the adults do not allow LD binding for *caki-casin*.

Next, the results from the adult control group can be compared with the results from the children. Figure 6.8 shows the data of the children.

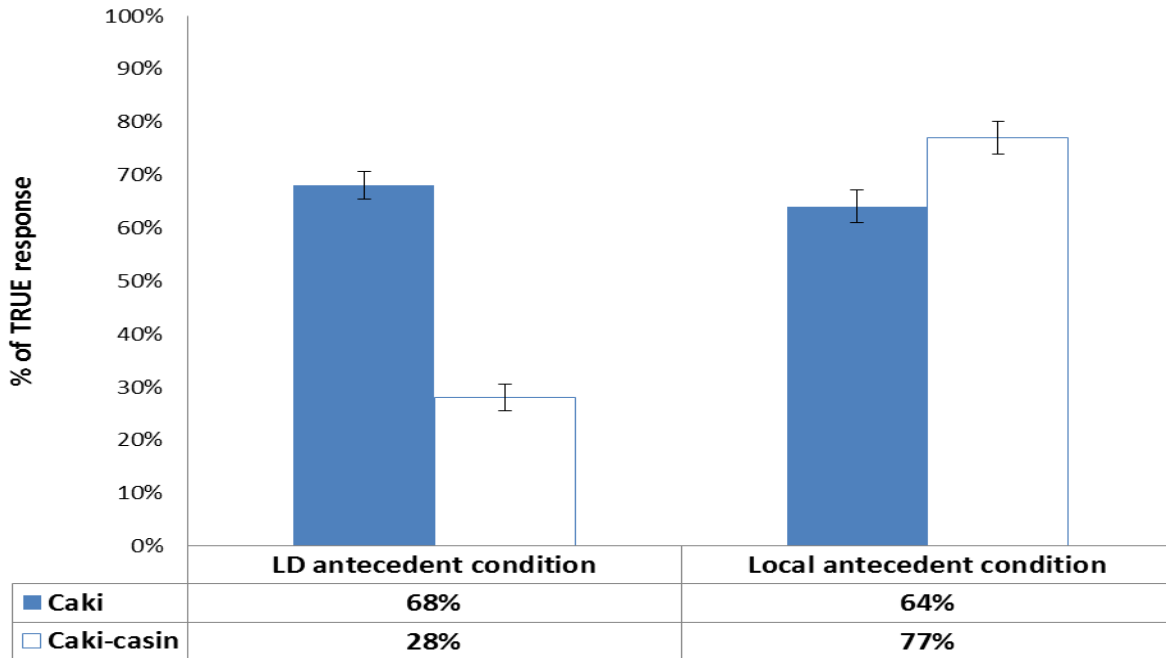


Figure 6.8. Antecedent interpretation of *caki* and *caki-casin* depending on context for extra-sentential discourse binding: Children; error bars represent standard errors.

As the results in Figure 6.8 clearly show, while children accepted *caki* in the extra-sentential LD interpretation 68% of the time (SD=6%), they tended to reject *caki-casin* in the LD contexts: the acceptance rate in this condition was only 28% (SD=23%). This indicates that they knew that LD interpretation was not allowed for *caki-casin*. In addition, the children accepted the local binding of both *caki* and *caki-casin*, but at a higher rate for *caki-casin* (77%; SD=18%) than for *caki* (64%; SD=19%), showing that even in discourse binding, Korean-speaking children know the properties of the two Korean reflexives, *caki* and *caki-casin*: The former prefers the LD antecedent and the latter the local antecedent.

A repeated measures ANOVA was conducted, revealing a main effect of reflexive type ($F_1(1, 28) = 16.291, p < .001; F_2(1, 3) = 46.679, p = .006$), and of context type ($F_1(1, 28) = 50.112, p < .001; F_2(1, 3) = 13.724, p = .034$). It also showed an interaction of reflexive by context effect ($F_1(1, 28) = 55.166, p < .001; F_2(1, 3) = 82.303, p = .003$). The main effects of

reflexive type and context type are due to the low acceptance rate (28%) of the condition using *caki-casin* in the distant-antecedent context (i.e., collapsed across the contexts, acceptance rates are over 60% for *caki* vs. around 50% for *caki-casin*; collapsed across the reflexives, the acceptance rates are around 70% for local-antecedent context vs. under 50% for distant-antecedent context). The interaction effect comes from the fact that the children disallow *caki-casin* in the distant-antecedent context, but allow it in the local-antecedent context. Planned comparisons reveal that the difference between LD and locally bound *caki* (i.e., 68% vs. 64%) was not significant ($t_1(28) = .902, p = .375; t_2(3) = .530, p = .633$), which means that children do not have LD antecedent preference for *caki* in the discourse-binding context over the local-binding context. It is noteworthy that the adults showed an LD antecedent preference for *caki* both in the sentence-binding and discourse-binding, while the children showed an LD antecedent preference for *caki* only in the case of sentence-internal binding. In addition, the difference between LD and local binding of *caki-casin* (i.e., 28% vs. 77%) was significant ($t_1(28) = -8.764, p < .001; t_2(3) = -6.720, p = .007$), which means that children do not allow *caki-casin* in the LD context.

6.3 General discussion of Experiments 1 and 2

The purpose of Experiments 1 and 2 was to test whether children interpret the two types of reflexives pronouns in different ways. Taken together, the results of these experiments revealed that Korean-speaking children have an adult-like grammar as far as the binding domains

of the two Korean reflexives are concerned.²⁹ Specifically, in Experiment 1, which tested sentence-level binding, the children accepted both an LD antecedent and a local antecedent for *caki*, exhibiting a preference for the LD antecedent; in contrast, in interpreting *caki-casin*, they only allowed a local antecedent. These results indicate that children have the ability to differentiate *caki* from *caki-casin*. The same trend was observed in Experiment 2, which tested discourse-binding: The children interpreted *caki* as having either an extra-sentential LD antecedent or a clause-mate local antecedent, while they interpreted *caki-casin* as having a local antecedent. Therefore, the results of these experiments lead to the conclusion that native Korean-speaking children at the age of around 5–6 years interpret the two types of reflexive pronouns differently, in accord with our first hypothesis.

An additional finding of the two experiments is the following: The adults showed an LD antecedent preference for *caki* both in the sentence-binding and discourse-binding. However, the children showed an LD antecedent preference for *caki* only in the sentence-binding; that is, children allowed *caki* equally in the LD and local contexts. A further question arises: If the children had an LD antecedent preference for *caki* as attested in the sentence-binding, why is that preference not shown in the discourse-binding? One account may be this: It is possible that intra-sentential binding is preferable to extra-sentential binding in terms of processing, given that the distance between the reflexive and the LD antecedent is shorter in intra-sentential binding than in extra-sentential binding. Unlike adults, children do not have the processing capacity (Trueswell, Sekerina, Hill & Logrip, 1999) to allow easy searches throughout discourse (Reinhart 2006;

²⁹ In fact, an omnibus 2x2x2x2 ANOVA (within factors: reflexives and context; between factors: participant group and experiment) shows a main effect of participant group ($p < .01$), which suggest that there is a significant difference between adults and children in terms of the mean acceptance rates of the four conditions. However, I contend that the mean acceptance rates of the four conditions do not tell us anything about grammar. What tells us about grammar is the response trend across the four conditions, which is the same for adults and children. For this reason, I claim that Korean-speaking children have an adult-like grammar.

Reuland, 2011).

The preference for a sentence-internal antecedent (i.e., the local antecedent) obscures children's LD antecedent preference for *caki* in Experiment 2. This issue—children's processing limitation—will be discussed in Chapter 7.

CHAPTER VII

LEXICAL SEMANTIC INFORMATION OF VERBS

The aim of Experiments 3 and 4 was to explore whether semantic properties of the clause-mate verb are at work when children comprehend the two types of reflexive, *caki* and *caki-casin*. In particular, Section 6.1 is concerned with whether native Korean-speaking children's antecedent choices differ according to reflexive types and semantic properties of the clause-mate verb in biclausal sentences. Section 7.2 taps into the role of semantic properties of the clause-mate verb in extra-sentential discourse binding. As discussed in Chapter 4, if children are adult-like in their interpretation of reflexives, the interpretation of *caki* will favor the LD antecedent (i.e., main clause subject in a bi-clausal sentence; extra-sentential discourse topic) when a DAV is used but the local antecedent when a LAV is used. However, *caki-casin* should always take a local antecedent no matter what verb type is used. This section addresses whether semantic properties of the clause-mate verb affect the interpretation of reflexives by Korean children.

7.1 Experiment 3: Sentential binding

7.1.1 Participants.

Thirty-one monolingual Korean native-speaker children (ages: mean = 5;2, range = 4;9–5;10) and 40 native-speaker adult controls participated in this experiment. Out of the 31 child participants, data from 3 participants (1 four-year-old, and 2 five-year-old) were excluded from the analysis because they performed poorly on filler items. Thus, data from 28 children were analyzed in Experiment 3. Note that the children tested in this experiment were newly recruited

for this experiment only. They were all monolingual Korean speakers who were attending a kindergarten in Seoul, Korea at the time of testing.

7.1.2 Procedure and materials.

The procedure used in Experiment 3 was identical to the procedure described in Experiments 1 and 2. Experiment 3 was a 2 x 2 x 2 design, varying the type of reflexive pronoun (*caki* vs. *caki-casin*), the type of clause-mate verb (DAV vs. LAV), and the type of context (LD antecedent context vs. local antecedent context). Six verbs were used, 3 DAV and 3 LAV. The three DAV were *milecwuta* ‘push’, *tulecwuta* ‘lift’, and *ccochakata* ‘chase’; the three LAV were *swumta* ‘hide’, *pyencanghata* ‘disguise’, and *kkwumita* ‘make up’. Each verb was used twice in two different items, where the reflexives were different (*caki* vs. *caki-casin*), resulting in 12 test sentences. In order to avoid an effect from the familiarity of the verbs, different animated characters were used.

Figures 7.1 and 7.2 present the LD and local contexts, respectively, for a DAV and for a LAV.



LD antecedent context	
<div style="border: 1px solid black; display: inline-block; padding: 2px;">1</div> 	<div style="border: 1px solid black; display: inline-block; padding: 2px;">2</div> 
Here are Dinosaur and Mouse.	Dinosaur is doing something. Blindfolded Rupy asks Mouse what is going on.
<p>Test sentence:</p> <p>Sayngwi-ka Konglyong-i <i>caki/caki-casin-lul</i> ccochawa-ss-tako malhay-ss-eyo Mouse-NOM Dinosaur-NOM <i>self-ACC</i> chase-PST-COMP say-PST-SES</p> <p>‘Mouse said that Dinosaur chased self.’</p> <p>Response type and antecedent interpretation</p> <p>True = LD antecedent interpretation (i.e., Mouse_i said that Dinosaur_j chased Mouse_i)</p> <p>False = Local antecedent interpretation (i.e., Mouse_i said that Dinosaur_j chased Dinosaur_j)</p>	

Figure 7.1. Sample pictures (with texts) of LD antecedent context with *caki/caki-casin* and DAV for intra-sentential binding.



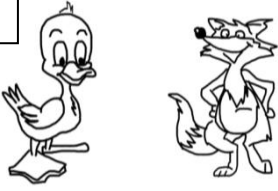

LD antecedent context	
<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">1</div> 	<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">2</div> 
<p>Here are Rabbit and Elephant.</p>	<p>Rabbit is doing something. Blindfolded Rupy asks Elephant what is going on.</p>
<p>Test sentence:</p> <p>Khokkili-ka Thokki-ka <i>caki/caki-casin-lul</i> pyencanghay-ss-tako malhay-ss-eyo Elephant-NOM Rabbit-NOM <i>self-ACC</i> disguise-PST-COMP say-PST-SES</p> <p>‘Elephant said that Rabbit disguised self.’</p>	
<p>Response type and antecedent interpretation</p> <p>True = LD antecedent interpretation (i.e., Elephant_i said that Rabbit_j disguised Elephant_i)</p> <p>False = Local antecedent interpretation (i.e., Elephant_i said that Rabbit_j disguised Rabbit_i)</p>	

Figure 7.2. Sample pictures (with texts) of LD antecedent context with *caki/caki-casin* and LAV for intra-sentential binding.

Local antecedent context

<p>1</p> 	<p>2</p> 
<p>Here are Fox and Duck.</p>	<p>Fox is doing something. Blindfolded Rupy asks Duck what is going on.</p>

Test sentence:

Oli-ka Yewu-ka *caki/caki-casin-lul* ccochawa-ss-tako malhay-ss-eyo

Duck-NOM Fox-NOM *self-ACC* chase-PST-COMP say-PST-SES

‘Duck said that Fox chased self.’

