

An Experimental Syntactic Study of Korean Anaphor Binding: A case study of ‘caki’

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Ji-Hye Kim. 2011. An Experimental Syntactic Study of Korean Anaphor Binding: A case study of ‘caki’. *Language and Information* 15.1, 63–78. This study investigates the binding behavior of the Korean anaphor ‘caki’, which has been regarded thus far as a long-distance anaphor (LDA). Given that even local anaphors can be bound long-distance when they function as exempt anaphors in certain languages (Pollard and Sag 1992; Kim and Yoon 2009a, b), I investigated the binding behavior of LD-bound ‘caki’, in order to determine whether LD-bound ‘caki’ differs from LD-bound ‘caki-casin’ in the same contexts. In the experiment, subjects were required to rate the grammaticality of Korean sentences representing various types of LD binding of ‘caki’ and to determine whether the sloppy or the strict reading was more prominent in elliptical VPs containing the anaphor. The results are discussed with respect to the typology of LDAs proposed by Cole, Hermon and Huang (2001) (Soongsil University)

Key words: long-distance (LD) binding, Korean anaphor, caki, logophor, VP ellipsis, logophoricity, exempt binding, strict vs. sloppy reading

1. Introduction

This study investigates the binding behavior of the Korean anaphor ‘caki’, which has been regarded thus far as along-distance anaphor (LDA). Given that even local anaphors can be bound long-distance when they function as exempt anaphors in certain languages (Pollard and Sag 1992; Kim and Yoon 2009a, b), I investigated the binding behavior of LD-bound ‘caki’, in order to determine whether LD-bound ‘caki’ differs from LD-bound ‘caki-casin’. In the experiment, 30 Korean native speakers were required to rate the grammaticality of Korean sentences representing various types of LD binding of ‘caki’ and to determine whether the sloppy or the strict reading was more prominent in elliptical VPs containing the anaphor.

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The test materials were based on Kim and Yoon (2009) to see if ‘caki’ behaves differently from ‘caki-casin’. The results are discussed with respect to the typology of LDAs proposed by Cole, Hermon and Huang (2001).

2. Theoretical background

Pollard and Sag (1992) and Reinhart and Reuland (1993) argued that local anaphors can be LD-bound or be unbound in certain contexts as shown in (1). In sentences shown below, the English local anaphor *himself* is bound outside the minimal GC (cf. 1a, 1b) or unbound (cf. 1c), or bound by a non-c-commanding antecedent (cf. 1d) and yet the sentences are acceptable.

- (1) a. Bill remembered that [the Times had printed [a picture of *himself*] in its Sunday edition].
 b. John thinks that [an article written by *himself*] caused the uproar.
 c. [Physicist like *yourself*] are a godsend.
 d. [Incriminating pictures of *himself*] worry Bill.

The above researchers posit a distinction between *core* or *grammatical* binding on the one hand and *exempt* or *logophoric* binding on the other to explicate how local anaphors can sometimes occur in structures where the core constraints on anaphor binding—locality and c-command—are seemingly violated. The proposal that these researchers make is that not all anaphors are licensed grammar-internally. Anaphors that are licensed grammar-internally are called *core/grammatical anaphors*, while anaphors licensed by extra-grammatical mechanisms are categorized as *exempt anaphors/logophors*. In the theory of Pollard & Sag (1992), an anaphor is exempt when it does not have a more prominent co-argument in its argument structure. However, in the presence of such a co-argument, the anaphor must be bound grammar-internally as a core anaphor. The bracketed NPs within which anaphors occur in (1a-d) above do not contain a more prominent co-argument (i.e., the Possessor) within their core binding domain, and hence, the anaphor is licensed as an exempt anaphor, freed from the constraints on core binding.