Response type and antecedent interpretation

True = Local antecedent interpretation (i.e., Duck_i said that Fox_j chased Fox_i)

False = LD antecedent interpretation (i.e., Duck_i said that Fox_j chased Duck_i)

Figure 7.3. Sample pictures (with texts) of local antecedent context with *caki/caki-casin* and DAV for intra-sentential binding.



Local antecedent context	
<div style="border: 1px solid black; display: inline-block; padding: 2px;">1</div> 	<div style="border: 1px solid black; display: inline-block; padding: 2px;">2</div> 
Here are Goat and Squirrel.	Goat is doing something. Blindfolded Rupy asks Squirrel what is going on.
<p>Test sentence:</p> <p>Talamcwi -ka Yemso-ka <i>caki/caki-casin-lul</i> pyencanghay-ss-tako malhay-ss-eyo. Squirrel-NOM Goat-NOM <i>self-ACC</i> disguise-PST-COMP say-PST-SES</p> <p>‘Squirrel said that Goat disguised self.’</p> <p>Response type and antecedent interpretation</p> <p>True = Local antecedent interpretation (i.e., Squirrel_i said that Goat_j disguised Goat_i)</p> <p>False = LD antecedent interpretation (i.e., Squirrel_i said that Goat_j disguised Squirrel_i)</p>	

Figure 7.4. Sample pictures (with texts) of local antecedent context with *caki/caki-casin* and LAV for intra-sentential binding.

7.1.3 Results.

Experiment 3 explores whether children use semantic properties of the clause-mate verb in their interpretation of the two types of reflexives in both the LD antecedent contexts and the local antecedent contexts. Therefore, the independent variables are verb type, reflexive type, and context type, while the dependent variable is the type of antecedent interpretation (as indicated by participants' true/false responses). The logic of the design of the experimental items is the same as in Experiments 1 and 2, except we systematically vary the type of verb (DAV vs. LAV). However, for statistical analyses, the ordinary logit model based on a logistic regression (instead of the ANOVAs that were used for Experiments 1 and 2) was implemented with the data of the adults and children. This is because not every participant had an equal number of tokens for each condition (recall that each participant was given a total of 12 tokens for 8 conditions), which meant it was impossible to create comparable means for each condition and participant. The three categorical predictors are coded in the logistic regression as follows: The LD context was coded 0 and the local context was coded 1. The DAV was coded 0 and the LAV was coded 1. *Caki* was coded 0 and *caki-casin* was coded 1. The categorical dependent variable, True/False, was coded as follows: a 'False' response was coded 0 and a 'True' response was coded 1.

Now, let us look at the data from the adults. Table 7.1 shows a summary of the ordinary logit model for all the data from adults.

Table 7.1.
Summary of the ordinary logit model (adults)

Predictor	B	S.E.	Wald Z	Sig.	Exp(B)
Intercept (constant)	2.944	.592	24.709	.000	19.000
Verb type	-.547	.754	.525	.469	.579
Reflexive type	-2.016	.658	9.391	.002	.133
Context type	-5.142	.732	49.316	.000	.006
Interaction = reflexive x verb	-1.075	.852	1.590	.207	.341
Interaction = context x verb	.105	1.011	.011	.918	1.110
Interaction = context x reflexive	3.667	.831	19.492	.000	39.140
Interaction = context x reflexive x verb	4.461	1.212	13.545	.000	86.562

Table 7.1 shows that (i) reflexive type, (ii) context type, (iii) interaction between context type and reflexive type, and (iv) interaction between context type, reflexive type, and verb type are the significant predictors ($p < .01$) for this regression model. To understand how these four predictors affected reflexive interpretation, let us look at the data based on descriptive statistics. Figures 7.5 and 7.6 show the data of the adults in the 4 conditions with *caki* and the 4 conditions with *caki-casin*.

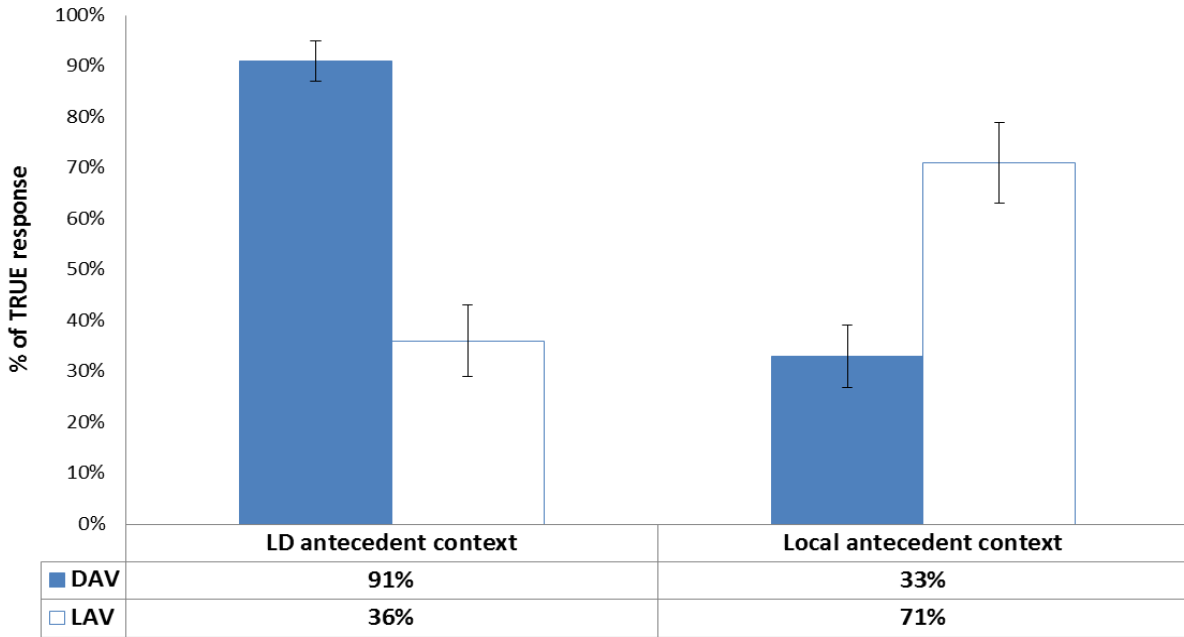


Figure 7.5. Antecedent interpretation of *caki* depending on type of verb in the LD antecedent contexts and in the local antecedent contexts for intra-sentential binding: Adults; error bars represent standard errors.

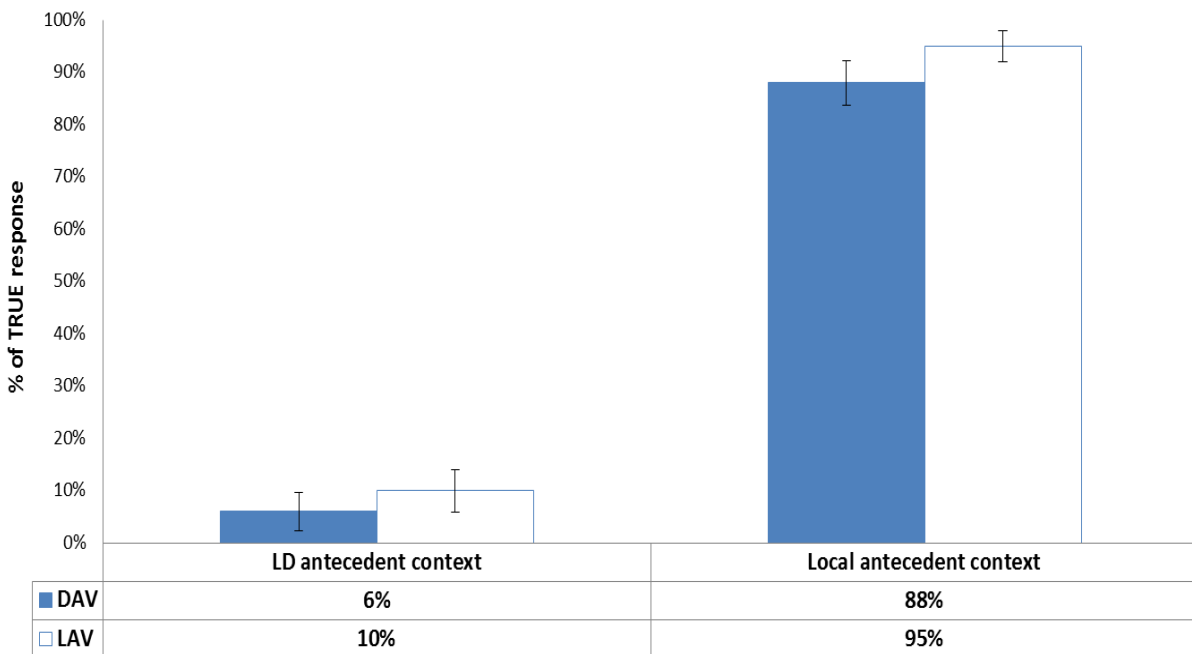


Figure 7.6. Antecedent interpretation of *caki-casin* depending on type of verb in the LD antecedent contexts and in the local antecedent contexts for intra-sentential binding: Adults; error bars represent standard errors.

The fact that (i) reflexive type and (ii) context type are significant predictors comes from the very low acceptance rates in the two conditions for *caki-casin* in the LD antecedent context (i.e., *caki-casin*+DAV+LD context 6% ($SD = 23\%$); *caki-casin*+LAV+LD context, 10% ($SD = 25\%$); See Figure 7.6). Overall, the acceptance rate for the conditions with *caki* is generally higher than it is for the conditions with *caki-casin*; and the acceptance rate for the conditions with local antecedent context is higher than it is for the conditions with LD antecedent context.

The other two factors, (iii) interaction between context type and reflexive type, and (iv) interaction between context type, reflexive type, and verb type, are significant predictors because the adults' interpretation of *caki-casin* is not affected by the semantic properties of the clause-mate verb while their interpretation of *caki* is, but differently so in LD versus and local contexts. Let us look at the data with *caki* first (see Figure 7.5). In the DAV+LD context, the acceptance rate for *caki* is 91% ($SD = 25\%$); however, in the LAV+LD context, it is merely 36% ($SD = 37\%$). This indicates that DAVs lead to the LD interpretation while LAVs lead to the local interpretation for *caki*. Likewise, in the DAV+local context, the acceptance rate for *caki* is 33% ($SD = 38\%$), while in the LAV+local context, it is 71% ($SD = 37\%$). Again, this shows that semantic properties of the clause-mate verb play a role in the interpretation of *caki*.

Now, let us look at the data with *caki-casin* (see Figure 7.6). Note that in both the DAV+LD context and LAV+LD context conditions, the acceptance rates are merely 6% ($SD = 23\%$) and 10% ($SD = 25\%$), respectively. In contrast, in the DAV+local context and LAV+local context, the acceptance rates for *caki-casin* are 88% ($SD = 27\%$) and 95% ($SD = 18\%$), respectively. These results suggest that the semantic properties of the clause-mate verb barely affected the interpretation of *caki-casin*, which allows local binding only. Another way to say

this is that *caki-casin* is so strongly local in its orientation that semantic properties of the clause-mate verb play no role.

Now let us look at the data from children. Table 7.2 shows a summary of the ordinary logit model for all the data from the children.

Table 7.2.
Summary of the ordinary logit model (children)

Predictor	B	S.E.	Wald Z	Sig.	Exp(B)
Intercept (constant)	1.036	.351	8.716	.003	2.818
Verb	-.234	.484	.233	.629	.792
Reflexive	-.120	.490	.060	.807	.887
Context	-1.952	.490	15.893	.000	.142
Interaction = reflexive x verb	-.197	.672	.086	.770	.821
Interaction = context x verb	.234	.684	.117	.733	1.263
Interaction = context x reflexive	2.072	.693	8.952	.003	7.942
Interaction = context x reflexive x verb	.608	.981	.384	.536	1.837

Table 7.2 shows that (i) context type and (ii) interaction between context type and reflexive type are the significant predictors ($p < .01$) for this regression model. It is important to note that the interaction between context type, reflexive type, and verb type is not a significant predictor. To understand this further, let us look at the data based on descriptive statistics. Figures 7.7 and 7.8 show the data for the children in the four conditions with *caki* and the four conditions with *caki-casin*.

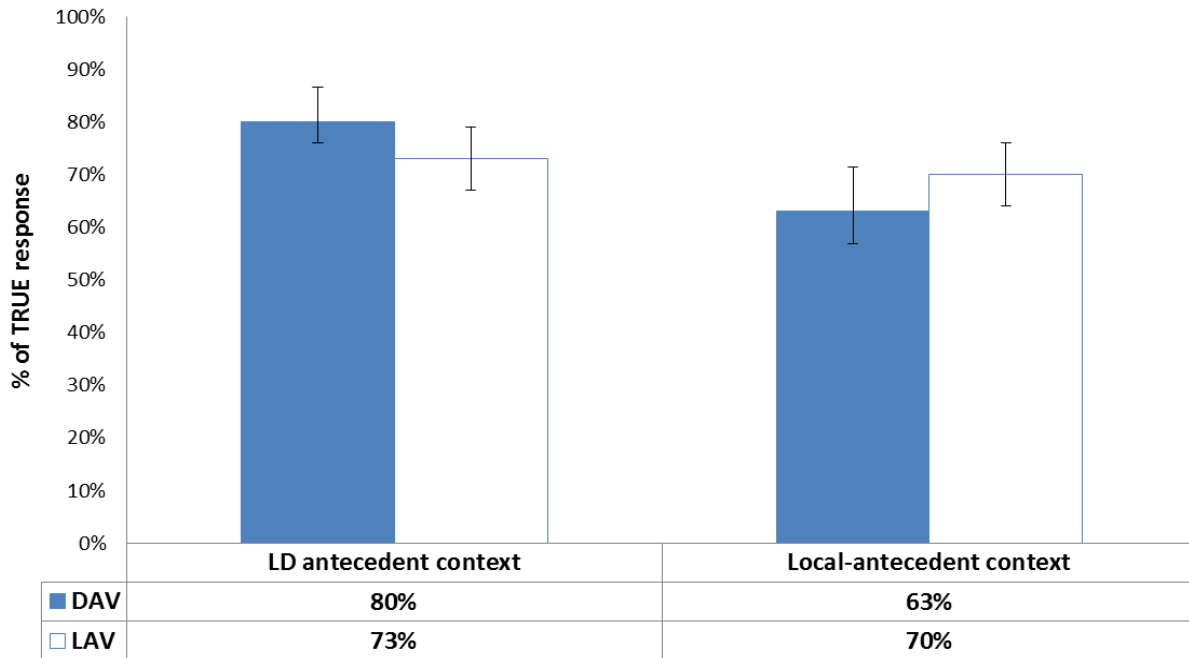


Figure 7.7. Antecedent interpretation of *caki* depending on type of verb in the LD antecedent contexts and in the local antecedent contexts for intra-sentential binding: Children; error bars represent standard errors.

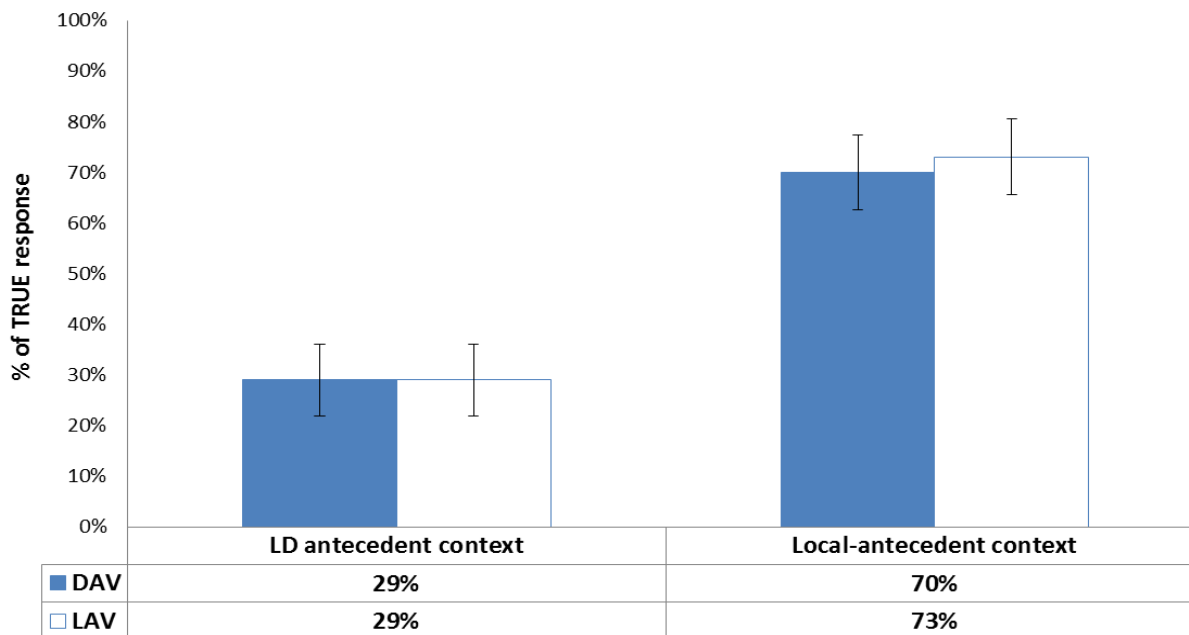


Figure 7.8. Antecedent interpretation of *caki-casin* depending on type of verb in the LD antecedent contexts and in the local antecedent contexts for intra-sentential binding: Children; error bars represent standard errors.

The finding that (i) context type and (ii) interaction between context type and reflexive type are significant predictors comes from the lower acceptance rates in the two conditions for *caki-casin* + LD context (i.e., *caki-casin*+DAV+LD context 29% ($SD = 37\%$); *caki-casin*+LAV+LD context, 29% ($SD = 37\%$); see Figure 7.8). What is noteworthy is that semantic properties of the clause-mate verb did not play a significant role in the children's interpretation of *caki* and *caki-casin*. Let us look at the data for *caki* first (see Figure 7.7). In both the DAV+LD context and the LAV+LD context, the acceptance rates are over 70% (80% ($SD=34\%$) and 73% ($SD=37\%$), respectively). Likewise, in both the DAV+local context and the LAV+local context conditions, the acceptance rates are over 60% (63% ($SD=44\%$) and 70% ($SD=41\%$), respectively). These results suggest that the semantic properties of the clause-mate verb hardly affected the children's interpretation of *caki*.

Now, let us look at the data with *caki-casin* (see Figure 7.8). Note that in both the DAV+LD context and the LAV+LD context conditions, the acceptance rates are less than 30% (both are 29%). In contrast, in the DAV+local context and LAV+local context conditions, the acceptance rates are 70% ($SD=39\%$) and 73% ($SD=39\%$), respectively. Again, these results suggest that the semantic properties of the clause-mate verb did not affect the interpretation of *caki-casin*, which allows local binding only.

In sum, the primary findings of Experiment 3 are (i) for adults, *caki-casin* is strongly local; and (ii) *caki* allows both local and LD antecedents, but is accepted at higher rates with LD antecedents; (iii) for adults, verb semantics plays a role in the interpretation of *caki*, but not *caki-casin*; (iv) for children, *caki-casin* takes the local antecedent; and (v) *caki* allows both local and LD antecedents, with a preference for the LD antecedent; (vi) for children, the choice of the clause-mate verb appears to play no role in the interpretation of either *caki* or *caki-casin*.

7.2 Experiment 4: Extra-sentential discourse binding

7.2.1 Participants.

To investigate children's interpretation of *caki* and *caki-casin* in extra-sentential discourse binding, Experiment 4 was conducted with 35 native Korean-speaking children (ages: mean = 5;3, range = 4;7–6;1) from a kindergarten in Seoul, Korea. These children had not participated in any of the previous experiments in the dissertation research. The data from 2 four-year-olds, 1 five-year-old, and 1 six-year-old were excluded as they failed to respond correctly to the filler items. The results from the remaining 31 children are used in the data analysis. Forty adult native speakers of Korean were also tested as a control group, and they all did well on the filler items.

7.2.2 Procedure and materials.

The procedure and materials were identical to those used in Experiment 3, except for the type of the test sentence: In order to investigate the role of semantic properties of the clause-mate verb in discourse-binding, the test sentence contains one possible antecedent in the previous sentence, and another possible antecedent within the same clause as the reflexive. The clause-mate verbs vary between DAV and LAV. Figures 7.9 and 7.10 present the LD and local contexts, respectively, for the LAV *kkwumita* 'make up'. (See Appendix E for DAV items.)

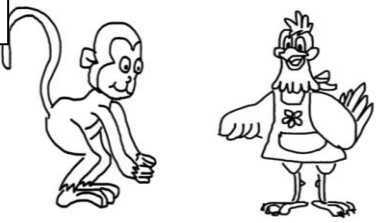


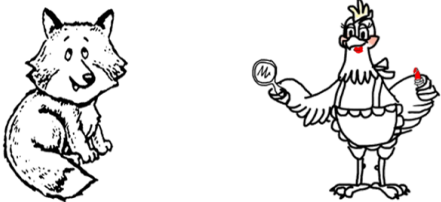
LD antecedent context	
<p>1</p> 	<p>Chicken and Monkey had an appointment with their boyfriends so they wanted to look pretty.</p>
<p>2</p> 	<p>Test sentence</p> <p>Wenswungi-ka_i mwuchek nolla-ss-eyo. Monkey-NOM_i very surprise-PST-SES. Hmm... Hmm.. ‘Monkey_i was very surprised.’</p> <p>Talk-i_j kapcaki caki/caki-casin-lul_{i/j} Chicken-NOM suddenly self-ACC kkwumye-ss-ki ttaymwun-i-lay-yo make up-PST-COMP because-be-REP-SES ‘(It was) because Chicken_j made self_{i/j} up suddenly.’</p>
<p>Response type and antecedent interpretation</p> <p>True = Extra-sentential LD interpretation (i.e., Chicken_i made Monkey_j up suddenly)</p> <p>False = Local antecedent interpretation (i.e., Chicken_i made Chicken_j up suddenly)</p>	

Figure 7.9. Sample pictures (with texts) of LD antecedent context with *caki/caki-casin* and LAV for extra-sentential discourse binding.

Local antecedent context

1		<p>Chicken and Fox were supposed to go to a birthday party of their friend so they wanted to look pretty.</p>
---	---	---

2		<p>Test sentence</p> <p>Yewu-ka_i mwuchek nolla-ss-eyo.</p> <p>Fox-NOM_i very surprise-PST-SES.</p> <p>Hmm...</p> <p>Hmm...</p> <p>‘Fox_i was very surprised.’</p> <p>Talk -i_j kapcaki caki/caki-casin-lul_{ij}</p> <p>Chicken-NOM suddenly self-ACC</p> <p>kkwumye-ss-ki ttaymwun-i-lay-yo.</p> <p>make up-PST-COMP because-be-REP-SES</p> <p>‘(It was) because Chicken_j made self_{ij} up suddenly.’</p>
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Response type and antecedent interpretation

True = Local antecedent interpretation (i.e., Chicken_i made Chicken_i up suddenly)

False = Extra-sentential LD interpretation (i.e., Chicken_i made Fox_j up suddenly)

Figure 7.10. Sample pictures (with texts) of local antecedent context with *caki/caki-casin* and LAV for extra-sentential discourse binding.

7.2.3 Results.

The methods of data analysis were the same as those that were used in Experiment 3. That is, the independent variables are verb type, reflexive type, and context type, while the dependent variable is the type of response (true vs. false). For statistical analyses, the ordinary logit model based on a logistic regression was implemented with the data of the adults and children.

Now, let us look at the data from the adults. Table 7.3 shows a summary of the ordinary logit model for all the data from adults.

Table 7.3.
Summary of the ordinary logit model (adults)

Predictor	B	S.E.	Wald Z	Sig.	Exp(B)
Intercept (constant)	2.398	.467	26.354	.000	11.000
Verb type	-.526	.602	.764	.382	.591
Reflexive type	-1.134	.563	4.060	.044	.322
Context type	-4.796	.661	52.707	.000	.008
Interaction = reflexive x verb	-1.331	.731	3.310	.069	.264
Interaction = context x verb	.900	.862	1.090	.296	2.459
Interaction = context x reflexive	2.888	.780	13.724	.000	17.953
Interaction = context x reflexive x verb	2.908	1.042	7.791	.005	18.316

Table 7.3 shows that (i) reflexive type, (ii) context type, (iii) interaction between context type and reflexive type, and (iv) interaction between context type, reflexive type, and verb type are the significant predictors ($p < .01$) for this regression model. To understand how these four predictors affected reflexive interpretation, let us look at the data based on descriptive statistics.

Figures 7.11 and 7.12 shows the data of the adults in the 4 conditions with *caki* and the four conditions with *caki-casin*.