According to Pollard and Sag (1992), exempt anaphors generally display a cluster of properties that distinguish them from core anaphors, which include the following:

- (2) a. Exempt anaphors may be unbound or discourse-bound (cf. 1c).
 b. Exempt anaphors do not need c-commanding antecedents (cf. 1d).
 c. Exempt anaphors may take antecedents outside the local domain (the Governing Category) for local binding (cf. 1a,b).
 d. Exempt anaphors allow strict readings in VP ellipsis contexts.

The sloppy-strict ambiguity (cf. 2d) was employed as another diagnostic of the core-exempt distinction in Huang & Liu (2001).¹ This is predicated on the

¹ Runner et al (2002) verified this diagnostic in their empirical experimental study.

observation that elliptical VPs² containing core anaphors are predominantly interpreted sloppily, whereas those containing exempt anaphors allow strict readings. As already pointed out by several previous studies (Kim and Yoon 2009a, Kim and Yoon 2009b), the anaphor *himself* in (3a) is a core anaphor since it is bound within the local GC. The elliptical VP ‘did so, too’ is interpreted sloppily (i.e. as meaning ‘Bill defended Bill’). The strict reading is marginal, if available at all. On the other hand, in case of exempt binding shown in (3b), the strict reading (i.e. Bill thinks that an article written by John. . .) is much easier to obtain for the elliptical VP, and may indeed be more prominent than the sloppy reading.

- (3) a. John defended *himself* against the committee’s accusations.
Bill did so, too (=Bill defended **Bill** >?*John. . .).
- b. John thinks that an article written by *himself* caused the uproar.
Bill does so, too (= Bill thinks that an article written by **John** >Bill. . .).
 (Examples from Kim and Yoon (2009a, b))

While exempt anaphors can escape the strictures of syntactic conditions that constrain core anaphors, their licensing is nevertheless subject to discourse-pragmatic conditions known as *logophoricity* (Sells 1987, Huang and Liu 2001). Antecedents of exempt anaphors are optimal if they can be associated with a logophoric role. In Sells (1987), three logophoric roles are introduced—SOURCE, SELF, and PIVOT—with the following characterizations.

- (4) Logophoric roles (Sells 1987):
SOURCE: the agent communicating the propositional content
SELF: one whose mental state or attitude the content of the proposition describes
PIVOT: one with respect to whose (space-time) location the content of the proposition is evaluated

Researchers investigating logophoricity have furthermore argued that there is canonical hierarchy of logophoric roles. SOURCE is more canonical than the other two roles, while PIVOT is less canonical than SELF or SOURCE (Sells 1987, Huang & Liu 2001). This is reflected easily with which antecedents of logophoric anaphors can be licensed. For example, exempt anaphors are more easily licensed by SOURCE antecedents than by PIVOTs.

While exempt binding has been investigated mostly for English, a language that does not have genuine LDAs, there are such languages as Korean, Japanese, Chinese, etc., in which rich inventory of anaphors is presented. For example, Korean possesses multiple anaphors – ‘caki’, ‘casin’, ‘pronoun-casin’, and ‘caki-casin’. The four different anaphors can be used interchangeably in many contexts, such as in (5) below.

² I do not distinguish between VPs that are elliptical and those that contain pro-forms, referring to both as ‘elliptical’, somewhat misleadingly. In Korean, there is no VP-ellipsis per se, but there is a VP pro-form. The strict-sloppy ambiguity is observed in both ellipsis and pro-forms, as is well-known.

- (5) John-un *caki/casin/caki-casin/ku-casin*-uy yakcem-ul cal molun-ta
 J-TOP self-GEN weakness-ACC well unaware-DECL
 'John doesn't know his own weaknesses well.'

While 'caki' and 'casin' are known to allow long-distance antecedents quite freely, the consensus in the literature is that 'caki-casin' and 'pronoun-casin' are primarily local anaphors (J-M Yoon 1989; Cole, Hermon, Sung 1990).³⁴ B-M Kang's (1998) corpus-based study showed that 'caki-casin' occurs primarily as a local anaphor, lending support to earlier theoretical research.⁵

Now, given the fact that exempt binding was mostly investigated in languages without genuine LDAs, questions such as whether a language like Korean, which possesses multiple anaphors, still allows local anaphors to be licensed as exempt anaphors naturally arise. Kim & Yoon (2006, 2009) investigated this question with the Korean local anaphor 'caki-casin' and found that native speakers of Korean allow the local anaphor 'caki-casin' to be LD-bound in contexts known to license exempt anaphors in English. When LD bound, 'caki-casin' showed a strong preference for the strict reading in VP-ellipsis contexts, which implies that the speakers treated LD-bound 'caki-casin' as an exempt anaphor. Finally, the degree of well-formedness of the exempt binding reflected the Sells (1987)'s canonical hierarchy of logophoric roles, in that binding of 'caki-casin' by a logophoric SOURCE got the highest acceptability rating, while that by a PIVOT antecedent got a much lower rating.

The results of Kim and Yoon (2009) invite further questions. If the local anaphor 'caki-casin' can be bound LD as an exempt anaphor, satisfying logophoric conditions, what are the properties of genuine LDAs (such as 'caki') when they are LD bound? Do the anaphors which have been treated as LDA's behave differently from the local anaphor 'caki-casin' when the latter is LD-bound? Are genuine LDAs also sensitive to logophoric factors when they are bound by LD antecedents?

Cole et al (2001, 2006) propose a three-way typology of LDAs. The first type of LDA, or Type I LDA, is a core anaphor that is bound in a larger domain than a local anaphor.⁶ They claim that LDAs in languages like Kannada and Hindi-Urdu

³ A similar position has been advanced regarding the Japanese anaphor system in Katada (1991), where the Japanese counterparts to 'caki-casin' and 'pronoun-casin' in Korean, 'zibun-zisin' and 'pronoun-zisin', are taken to be local anaphors in contrast to 'zibun', which is taken to be an LDA.

⁴ For more information about comparison of different Korean reflexives and related literature, see Kim and Yoon (2008, 2009b).

⁵ Specifically, Kang examined accusative-marked forms of the three reflexives in his corpus (Korea University Corpus of Korean, Collection I) and found the following (Kang 1998:183)

	<i>caki-acc</i>	<i>casin-acc</i>	<i>caki-casin-acc</i>
Local	151	311	66
Long-distance	165	123	5
Total	316	434	71

These figures support the intuition of many native speakers about the local vs. long-distance binding potential of various anaphors in Korean.

⁶ Chomsky (1980) defined the binding domain as conjunction of Tensed S Condition (TSC) and Specified Subject Condition (SSC). TSC represents a binding out of a finite clause, whereas SSC represents a case of binding across an intervening subject. If we take the TSC and SSC to be operative in defining the Governing Category (GC) for local anaphors as Chomsky (1980),

are of this type. Type I LDA is characterized by the following properties: 1) The antecedent must c-command the LDA; 2) The antecedent must be clause-internal; 3) Sloppy readings are required and/or preferred in VP ellipsis contexts. That is, except for being bound in a larger domain than local (core) anaphors, these LDAs must be bound grammar-internally. Their status as core anaphor is verified by the predominance of sloppy interpretation in VP ellipsis.

On the other hand, Type II LDAs are anaphoric expressions that represent a form neutral between anaphor and pronoun. This class of anaphors is found in Malay and Turkish and shows the following characteristics: 1) The anaphor need not have a c-commanding antecedent; 2) The LDA can have a discourse antecedent; 3) Both sloppy and strict readings are allowed in VP ellipsis. Crucially, these properties characterize Type II LDAs in both local and LD binding.