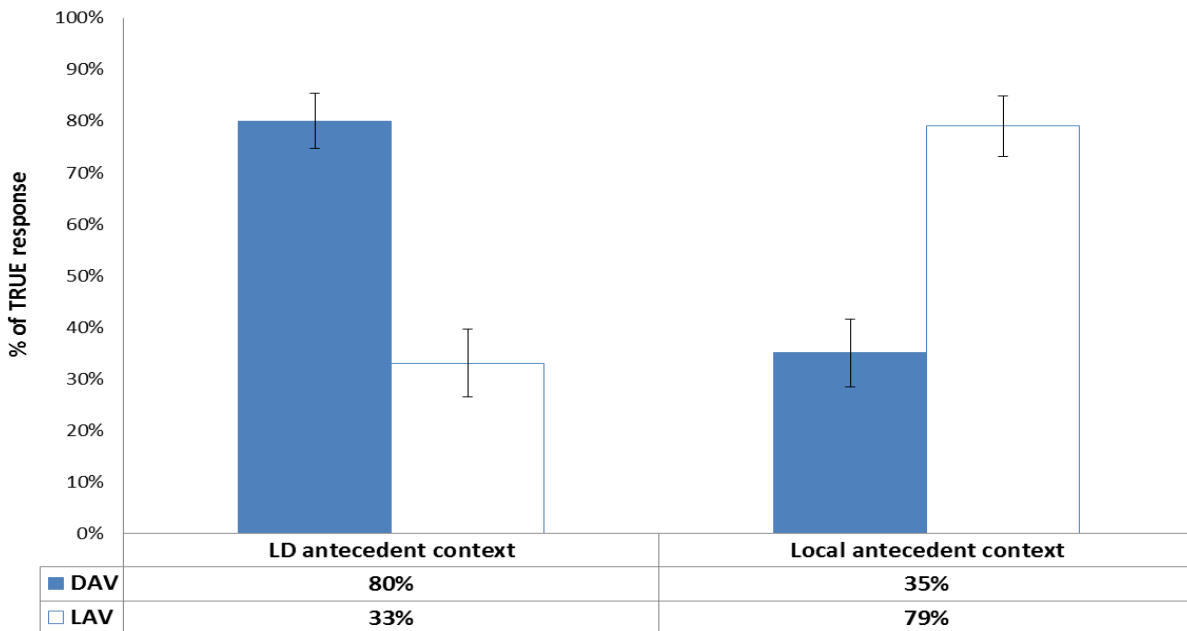


Figure 7.11. Antecedent interpretation of *caki* depending on type of verb in the LD antecedent contexts and the local antecedent contexts for extra-sentential discourse binding: Adults; error bars represent standard errors.

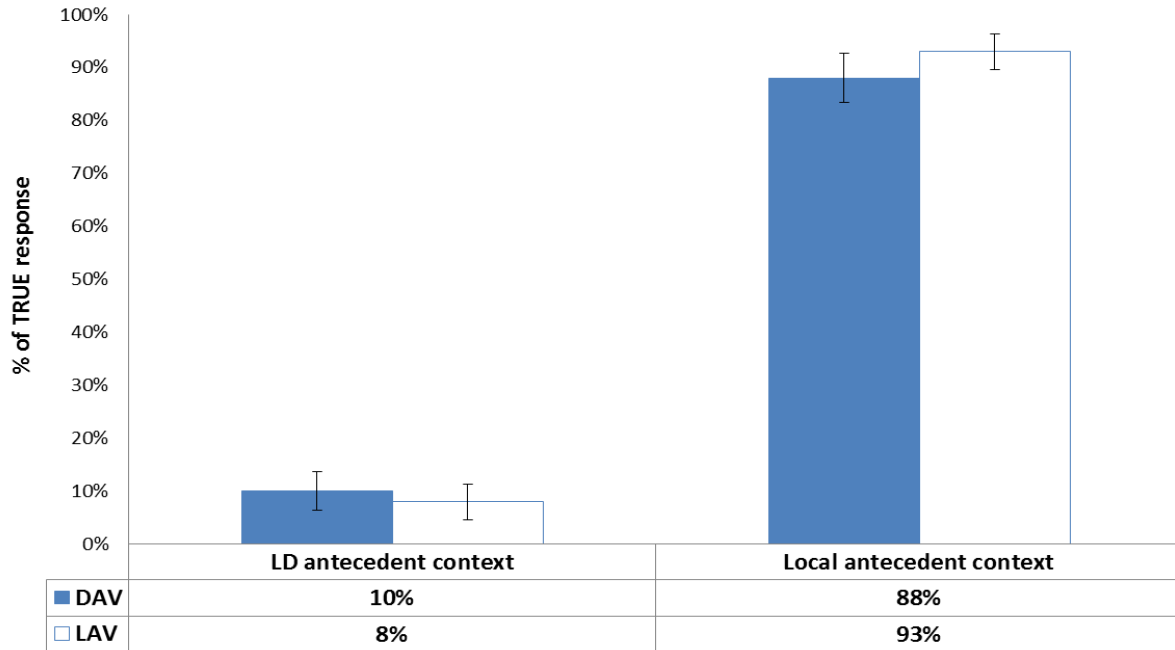


Figure 7.12. Antecedent interpretation of *caki-casin* depending on type of verb in the LD antecedent contexts and the local antecedent contexts for extra-sentential discourse binding: Adults; error bars represent standard errors.

The fact that (i) reflexive type and (ii) context type are significant predictors comes from the very low acceptance rates in the two conditions for *caki-casin* in the LD antecedent context (i.e., *caki-casin*+DAV+LD context, 10% ($SD=23\%$); *caki-casin*+LAV+LD context, 8% ($SD=21\%$); see Figure 7.12), which results in the following: Overall, the acceptance rate for the conditions with *caki* is generally higher than it is for the conditions with *caki-casin*; and the acceptance rate for the conditions with the local antecedent context is higher than it is for the conditions with the LD antecedent context.

The other two factors, (iii) interaction between context type and reflexive type, and (iv) interaction between context type, reflexive type, and verb type, are significant predictors due to the following: The adults' interpretation of *caki-casin* is not affected by the semantic properties of the clause-mate verb while their interpretation of *caki* is, but differently so in LD versus and

local contexts. Let us look at the data with *caki* first (see Figure 7.11). In the DAV+LD context, the acceptance rate is 80% ($SD=33\%$); however, in the LAV+LD context, it is merely 33% ($SD = 37\%$). This indicates that DAVs lead to the LD interpretation while LAVs lead to the local interpretation for *caki*. Likewise, in the DAV+local context, the acceptance rate is 35% ($SD=41\%$), while in the LAV+local context, it is 79% ($SD=37\%$). Again, this shows that the semantic properties of the clause-mate verb play a role in the interpretation of *caki*.

Now, let us look at the data with *caki-casin* (see Figure 7.12). Note that in both the DAV+LD context and LAV+LD context conditions, the acceptance rates are merely 10% and 8%, respectively. In contrast, in the DAV+local context and LAV+local context, the acceptance rates are 88% ($SD=29\%$) and 93% ($SD=21\%$), respectively. These results suggest that the semantic properties of the clause-mate verb do not affect the interpretation of *caki-casin*, which allows local binding only.

Now let us look at the data from children. Table 7.4 shows a summary of the ordinary logit model for all the data from the children.

Table 7.4.
Summary of the ordinary logit model (children)

Predictor	B	S.E.	Wald Z	Sig.	Exp(B)
Intercept (constant)	1.414	.372	14.468	.000	4.111
Verb	-.372	.501	.552	.457	.689
Reflexive	-.228	.507	.203	.653	.796
Context	-2.171	.486	19.974	.000	.114
Interaction = reflexive x verb	-.336	.678	.246	.620	.714
Interaction = context x verb	.272	.671	.165	.685	1.313
Interaction = context x reflexive	1.614	.671	5.784	.016	5.025
Interaction = context x reflexive x verb	.534	.924	.333	.564	1.705

Table 7.4 shows that (i) context type and (ii) interaction between context type and reflexive type are the significant predictors ($p < .01$) for this regression model. It is noteworthy that unlike adults, there is no interaction effect between context type, reflexive type and verb type. To gain a clearer picture of the data, let us look at the data based on descriptive statistics. Figures 7.13 and 7.14 show the data of the children in the 4 conditions with *caki* and the 4 conditions with *caki-casin*.

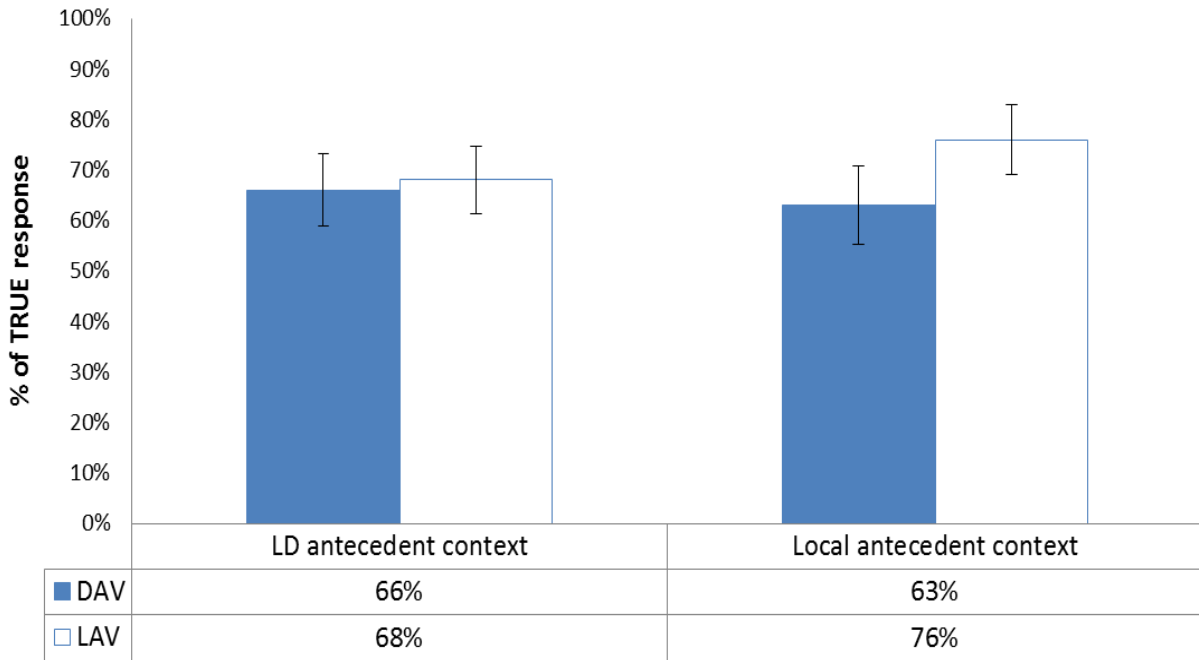


Figure 7.13. Antecedent interpretation of *caki* depending on type of verb in the LD antecedent contexts and the local antecedent contexts for extra-sentential discourse binding: Children; error bars represent standard errors.

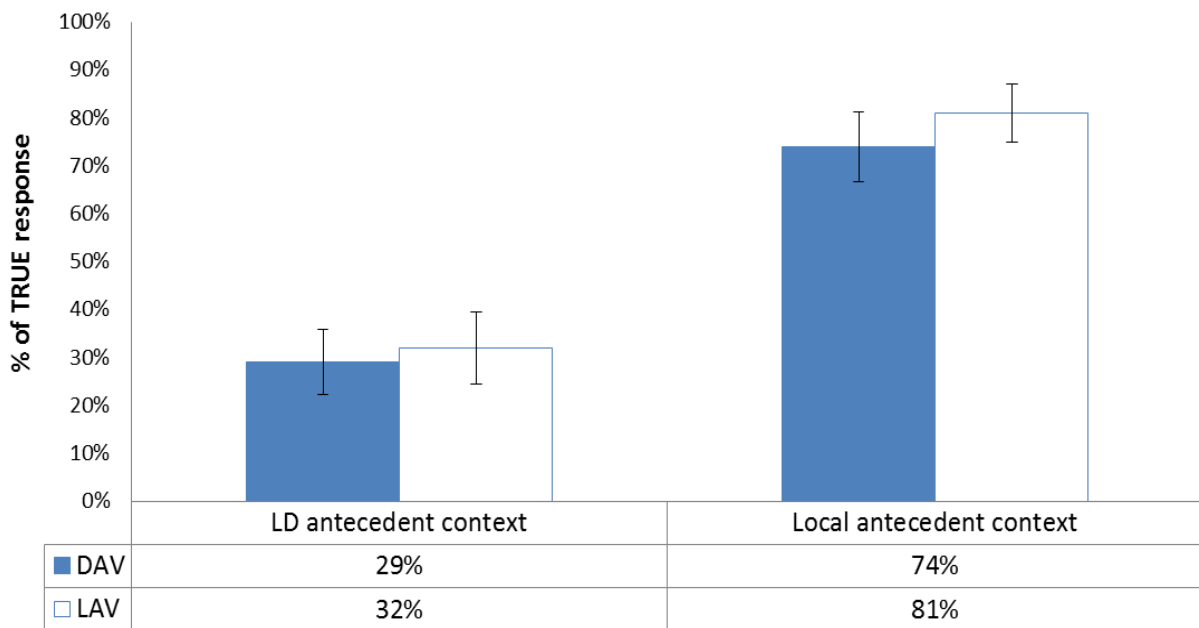


Figure 7.14. Antecedent interpretation of *caki* depending on type of verb in the LD antecedent contexts and the local antecedent contexts for extra-sentential discourse binding: Children; error bars represent standard errors.

The fact that (i) context type and (ii) interaction between context type and reflexive type are significant predictors comes from the low acceptance rate in the two conditions on *caki-casin*+LD context (i.e., *caki-casin*+DAV+LD context (mean = 29%; *SD*=38%); *caki-casin*+LAV+LD context (mean = 32%; *SD*=41%); see Figure 7.14). What is noteworthy is that the semantic properties of the clause-mate verb did not play a significant role in the children's interpretation of *caki* and *caki-casin*. Let us look at the data with *caki* first (see Figure 7.13). In both the DAV+LD context and the LAV+LD context, the acceptance rates are around 67% (66% (*SD*=39%) and 68% (*SD*=37%), respectively). Likewise, in both the DAV+local context and the LAV+local context conditions, the acceptance rates are at least 63% (63% (*SD*=42%) and 76% (*SD*=38%), respectively). These results suggest that the semantic properties of the clause-mate verb hardly affected the interpretation of *caki*.

Now, let us look at the data with *caki-casin* (see Figure 7.14). Note that in both the DAV+LD context and LAV+LD context conditions, the acceptance rates are around 30% (29% and 32%, respectively). In contrast, in the DAV+local context and LAV+local context conditions, the acceptance rates are 74% (*SD*=40%) and 81% (*SD*=33%), respectively. Again, these results suggest that the semantic properties of the clause-mate verb hardly affected the interpretation of *caki-casin*, which allows local binding only.

As a whole, the interaction effect between context type and reflexive type suggests that like the adults, the children use the two reflexives according to their defining properties in the sense that they allowed both an LD antecedent and a local antecedent in the *caki*+DAV and the *caki*+LAV conditions, but allowed only the local antecedent in the *caki-casin*+DAV and *caki-casin*+LAV conditions. However, the lack of interaction between context type, reflexive type,

and verb type suggests that, unlike the adults, the children did not attend to the semantic properties of the clause-mate verb in interpreting the reflexives.

In sum, the primary findings of Experiment 4, discourse-binding, are for adults (i) *caki-casin* is strongly local; and (ii) *caki* allows both local and LD, suggesting that the interpretation of *caki* allows an antecedent within and across a sentence boundary; (iii) the interpretation of *caki* is modulated by the type of the clause-mate verb, whereas *caki-casin* does not show any such sensitivity, as for children; (iv) for children, *caki-casin* takes the local antecedent; and (v) *caki* allows both local and LD; (vi) the choice of the clause-mate verb appears to play no significant role in the interpretation of both *caki* and *caki-casin*.

7.3 General discussion of Experiments 3 and 4

Two experimental studies that examined lexical effects on the interpretation of the Korean reflexives *caki* and *caki-casin* in child language were reported in Sections 7.1 and 7.2. The results of both Experiments 3 and 4 tell us that, although the children showed adult-like knowledge of the domains where the two reflexives find their antecedents, as demonstrated in Sections 6.1 and 6.2, they did not attend to semantic properties of the clause-mate verb (DAV vs, LAV) the way that the adult native speakers did when interpreting *caki*. In both sentence-level and discourse-level binding, children were not influenced by the meaning of the clause-mate verb when they searched for the antecedent of *caki*. Accordingly, they chose either the LD antecedent or the local antecedent based only on the locality-related properties of the two reflexives. The results of the two experiments revealed that native Korean-speaking children are not adult-like in terms of using semantic properties of the clause-mate verb for the interpretation of *caki*, the reflexive that is affected by the semantic properties of the clause-mate verb.

CHAPTER VIII

GENERAL DISCUSSION AND CONCLUSION

This chapter provides a general discussion on the roles of (i) knowledge of antecedent domains and (ii) knowledge of the semantic properties (DAV vs. LAV) of clause-mate verbs. Section 8.1 begins by summarizing the findings of each study described in Chapters 6 and 7. Section 8.2 discusses the implications of these findings for the understanding of the acquisition of Korean reflexives. In particular, first, it addresses the research questions in this dissertation and elucidates new findings in the acquisition literature. Second, it discusses why the children in this study were not effective at integrating semantic properties of the clause-mate verb in their interpretation of reflexives, focusing on children's difficulty with reanalysis. Third, it compares children's and adults' interpretation of the Korean reflexives. Section 8.3 concludes this dissertation.

8.1 Summary of the Findings

This section provides a summary of the key findings of the series of experimental studies on children's comprehension of the Korean reflexives *caki* and *caki-casin*. Experiment 1 found that the type (i.e., *caki* vs. *caki-casin*) affected interpretation by the native Korean-speaking children (and the adult control group) in sentence-level binding: *caki* prefers a long-distant antecedent and *caki-casin* takes a local antecedent. Experiment 2 revealed that for native Korean-speaking children (and adults), the interpretation of *caki* crossed sentence boundaries, whereas the binding domain of *caki-casin* was limited to the local antecedent. Experiment 3 showed that unlike the adult control group, the native Korean-speaking children did not show sensitivity to

the semantic properties of the clause-mate verb in interpreting reflexive *caki* in biclausal sentences. For *caki-casin*, children (and adults) only allowed a local antecedent in any case. Lastly, Experiment 4 found that the type of clause-mate verb (i.e., DAV vs. LAV) did not shape the native Korean-speaking children's interpretation of *caki* in discourse-level binding, but it did affect the adult control group's interpretation. For *caki-casin*, neither the children's nor the adults' interpretations were affected by the verb type.

In these 4 experiments, the Korean-speaking children performed like adults with respect to the interpretation of the two reflexives in sentence-level and in discourse-level binding when the verbs used in the experiments were neutral. However, when the type of verb favored a local or distant interpretation, the children did not perform like the adults: the children did not use the information in verbs in interpreting *caki*.

These results raise the question of why the young children were not able to use the semantic properties of the clause-mate verb. Do children have different knowledge than adults? If not, then what made them perform differently than the adults? These questions will be discussed in the following sections.

8.2 Implications of the Findings

8.2.1 Knowledge of antecedent domains.

The first research question asked whether the type of reflexive (i.e., *caki* vs. *caki-casin*) affects native Korean-speaking children's reflexive interpretation in biclausal sentences and in discourse. I hypothesized that young children are able to parameterize the antecedent domain for *caki* and *caki-casin* even though the reflexives are hardly ever used in Korean speech.

The results of the four TVJT experiments clearly confirmed this hypothesis, showing the effect of reflexive type in the children's choice of an antecedent in both biclausal sentences (Experiment 1 and Experiment 3) and in a discourse (Experiment 2 and Experiment 4).³⁰ Their interpretation of *caki* allowed either the LD antecedent (main clause subject in a biclausal sentence; extra-sentential discourse topic) or the local antecedent, whereas their interpretation of *caki-casin* allowed only the local antecedent both in sentence-level binding and in discourse-level binding. That is, the children involved in all the experiments knew that the two reflexives were distinct from one another in terms of locality.

8.2.2 Integrating lexical semantic properties of the clause-mate verb into antecedent interpretation.

The second research question asked whether the type of clause-mate verb (i.e., DAV vs. LAV) induces a particular bias toward the choice of one or the other antecedent in native Korean-speaking children. Following the previous results reporting that young children used semantic properties of the clause-mate verb in the interpretation of the Icelandic LD reflexive, *sig* (e.g., Hyams & Sigurjónsdóttir, 1990), I hypothesized that the effect of the clause-mate verb would be evident in children's choice of antecedent for *caki* (but not *caki-casin*). That is, *caki* would favor the LD antecedent (i.e., main clause subject in a biclausal sentence; extra-sentential discourse topic) with a DAV and the local antecedent with a LAV.

However, the results did not support this hypothesis. The children did not integrate the semantic properties of the clause-mate verb into their interpretation of the reflexives, while the

³⁰ It may be proposed that the children thought *caki* was a pronoun (like English *him*), not a reflexive. However, this proposal is not plausible. If *caki* is considered to be a pronoun, the children must reject local binding for *caki*. However, Experiments 1 and 2 clearly showed that native Korean children allow local binding as well as LD binding for *caki*, which suggests that the children did not think that *caki* was a pronoun.

adults did. Why is it the case that semantic properties of the clause-mate verb plays an important role for Icelandic children (Hyams & Sigurjónsdóttir, 1990), but not for the Korean children involved in this study?³¹ In order to elucidate why the Korean-speaking children performed differently from the Icelandic-speaking children with respect to the interpretation of reflexives, I compare the two studies in terms of (i) the amount of information in the verbs and (ii) the word order of the test sentences.

First, Icelandic verbs have more information that affects the interpretation of the reflexive than Korean verbs do. Korean verbs are divided into three groups (neutral, DAV, and LAV), while Icelandic verbs are divided into 6 categories based on type of mood and semantic properties of the clause-mate verb (i.e., subjunctive-*gefa* verbs, infinitive-*gefa* verbs, indicative-*gefa* verbs, subjunctive-normal verbs, infinitive-normal verbs, and indicative-normal verbs). For the indicative mood verbs, only the local interpretation is possible for the interpretation of *sig*, while for the *gefa* verbs, only the LD interpretation is allowed. That is, the information of Icelandic verbs plays a more important role than the information of Korean verbs in terms of the interpretation of reflexives. This suggests that Icelandic-speaking children might be more sensitive to the information of verbs than Korean-speaking children are for the interpretation of reflexives.

³¹ One may raise a question as to whether there is a difference between the two studies in terms of the nature of the semantic information involved in verbs. However, I acknowledge that there is not a crucial difference between the two studies. The semantic information in verbs is relevant to interpretation tendencies. All the LAVs used in the current study's experiments (*swumta* 'hide', *pyencanghata* 'disguise', and *kkwumita* 'dress up') tend to take (parts of) the body as their complement, while the DAVs (*milecwuta* 'push', *tulecwuta* 'lift', and *cochakata* 'chase') tend to take an entity that is not the agent of the verb. (In Safir's [1996] terms, the anaphoric atoms for each verb type are BODYPART and OTHER, respectively.) Hyams and Sigurjónsdóttir (1990) used only one verb for their experiment, the LD antecedent-favoring verb *gefa* 'give'. In a transfer of possession situation, where there are a giver and a giveee, it is often the case that the giver is not the same person as the giveee. That is, the nature of the semantic information in the verbs is not different in the current experiment and Hyams and Sigurjónsdóttir's (1990) experiment.

Second, the difference in canonical word order between Icelandic and Korean may be one reason that Icelandic-speaking children were better at integrating the information of the verbs. The Icelandic language is SVO while Korean is SOV. Hence, Icelandic reflexives (almost) always appear after the verb, while Korean reflexives tend to appear before the verb. Given that the processing mechanism that children as well as adults adopt during online interpretation is incremental, and given that children's online processing is different from that of adults in that children are not efficient at reanalysis, the lexical information of verbs may not overcome the temporary antecedent interpretation. When sentences are processed, the interpretations are obtained incrementally. That is, incoming constituents are construed on a word-by-word basis, without waiting for a crucial cue that disambiguates the possible interpretations (Frazier, 1987). If both Icelandic speakers and Korean speakers process sentences incrementally, Icelandic speakers' initial parsing commitment of *sig* can be influenced by the semantic properties of the clause-mate verb that they encounter before they reach *sig*. However, Korean speakers' initial parsing commitment of *caki* cannot be influenced by the semantic properties of the clause-mate verb, because the verb appears after *caki*.

When the lexical information from a verb encountered later in a Korean sentence is not compatible with the antecedent initially selected to interpret *caki*, the parser must reanalyze the initial parsing commitment. For example, let us look at the incremental processing of an LAV verb + LD context shown in Figure 8.1.