Finally, Type III LDAs are primarily local anaphors, but which can be converted to a pronoun-like (exempt/logophoric) usage in specific syntactic or discourse contexts. Anaphors like Icelandic LDA in subjunctive complements, LD-bound Chinese ‘ziji’ (according to Huang and Liu 2001, though not Pollard and Xue 2001) and English exempt anaphors fall into this category and show the following properties: 1) The LDA need not have c-commanding antecedent; 2) The LDAs have an antecedent outside the sentence; 3) Both sloppy and strict readings are allowed in VP ellipsis when the anaphor is LD-bound. However, unlike Type II anaphors, Type III anaphors behave like a core anaphor in a local domain. Kim and Yoon (2009) seem to argue that ‘caki-casin’ is a Type III anaphor, by showing that i) the anaphor allows LD-binding in contexts known to license exempt anaphors, ii) the anaphor was sensitive to logophoric factors, and iii) the subjects allowed predominant strict readings in VP ellipsis with this anaphor.

The present study seeks to investigate whether the interpretations that speakers assign to the anaphor ‘caki’ differ systematically from those that native speakers assign to ‘caki-casin’ in the same contexts. The specific research questions addressed in the present study are the following:

- 1) Does LD-bound ‘caki’ behave differently from LD-bound exempt anaphor ‘caki-casin’?
- 2) Does LD-bound ‘caki’ show sensitivity to logophoric factors?

3. The Study

3.1 Hypothesis and Predictions

The hypotheses given below are involved in the status of ‘caki’ within the typology set forth by Cole et al (2006).

Hypothesis A: ‘Caki’ is a Type I LDA. In other words, it is a core anaphor with a larger GC (Governing Category, Manzini and Wexler 1987) than ‘caki-casin’ (i.e., neither the TSC (Tensed S Condition, Chomsky 1980) nor the SSC (Specified Subject Condition, Chomsky 1980) defines its GC). If so, it is predicted to behave in the following way: i) ‘caki’ will require a c-commanding clause-internal antecedent while disallowing discourse antecedents; ii) ‘caki’ will show a preference for sloppy

the GC for Type I LDA might involve the suspension of TSC and/or SSC.

readings in VP-ellipsis contexts; iii) ‘caki’ may not be sensitive to logophoric conditions on the antecedent even in LD-binding, since it is a core anaphor.⁷ These properties are predicted to hold of ‘caki’ in both local and LD-binding.

Hypothesis B: ‘Caki’ is a Type II LDA, a form that is neutral between pronouns and anaphors. If so, i) ‘caki’ will not require c-commanding antecedents and allow discourse antecedents; ii) ‘caki’ will not show a preference for either the strict or the sloppy reading in VP-ellipsis contexts; iii) ‘caki’ may not be sensitive to logophoricity. As with Hypothesis A, these properties are predicted to hold of ‘caki’ regardless of whether it is LD-bound or locally bound.

Hypothesis C: ‘Caki’ is a Type III anaphor like ‘caki-casin’, but with a larger core GC than ‘caki-casin’ (i.e. it can violate SSC and TSC, *qua* a core anaphor). If so, i) ‘caki’ will allow discourse or non-c-commanding antecedents when there is no (potential) c-commanding antecedent; ii) ‘caki’ will yield dominant sloppy readings in VP ellipsis when its antecedent c-commands it, but not when the antecedent does not; iii) ‘caki’ may not be sensitive to logophoricity when it is bound by a c-commanding antecedent, but may show logophoricity effects when its antecedent does not c-command it.

In addition to the three hypotheses given here, there is another possibility—namely, that ‘caki’ is just like ‘caki-casin’. It is primarily a local anaphor with the same core GC as ‘caki-casin’ (defined by SSC, but not TSC, since all anaphors in Korean violate TSC), and is turned into an exempt anaphor only when it is LD-bound (that is, when it violates SSC). This is essentially the position that Huang and Liu (2001) take with respect to the Mandarin Chinese LDA ‘ziji’.