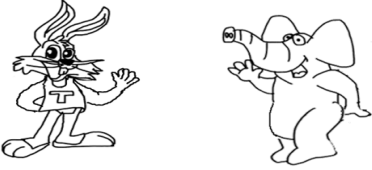
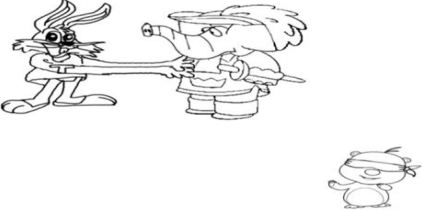
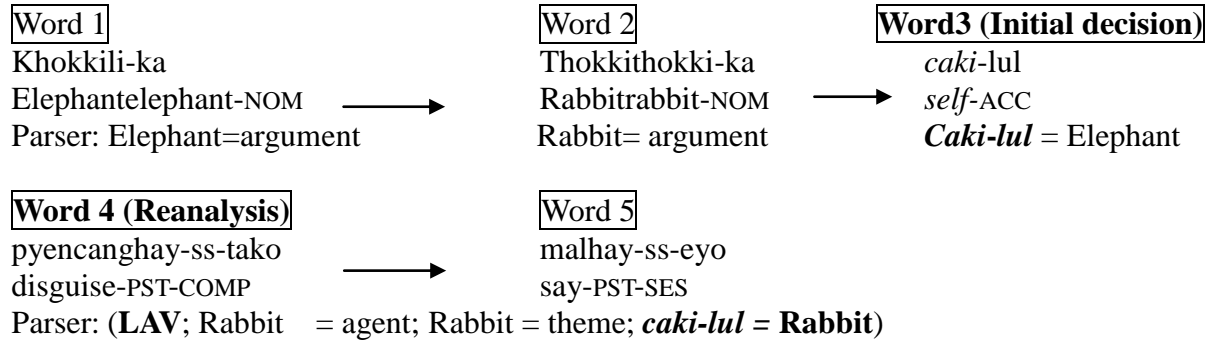
LD antecedent context	
<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">1</div> 	<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">2</div> 
Here are Rabbit and Elephant.	Rabbit is doing something. Blindfolded Rupy asks Elephant what is going on.
<p>Test sentence:</p> <p>Khokkili-ka Thokki-ka <i>caki/caki-casin-lul</i> pyencanghay-ss-tako malhay-ss-eyo Elephant-NOM Rabbit-NOM <i>self</i>-ACC disguise-PST-COMP say-PST-SES ‘Elephant said that Rabbit disguised self.’</p>	

Figure 8.1. Test sentence (LAV verb + LD antecedent context)

Incremental processing by adults is described in Figure 8.2. We suppose that adults initially associate *caki* with the LD antecedent, *khokkili* ‘elephant’.

Stage 1. Incremental processing of the test sentence by adults



Stage 2. Response

The dominant TVJT response by adults for the test item shown in the figure was False (Why? Because the clause-mate verb indicates that the antecedent should be the rabbit, while the context shows that it is the elephant.)

Figure 8.2. Incremental processing of *caki*-LAV in LD antecedent context by adults.

Incremental processing by children is described in Figure 8.3. Again, we suppose that the children initially associated *caki* to the LD antecedent, Khokkili ‘elephant’ because they have a preference for the coreference between *caki* and an LD antecedent.

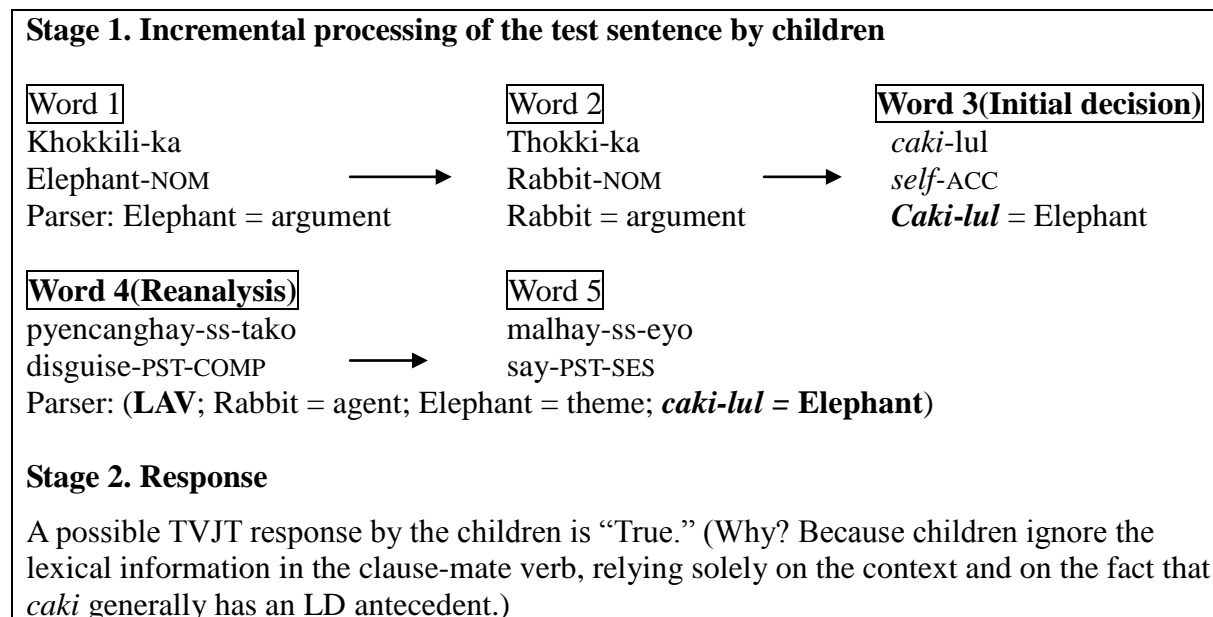


Figure 8.3. Incremental processing of *caki-LAV* in LD antecedent context by children.

Figure 8.3 shows an example of incremental processing of *caki-LAV* in the LD antecedent context. When participants listen to the test sentence and encounter the accusative-marked *caki-lul*, they will assign *caki-lul* a temporary role as theme of the transitive verb that follows, because the accusative marker normally signals that the NP is the theme of the transitive verb. Both children and adults therefore temporarily take Elephant to be the antecedent of *caki*. Encountering the LAV *pyencanghay* ‘disguise’, adults now interpret Rabbit as the theme of the LAV, because such verbs require coreference between their agent and theme. Thus, if the agent is Rabbit, the theme must be Rabbit as well. If the adults’ initial interpretation was Elephant, they will reanalyze their initial commitment, as seen in Figure 8.2.

However, if children’s initial interpretation was Rabbit, it is questionable whether they can reanalyze their initial commitment. Previous psycholinguistic studies have addressed children’s difficulty in revising their initial parsing of a sentence. For example, Trueswell et al. (1999) and Hurewitz, Brown-Schmidt, Thorpe, Gleitman and Trueswell (2000) showed that

children have difficulty in reanalysis. Their online studies revealed that 5-year-olds showed little or no ability to revise their initial parsing commitments. The children listened to test sentences involving temporary syntactic ambiguities such as “Put the frog on the napkin in the box” and were asked to manipulate toys in front of them to show their interpretation. Both children and adults showed signs of rapid incremental interpretation, initially treating the phrase *on the napkin* as a PP expressing a goal; however, only the adults could later reanalyze it as a PP modifying *the frog*.

8.2.3 The difference between adults and children in the interpretation of reflexives.

The third research question asked whether native Korean-speaking children have the same interpretations as adults for *caki* and *caki-casin*. The study found that the children and the adults share the same interpretations for *caki* and *caki-casin* when the given verbs are neutral. However, the children differ from the adults in how they interpret *caki* and *caki-casin* when the given verbs are either DAV or LAV.

These results suggest that children know about the different antecedent domains for *caki* and *caki-casin*. In other words, they know that there is a syntactic constraint on *caki-casin* but not on *caki*: *Caki-casin* only refers to the local subject, while *caki* refers to the local subject, the LD subject, or even an entity outside the sentence in which *caki* is placed.

However, children are not adult-like in integrating semantic properties of the clause-mate verb into the interpretation of *caki*. In other words, adults know that the semantic properties of DAVs and LAVs can play a role as a semantic constraint, and they use the semantic constraint in their interpretation of *caki*. However, the semantic properties of DAVs and LAVs do not play any role as a semantic constraint for children. As discussed earlier, there are at least two possible

accounts for this. One account is that children are unable to reanalyze their interpretation of the reflexives when they later encounter the verbs that should direct them to a different antecedent. Another account is that native Korean children do not attend to the lexical information made available by the clause-mate verb. Further research will be required to choose between these accounts. For now, let it suffice to note that both accounts attribute children's difficulties to parsing issues rather than to deficit in knowledge.

8.3 Concluding Remarks

Native Korean-speaking children at ages 4–6 know *caki* and *caki-casin* despite infrequent input exposure. However, unlike native Icelandic-speaking children, native Korean-speaking children have little ability to integrate verb information into their interpretation of reflexives. The children's inability to use verb information can be best accounted for by processing issues. Given that children's processing resources are limited, young native speakers of Korean (an SOV language) might not be able to revise their initial parsing commitment for the Korean reflexive or be less effective at using lexical information of verbs for disambiguation of reflexives.

APPENDIX A

Test sentences for the norming study

1. Testing DAVs with a 3rd person LD subject and a 1st person local subject

민재는 내가 자기를 밀어주었다고 말했어요.

환희는 내가 자기를 들어주었다고 말했어요.

은호는 내가 자기를 쫓아갔다고 말했어요.

2. Testing DAVs with a 1st person LD subject and a 3rd person local subject

나는 영수가 자기를 밀어주었다고 말했어요.

나는 철수가 자기를 들어주었다고 말했어요.

나는 수지가 자기를 쫓아갔다고 말했어요.

3. Testing LAVs with a 3rd person LD subject and a 1st person local subject

윤아는 내가 자기를 숨겼다고 말했어요.

병수는 내가 자기를 변장했다고 말했어요.

준호는 내가 자기를 꾸몄다고 말했어요.

4. Testing LAVs with a 1st person LD subject and a 3rd person local subject

나는 유라가 자기를 숨겼다고 말했어요.

나는 현태가 자기를 변장했다고 말했어요.

나는 영우가 자기를 꾸몄다고 말했어요.

5. Testing neutral verbs with a 3rd person LD subject and a 1st person local subject

유리는 내가 자기를 그렸다고 말했어요.

영수는 내가 자기를 안았다고 말했어요.

준호는 내가 자기를 가리켰다고 말했어요.

현주는 내가 자기를 꼬집었다고 말했어요.

6. Testing neutral verbs with a 1st person LD subject and a 3rd person local subject

나는 동주가 자기를 그렸다고 말했어요.

나는 은아가 자기를 안았다고 말했어요.

나는 영규가 자기를 가리켰다고 말했어요.

나는 진희가 자기를 꼬집었다고 말했어요.

APPENDIX B

Test sentences for Experiment 1

Item 1 – Condition 1: LD antecedent context+ *caki*

여기 오리와 꿀벌이 있어요.

꿀벌이 무언가를 하고 있네요.

눈을 가린 루피는 오리한테 무슨 일이 일어났는지 물어봤어요.

오리가 꿀벌이 자기를 가리켰다고 말했어요.

Item 2 – Condition 1: LD antecedent context+ *caki*

여기 여우와 공룡이 있어요.

공룡이 무언가를 하고 있네요.

눈을 가린 루피는 여우한테 무슨 일이 일어났는지 물어봤어요.

여우가 공룡이 자기를 꼬집었다고 말했어요.

Item 3 – Condition 1: LD antecedent context+ *caki*

여기 사자와 푸우가 있어요.

푸우가 무언가를 하고 있네요.

눈을 가린 루피는 사자한테 무슨 일이 일어났는지 물어봤어요.

사자가 푸우가 자기를 그렸다고 말했어요.

Item 4– Condition 2: LD antecedent context+ *caki-casin*

여기 토끼와 아기 곰이 있어요.

아기 곰이 무언가를 하고 있네요.

눈을 가린 루피는 토끼한테 무슨 일이 일어났는지 물어봤어요.

토끼가 아기 곰이 자기 자신을 그렸다고 말했어요.

Item 5– Condition 2: LD antecedent context+ *caki-casin*

여기 생쥐와 부엉이가 있어요.

부엉이가 무언가를 하고 있네요.

눈을 가린 루피는 생쥐한테 무슨 일이 일어났는지 물어봤어요.

생쥐가 부엉이가 자기 자신을 안았다고 말했어요.

Item 6– Condition 2: LD antecedent context+ *caki-casin*

여기 코끼리와 얼룩말이 있어요.

얼룩말이 무언가를 하고 있네요.

눈을 가린 루피는 코끼리한테 무슨 일이 일어났는지 물어봤어요.

얼룩말이 코끼리가 자기 자신을 꼬집었다고 말했어요.

Item 7- Condition 3: Local antecedent context+ *caki*

여기 엄마닭과 원숭이가 있어요.

원숭이가 무언가를 하고 있네요.