While we cannot discount this possibility, it is well-known that while LD-binding of ‘caki-casin’ is rare, ‘caki’ occurs quite freely with LD antecedents (Kang 1998). If the two are identical in terms of their categorization, this difference is hard to account for. Despite this difficulty, without a direct comparison of the two anaphors in the same contexts and structures, we cannot rule out this scenario. Therefore, I attempted to test ‘caki’ with the same materials that tested ‘caki-casin’ in Kim and Yoon (2009) to see the difference between the two anaphors in the same sentential contexts.

3.2 The Experiment

3.2.1 Method.

Participants

Thirty native speakers of Korean residing in and around Seoul, South Korea (age range: 20-50) participated in the experiment. The participants grew up as monolinguals and have not resided longer than a month in a foreign country.

Task and Materials

The main task was a Grammaticality Judgment Task using the 5-point Likert scale, coupled with a Preferential Sentence Interpretation Task, which was em-

⁷ Cole et. al. do not rule out the possibility that there may be pragmatic conditions on core anaphors with a larger GC (Type I LDAs). If that is the case, the applicability of pragmatic conditions on LD-bound ‘caki’ will not be decisive in determining which hypothesis is valid.

ployed in Kim & Yoon (2009) with different Korean anaphor ‘caki’. Each task contained two parts, the first of which asked the participants to rate the degree of grammaticality of a given sentence where ‘caki’ occurs with a long-distance antecedent, while the second asked them to choose the most salient interpretation (from among sloppy, strict and neither) of a sentence containing VP-ellipsis that immediately follows the sentence they just rated.

The test materials were composed of 54 Korean sentences (36 target items and 18 non-target items) illustrating various types of sentences containing LD-bound ‘caki’. The target items were composed of 12 types of Korean sentences, either violating only TSC⁸, or attesting both TSC and SSC violations,⁹ with 3 tokens in each type. The sentences with TSC and SSC violations were constructed to reflect various combinations of the factors (i.e. logophoric role (cf. see (6)) and varying grammatical-structural functions of the anaphor – subject vs. non-subject antecedent, c-commanding vs. non-c-commanding antecedent, backward binding, etc.). 18 non-target items were distractors with ungrammatical sentences, which exemplified wrong binding relations or were ungrammatical for reasons unrelated to binding. The sample sentences exemplifying the different logophoric roles of antecedents of LD-bound ‘caki’ are shown in (6).

In (6a), the only possible antecedent of the anaphor *caki* is the matrix subject *Inphyo*, since the intervening subject ‘the police’ is not a possible antecedent since it is inanimate but *caki* requires animate antecedents. The LD antecedent *Inphyo* is logophoric SOURCE, since he is the speaker of the embedded proposition. The matrix subject *Sangho* in (6b) and *Yenghi* in (6c) serve as antecedents of *caki*, and has the role of SELF in the event described, and by being the one whose point of view is described in the proposition (i.e. PIVOT), respectively.

(6) a. LD antecedent: SOURCE

Inphyo-nun [kyengchalcheng -i *caki-ka* swumki-n
Inphyo-TOP the police.agency-NOM self-NOM hide-REL
cungkemwul-ul chacanay- ess-ta]-ko malhay-ss-ta
exhibit-ACC find- PST-DECL-COMP say-PST-DECL
‘Inphyo said that the Police found out the exhibit he (self) had hidden.’

b. LD antecedent: SELF

Sangho-nun [tongchanghoy meympe-tul-i *caki-uy* kyelhon
Sangho-TOP alumni.assoc members-NOM self-GEN wedding

⁸ An example of Korean sentences violating TSC only is the following:

Mary-ka Sue-eykey cinan key.im-eyse **caki-ka**
Mary-NOM Sue-DAT last game-LOC self-NOM
iki-ess-ta-ko malhay-ess-ta.
won-DECL-COMPp say-PST-DECL
‘Mary said to Sue that self won in the last game.’