눈을 가린 루피는 엄마닭한테 무슨 일이 일어났는지 물어봤어요.

엄마닭이 원숭이가 자기를 그렸다고 말했어요.

Item 8- Condition 3: Local antecedent context+ *caki*

여기 오리와 염소가 있어요.

염소가 무언가를 하고 있네요.

눈을 가린 루피는 오리한테 무슨 일이 일어났는지 물어봤어요.

오리가 염소가 자기를 안았다고 말했어요.

Item 9 - Condition 3: Local antecedent context+ *caki*

여기 호랑이와 아기 곰이 있어요.

아기 곰이 무언가를 하고 있네요.

눈을 가린 루피는 호랑이한테 무슨 일이 일어났는지 물어봤어요.

호랑이가 아기곰이 자기를 가리켰다고 말했어요.

Item 10 – Condition 4: Local antecedent context+ *caki-casin*

여기 꿀벌과 다람쥐가 있어요.

다람쥐가 무언가를 하고 있네요.

눈을 가린 루피는 꿀벌한테 무슨 일이 일어났는지 물어봤어요.

꿀벌이 다람쥐가 자기 자신을 가리켰다고 말했어요.

Item 11 – Condition 4: Local antecedent context+ *caki-casin*

여기 펭귄과 염소가 있어요.

염소가 무언가를 하고 있네요.

눈을 가린 루피는 펭귄한테 무슨 일이 일어났는지 물어봤어요.

펭귄이 염소가 자기 자신을 꼬집었다고 말했어요.

Item 12 – Condition 4: Local antecedent context+ *caki-casin*

여기 생쥐와 부엉이가 있어요.

부엉이가 무언가를 하고 있네요.

눈을 가린 루피는 생쥐한테 무슨 일이 일어났는지 물어봤어요.

생쥐가 부엉이가 자기 자신을 안았다고 말했어요.

APPENDIX C

Test sentences for Experiment 2

Item 1 – Condition 1: LD antecedent context+ *caki*

꿀벌과 오리는 누가 예쁜 동물 선발 대회에 참여할지 결정 중이었어요.

이때 오리가 무척 놀랐어요. 흠..

꿀벌이 갑자기 자기를 가리켰기 때문이래요.

Item 2– Condition 1: LD antecedent context+ *caki*

호랑이와 아기곰이 갑작스러운 천둥치는 소리를 들었어요.

이때 호랑이가 무척 놀랐어요. 흠..

아기곰이 자기를 꼭 껴안았기 때문이래요.

Item 3– Condition 1: LD antecedent context+ *caki*

얼룩말과 코끼리가 미술시간에 그림을 그리고 있었어요.

이때 갑자기 코끼리가 깔깔대며 웃었어요. 흠..

얼룩말이 자기를 웃기게 그렸기 때문이래요.

Item 4 – Condition 2: LD antecedent context+ *caki-casin*

펭귄과 염소가 미술시간에 그림을 그리고 있었어요.

이때 갑자기 펭귄이 깔깔대며 웃었어요. 흠..

염소가 자기 자기 자신을 웃기게 그렸기 때문이래요.

Item 5– Condition 2: LD antecedent context+ *caki-casin*

생쥐와 부엉이가 갑작스러운 천둥치는 소리를 들었어요.

이때 부엉이가 무척 놀랐어요. 흠..

생쥐가 자기 자기 자신을 꼭 껴안았기 때문이래요.

Item 6– Condition 2: LD antecedent context+ *caki-casin*

토끼와 아기 곰은 쉽게 잠에서 깨어나지 못했고 어느 날 밤 들은 깊이 잠이
들었어요.

이때 토끼가 무척 놀랐어요. 흠..

아기곰이 자기 자신을 세계 꼬집었기 때문이래요.

Item 7 – Condition 3: Local antecedent context+ *caki*

돼지와 아기양이 미술시간에 그림을 그리고 있었어요.

이때 갑자기 아기양이 깔깔대며 웃었어요. 흠..

돼지가 자기를 웃기게 그렸기 때문이래요.

Item 8– Condition 3: Local antecedent context+ *caki*

개구리와 아기곰이 갑작스러운 천둥치는 소리를 들었어요.

이때 개구리가 무척 놀랐어요. 흠..

아기곰이 자기를 꼭 껴안았기 때문이래요.

Item 9– Condition 3: Local antecedent context+ *caki*

다람쥐와 꿀벌은 누가 예쁜 동물 선발 대회에 참여할지 결정 중이었어요.

이때 꿀벌이 무척 놀랐어요. 흠..

다람쥐가 갑자기 자기를 가리켰기 때문이래요.

Item 10 – Condition 4: Local antecedent context+ *caki-casin*

토끼와 아기곰은 누가 예쁜 동물 선발 대회에 참여할지 결정 중이었어요.

이때 아기곰이 무척 놀랐어요. 흠..

토끼가 갑자기 자기 자신을 가리켰기 때문이래요.

Item 11– Condition 4: Local antecedent context+ *caki-casin*

엄마닭과 원숭이는 쉽게 잠에서 깨어나지 못했고 어느 날 밤 들은 깊이 잠이
들었어요.

이때 엄마닭이 무척 놀랐어요. 흠..

원숭이가 자기 자신을 세계 꼬집었기 때문이래요.

Item 12— Condition 4: Local antecedent context+ *caki-casin*

돼지와 호랑이가 갑작스러운 천둥치는 소리를 들었어요.

이때 호랑이가 무척 놀랐어요. 흠..

돼지가 자기 자신을 꼭 껴안았기 때문이래요.

APPENDIX D

Test sentences for Experiment 3

Item 1 – Condition 1: LD antecedent context+ DAV+ *caki*

여기 공룡과 생쥐가 있어요.

공룡이 무언가를 하고 있네요.

눈을 가린 루피는 생쥐한테 무슨 일이 일어났는지 물어봤어요.

생쥐가 공룡이 자기를 들었다고 말했어요.

Item 2 – Condition 2: LD antecedent context+ DAV+ *caki-casin*

여기 여우와 공룡이 있어요.

공룡이 무언가를 하고 있네요.

눈을 가린 루피는 여우한테 무슨 일이 일어났는지 물어봤어요.

여우가 공룡이 자기 자신을 쫓았다고 말했어요.

Item 3 – Condition 2: LD antecedent context+ DAV+ *caki-casin*

여기 사자와 푸우가 있어요.

푸우가 무언가를 하고 있네요.

눈을 가린 루피는 사자한테 무슨 일이 일어났는지 물어봤어요.

사자가 푸우가 자기 자신을 밀었다고 말했어요.

Item 4– Condition 3: Local antecedent context+ DAV+ *caki*

여기 여우와 오리가 있어요.

여우가 무언가를 하고 있네요.

눈을 가린 루피는 오리한테 무슨 일이 일어났는지 물어봤어요.

오리가 여우가 자기를 밀었다고 말했어요.

Item 5– Condition 3: Local antecedent context+ DAV+ *caki*

여기 생쥐와 부엉이가 있어요.

부엉이가 무언가를 하고 있네요.

눈을 가린 루피는 생쥐한테 무슨 일이 일어났는지 물어봤어요.

생쥐가 부엉이가 자기를 쫓았다고 말했어요.

Item 6– Condition 4: Local antecedent context+ DAV+ *caki-casin*

여기 코끼리와 얼룩말이 있어요.

얼룩말이 무언가를 하고 있네요.

눈을 가린 루피는 코끼리한테 무슨 일이 일어났는지 물어봤어요.

얼룩말이 코끼리가 자기 자신을 들었다고 말했어요.

Item 7- Condition 5: LD antecedent context+ LAV+ *caki*

여기 토끼와 코끼리가 있어요.

토끼가 무언가를 하고 있네요.

눈을 가린 루피는 코끼리한테 무슨 일이 일어났는지 물어봤어요.

코끼리가 토끼가 자기를 숨겼다고 말했어요.

Item 8- Condition 5: LD antecedent context+ LAV+ *caki*

여기 오리와 염소가 있어요.

염소가 무언가를 하고 있네요.

눈을 가린 루피는 오리한테 무슨 일이 일어났는지 물어봤어요.

오리가 염소가 자기를 변장했다고 말했어요.

Item 9 - Condition 6: LD antecedent context+ LAV+ *caki-casin*

여기 호랑이와 아기 곰이 있어요.

아기 곰이 무언가를 하고 있네요.

눈을 가린 루피는 호랑이한테 무슨 일이 일어났는지 물어봤어요.

호랑이가 아기곰이 자기 자신을 꾸몄다고 말했어요.

Item 10 – Condition 7: Local antecedent context+ LAV+ *caki*

여기 염소와 다람쥐가 있어요.

다람쥐가 무언가를 하고 있네요.

눈을 가린 루피는 염소한테 무슨 일이 일어났는지 물어봤어요.

염소가 다람쥐가 자기를 꾸렸다고 말했어요.

Item 11 – Condition 8: Local antecedent context+ LAV+ *caki-casin*

여기 펭귄과 염소가 있어요.

염소가 무언가를 하고 있네요.

눈을 가린 루피는 펭귄한테 무슨 일이 일어났는지 물어봤어요.

펭귄이 염소가 자기 자신을 숨겼다고 말했어요.

Item 12 – Condition 8: Local antecedent context+ LAV + *caki-casin*

여기 생쥐와 부엉이가 있어요.

부엉이가 무언가를 하고 있네요.

눈을 가린 루피는 생쥐한테 무슨 일이 일어났는지 물어봤어요.

생쥐가 부엉이가 자기 자신을 변장했다고 말했어요.

APPENDIX E

Test sentences for Experiment 4

Item 1 – Condition 1: LD antecedent context+ DAV+ *caki*

여우와 오리는 누군가의 꼬리에 사탕이 숨겨져 있다는 이야기를 들었어요.

오리가 무척 당황스러웠어요.

여우가 열심히 자기를 쫓아왔기 때문이에요.

Item 2 – Condition 1: LD antecedent context+ DAV+ *caki*

펭귄과 북극곰은 서로 먼저 보드를 타고 싶어했어요.

북극곰이 무척 놀랐어요.

펭귄이 자기를 밀어줬기 때문이래요.

Item 3 – Condition 2: LD antecedent context+ DAV+ *caki-casin*

생쥐와 부엉이는 누군가의 꼬리에 사탕이 숨겨져 있다는 이야기를 들었어요.

생쥐가 무척 당황스러웠어요.

부엉이가 열심히 자기 자신을 쫓아왔기 때문이에요.

Item 4– Condition 2: LD antecedent context+ DAV+ *caki-casin*

돼지와 강아지는 서로 먼저 보드를 타고 싶어했어요.

돼지가 무척 놀랐어요.

강아지가 자기 자신을 밀어줬기 때문이래요.

Item 5– Condition 3: Local antecedent context+ DAV+ *caki*

강아지와 펭귄은 서로 먼저 철봉을 하고 싶어했어요.

펭귄이 무척 놀랐어요.

강아지가 자기를 들어줬기 때문이래요.

Item 6– Condition 4: Local antecedent context+ DAV+ *caki-casin*

코끼리와 얼룩말은 서로 먼저 철봉을 하고 싶어했어요.

코끼리가 무척 놀랐어요.

얼룩말이 자기 자신을 들어줬기 때문이래요.

Item 7– Condition 5: LD antecedent context+ LAV+ *caki*

꿀벌과 애벌레는 유령이 나타날 것 같아 무서웠어요.

애벌레가 무척 놀랐어요.

꿀벌이 갑자기 자기를 숨겼기 때문이래요.

Item 8- Condition 5: LD antecedent context+ LAV+ *caki*

닭과 원숭이는 남자친구와 약속이 있어서 예쁘게 보이고 싶었어요.

원숭이가 무척 놀랐어요.

닭이 갑자기 자기를 꾸뻐기 때문이래요.

Item 9 - Condition 6: LD antecedent context+ LAV+ *caki-casin*

황소와 얼룩말은 천둥 번개 소리를 들었어요.

얼룩말이 무척 놀랄일이 생겼어요.

황소가 갑자기 자기 자신을 숨겼기 때문이래요.

Item 10 - Condition 6: LD antecedent context+ LAV+ *caki-casin*

닭과 여우는 남자친구와 약속이 있어서 예쁘게 보이고 싶었어요.

여우가 무척 놀랐어요.

닭이 갑자기 자기 자신을 꾸뻐기 때문이래요.

Item 11 - Condition 7: Local antecedent context+ LAV+ *caki*

염소와 다람쥐는 할로윈 파티에 초대 받았어요.

다람쥐가 무척 놀랐어요.

염소가 갑자기 자기를 완전히 변장했기 때문이래요.

Item 12 – Condition 8: Local antecedent context+ LAV + *caki-casin*

생쥐와 부엉이는 할로윈 파티에 초대 받았어요.

부엉이가 무척 놀랐어요.

생쥐가 갑자기 자기 자신을 완전히 변장했기 때문이래요.

References

- Abe, J. (1997). The locality of *zibun* and logophoricity. In *Researching and verifying an advanced theory of human language* (COE Research Report 1; pp. 595–626). Graduate School of Language Sciences, Kanda University of International Studies.
- Berwick, R. (1985). *The acquisition of syntactic knowledge*. Cambridge, MA: MIT Press.
- Bickerton, D. (1987). He himself: Anaphor, pronoun...or? *Linguistic Inquiry*, 18, 345–348.
- Chien, Y.-C., & Wexler, K. (1990). Children's knowledge of locality conditions in binding as evidence for the modularity of syntax and pragmatics. *Language Acquisition*, 1, 225–295.
- Chien, Y.-C., Wexler, K., & Chang, H. W. (1993). Children's development of long-distance binding in Chinese. *Journal of East Asian Linguistics*, 2(3), 229–259.
- Cho, S. W. (1985). *Issues in the structure and acquisition of Korean anaphora* (Unpublished doctoral dissertation). University of Alberta, Edmonton, Canada.
- Cho, S. W. (1992). Kyay-wa caki-uy yhongsakwucho mich suptuk yenkwu [The syntax and acquisition of *kyay* 's/he' and *caki* 'self']. *Studies in Generative Grammar*, 2, 361–392.
- Cho, S. W. (1996). *Caki 'self' as a nominal anaphor and locally free pronoun in Korean*. Paper presented at the 25th Annual Convention of the Linguistic Society of America, San Diego, CA.
- Cho, S. W. (2004). *The syntactic principles and acquisition of Korean reflexive anaphora*. Seoul: Sogang University Press.
- Cho, S. W. (2006). The syntactic and semantic ambiguity of *caki* 'self' in Korean. *Korean Linguistics*, 13, 1–18.

- Choi, K.-I., & Kim, Y.-J. (2007). Caykwitaymyengsa-uy tauyseng hayso-kwaceng: Ankwu wuntong pwunsek [Ambiguity resolution processes of reflexives: Eye-tracking data]. *The Korean Journal of Experimental Psychology*, 19(4), 263–277.
- Choi, Y S. (2013). The Structure of *caki* and implication for null argument. *Studies in Modern Grammar*, 73, 29–48.
- Chomsky, N. (1981). *Lectures on government and binding*. Dordrecht: Foris.
- Chomsky, N. (1982). *Some concepts and consequences of the theory of government and binding*. Cambridge, MA: MIT Press.
- Clackson, K., Felser, C., & Clashen, H. (2011). Children’s processing of reflexives and pronouns in English: Evidence from eye-movements during listening. *Journal of Memory and Language*, 65, 128–144.
- Clark, R., & Roberts, I. (1993). A computational model of language learnability and language change. *Linguistic Inquiry*, 24(2), 299–345.
- Clements, G. (1975). The logophoric pronoun in Ewe: Its role in discourse. *Journal of West African Languages*, 10, 141–177.
- Cole, P., Hermon, G., & Sung, L.-M. (1990). Principles and parameters of long distance reflexives. *Linguistic Inquiry*, 21(1), 1–22.
- Cole, P., & Sung, L.-M. (1994). Head movement and long-distance reflexives. *Linguistic Inquiry*, 25, 355–406.
- Crain, S., & Thornton, R. (1998). *Investigations in Universal Grammar: A guide to experiments in the acquisition of syntax and semantics*. Cambridge, MA: MIT Press.
- Frazier, L. (1987). Sentence processing: a tutorial review. In M.Coltheart (Eds.), *Attention and performance XII: the Psychology of Reading* (pp. 559–586). Lawrence Erlbaum

Associates.

Guasti, M. T. (2002). *Language acquisition: The growth of grammar*. Cambridge, MA: MIT Press.

Gill, K-H. (1999). The long-distance anaphora conspiracy: The case of Korean. *U.Penn Working Papers in Linguistics*, 6 (1).

Gill, K-H. (2005). Phase and long-distance antecedency. Unpublished abstract, University of Sheffield, Sheffield, UK.

Han, C.-H., & Storoshenko, D. R. (2012). Semantic binding of long-distance anaphor *caki* in Korean. *Language*, 88(4), 764–790.

Hurewitz, F., Brown-Schmidt, S., Thorpe, K., Gleitman, L., & Trueswell, J. (2000). One frog, two frog, red frog, blue frog: Factors affecting children's syntactic choices in production and comprehension. *Journal of Psycholinguistic Research*, 29(6), 597–626.

Hyams, N., & Sigurjónsdóttir, S. (1990). The development of long-distance anaphora. *Language Acquisition*, 1(1), 57–93.

Im, H.-B. (1987). *Kwuke-uy caykwisa yenkwu* [The study of Korean anaphora]. Seoul: Sinkwu Mwunhwasa.

Jakubowicz, C. (1994). On markedness and binding principles. In M. Kadowaki & S. Kawahara (Eds.), *Proceedings of the North Eastern Linguistics Society 14* (pp. 15–182). Amherst, MA: GLSA.

Jakubowicz, C., & Olsen, L. (1988). *Reflexive anaphors and pronouns in Danish: Syntax and acquisition*. Paper presented at the 13th Annual Boston University Conference on Language Development, Boston, MA.

Kang, B.-M. (1988). Unbounded reflexives. *Linguistics and Philosophy*, 11(4), 415–456.

- Kang, B.-M. (1998). Mwunpep-kwa ene sayong: Khophes-ey kipanhan caykwisa ‘caki’, ‘casin’, ‘caki-casin’-uy kinung pwunsek-ul cwungsim-ulo [Grammar and the use of language: Korean reflexives ‘caki’, ‘casin’, and ‘caki-casin’]. *Journal of Korean Linguistics*, 31, 165–204.
- Katada, F. (1991). The LF representation of anaphors. *Linguistic Inquiry*, 22, 287–314.
- Kim, J. H., & Yoon, J. (2008). An experimental syntactic study of binding of multiple anaphors in Korean. *Journal of Cognitive Science*, 9(1), 1–30.
- Kim, S. (2012). *The acquisition of binding principles A and B by Korean speaking children* (Unpublished master’s thesis). Korea University, Seoul.
- Kim, S. Y. (2000). Acceptability and preference in the interpretation of anaphors. *Linguistics*, 38(2), 315–353.
- Kim, Y.-S. (2000). A morpho-syntactic analysis of reflexives: A minimalist approach. *Studies in Modern Grammar*, 19, 1–26.
- Kishida, M. (2011). *Reflexives in Japanese* (Unpublished doctoral dissertation). University of Maryland, College Park.
- Kuno, S. (1987). *Functional syntax*. Chicago, IL: University of Chicago Press.
- Lee, C. M. (1973). *Abstract syntax and Korean with reference to English* (Unpublished doctoral dissertation). University of Indiana at Bloomington.
- Lee, D. W. (2010). The demonstrative *ku* ‘he’ binding in the dative construction. *Studies in Linguistics*, 16, 167–186.
- Lee, H. (1990). *Logical relations in the child’s grammar: Relative scope, bound variables, and long distance binding in Korean* (Unpublished doctoral dissertation). University of California at Irvine.

- Lee, H.S. (1987). *Pronominal anaphors and binding domain: With reference to a quasi-reflexive caki in Korean.*, ms, University of California at Los Angeles.
- Lee, H., & Wexler, K. (1987). *The acquisition of reflexives and pronouns in Korean: From a cross-linguistic perspective.* Paper presented at the 12th Annual Boston University Conference on Language Development, Boston, MA.
- Lee, Y., Kwon, K., & Jeong, I. (1980). *Hankwuk atong-uy ehwi paltal yenkwu* [The study on the vocabulary development of Korean children]. Seoul: Korean Educational Developmental Institute.
- MacWhinney, B. (2000). *The CHILDES project: Tools for analyzing talk* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Maling, J. (1984). Non-clause-bounded reflexives in modern Icelandic. *Linguistics and Philosophy*, 7, 211–241.
- Manzini, R. M., & Wexler, K. (1987). Parameters, binding theory, and learnability. *Linguistic Inquiry*, 18(3), 413–444.
- Montrul, S. (2010). Current issues in heritage language acquisition. *Annual Review of Applied Linguistics*, 30, 3–23.
- O’Grady, W. (1987). The interpretation of Korean anaphora: The role and representation of grammatical relations. *Language*, 63(2), 251–277.
- O’Grady, W. (2013). Processing and language acquisition: Reflexive pronouns in English and Korean. *Language and Information*, 19, 33–59.
- Okabe, R. (2008). *Child causatives: Acquisition of bi-clausal structures in Japanese* (Unpublished doctoral dissertation). Massachusetts Institute of Technology, Cambridge.

- Olsen, L. (1992). *Théorie linguistique et acquisition du langage: Étude contrastive des relations anaphoriques, syntaxe, danoise et syntaxe comparée* [Linguistic theory and language acquisition: Contrastive study of anaphoric relations, syntax, and Danish syntax compared] (Unpublished doctoral thesis). Université de Paris VII, France.
- Otsu, Y. (1981). *Universal grammar and syntactic development in children: Toward a theory of syntactic development* (Unpublished doctoral dissertation). University of California at Irvine.
- Pica, P. (1987). On the nature of the reflexivization cycle. In J. McDonough & B. Plunket (Eds.), *Proceedings of the North Eastern Linguistics Society 17* (pp. 483–499). Amherst, MA: GLSA.
- Pinker, S. (1989). *Learnability and cognition: The acquisition of argument structure*. Cambridge, MA: MIT Press.
- Progovac, L. (1993). Long-distance reflexives: Movement-to-Infl versus relativized SUBJECT. *Linguistic Inquiry*, 24(4), 755–772.
- Reinhart, T. (1993). *The syntactic domain of anaphora* (Unpublished doctoral dissertation). Massachusetts Institute of Technology, Cambridge.
- Reinhart, T. (2006). *Interface strategies: Reference-set computation*. Cambridge, MA: MIT Press.
- Reinhart, T., & Reuland, E. (1993). Reflexivity. *Linguistic Inquiry*, 24(4), 657–720.
- Reuland, E. (2001). Primitives of binding. *Linguistic Inquiry*, 32(3), 439–492.
- Reuland, E. (2011). *Anaphora and language design*. Cambridge, MA: MIT Press.
- Safir, K. (1996). Semantic atoms of anaphora. *Natural Language and Linguistic Theory*, 14, 545–589.

- Sekerina, I., Stromswold, K., & Hestvik, A. (2004). How do adults and children process referentially ambiguous pronouns? *Journal of Child Language*, 31, 123–152.
- Sell, P. (1987). Aspects of logophoricity. *Linguistic Inquiry*, 18, 445–479.
- Sigurjónsdóttir, S., & Hyams, N. (1992). Reflexivization and logophoricity: Evidence from the acquisition of Icelandic. *Language Acquisition*, 2(4), 359–413.
- Sohng, H.-K. (2004). A minimalist analysis of X⁰ reflexivization in Chinese and Korean. *Studies in Generative Grammar*, 14, 375–396.
- Su, Y.-C. (2004). The development of long-distance binding for Chinese *ziji* revisited. *Chinese Journal of Psychology*, 46(30), 249–257.
- Thráinsson, H. (1991). Long distance reflexives and the typology of NPs. In J. Koster & E. Reuland (Eds.), *Long distance anaphora* (pp. 49–75). Cambridge, UK: Cambridge University Press.
- Trueswell, J., Sekerina, I., Hill, N., & Logrip, M. (1999). The kindergarten path effect: Studying on-line sentence processing in young children. *Cognition*, 73, 89–134.
- Wexler, K., & Culicover, P. (1980). *Formal principles of language acquisition*. Cambridge, MA: MIT Press.
- Wexler, K., & Manzini, R. (1987). Parameters and learnability in binding theory. In T. Roeper & E. Williams (Eds.), *Parameter setting* (pp. 41–76). Dordrecht: Reidel.
- Yang, D.-W. (1983). The extended binding theory of anaphors. *Language Research*, 19, 169–192.
- Yang, D.-W. (1989). *Hankwuke-uy tayyongkwa* [Korean anaphora]. Seoul: Hankwuk Yenkwuwon.

Yoon, J.-M. (1989). Long-distance anaphors in Korean and their cross-linguistic implications. In C. Wiltshire, R. Graczyk, & B. Music (Eds.), *Proceedings of the 25th Annual Regional Meeting of the Chicago Linguistic Society* (pp. 479–495). Chicago, IL: Chicago Linguistic Society.