⁹ An example of Korean sentences violating both TSC and SSC is the following:

Mary-nun nay-ka kouyceck-ulo **caki-casin-i** kuli-n
Mary-TOP I-NOM intentionally self-NOM draw-REL
kulim-ul tollyeponay-ss-ta-ko malhayss-ta.
picture-ACC return-PST-DECL-COMP Say-PST-DECL.
‘**Mary** said that I intentionally sent back the picture **self** had drawn.’

nalcca-lul imi palphyohaypeli-ess-ta]-ko mit-ko iss-ta.
 date-ACC already announced-COMP believe-DECL
 'Sangho believes that the alumni association already announced his
 (self's) wedding date.'

c. LD antecedent: PIVOT

[Chelswu-ka *caki-lul* chaca o-ass-ul ttay], *Yenghi-nun*
 Chelswu-NOM self-ACC seek-come-REL when Yenghi-TOP
 (*pro-ul*) maywu pankapkey mac-a cwu-ess-ta.
 (Chelswu-ACC) very gladly greet-PST-DECL
 'When Chelswu came to see her (= self, Yenghi), Yenghi greeted (Chel-
 swu) very gladly.'

d. LD antecedent: less logophoric

[Chelswu-ka *caki-lul* chaca ka-ss-ul ttay], *Yenghi-nun*
 Chelswu-NOM self-ACC seek-went-REL when Yenghi-TOP
 (*pro-ul*) maywu pankapkey mac-a cwu-ess-ta.
 (Chelswu-ACC) very gladly greet-PST-DECL
 'When Chelswu went to see her (= self, Yenghi), Yenghi greeted (Chel-
 swu) very gladly.'

Examples in (6c) and (6d) need further clarification. Sentences containing PIVOT antecedents were constructed following Sells (1987), who used directional auxiliaries *o-ta* 'come' and *ka-ta* 'go' to identify PIVOTs. (6c) is an example of the sentences containing PIVOT antecedent, as explained earlier. (6c) has more than one third-person NP. However, the directional auxiliary *o-ta* 'come' in the adjunct clause implies that the matrix subject *Yenghi* is the deictic center, as *Chelswu* is described as coming toward her. Thus, *Yenghi* is the PIVOT of the sentence.

On the other hand, (6d) contrasts with (6c) with respect to the use of auxiliary verbs. While in (6c) auxiliary *o-ta* 'come' is used, in (6d), the auxiliary *ka-ta* 'go' is used in the adjunct clause, which indicates that the POV is that of the referent of the subject of the adjunct clause, *Chelswu*. However, *Chelswu* cannot be construed pragmatically as the antecedent of the anaphor in the overall context of this sentence. Hence, when the matrix clause is parsed and the subject *Yenghi* is encountered, the POV has to shift to that of *Yenghi* from *Chelswu* in order for it to serve as the antecedent of the exempt anaphor contained in the adjunct clause.

Since in parsing this sentence a shift in POV between the adjunct and the main clauses is needed in order to obtain the requisite binding interpretation, we can imagine that the binding relation in this type of sentence will be more difficult to obtain compared to sentences that do not require a POV shift. For this reason, sentences such as (6d) are categorized as Less Logophoric, or lower in the degree of logophoricity, rather than as non-logophoric. I expect this type of sentence to be judged less acceptable (but not completely out, with the indicated binding interpretation) than sentences containing clearly identifiable logophoric centers.

An example of the target test items in the experiment is shown in (7).

- (7) Mary-nun [nay-ka *caki*-uy kihoy-lul kalochayssta-ko] malhayssta
 Mary-TOP I-NOM self-GEN chance-ACC took-COMP said
 ‘Mary said that I robbed her of her (= self’s) opportunity.’

Ungrammatical

Grammatical

1 2 3 4 ⑤

Laura-to kulekey malhayssta.

Laura-too so said.

‘Laura said so too.’

Interpretation:

A. Laura-nun [nay-ka Laura-uy kihoy-lul kalochayssta-ko] malhayssta.

(= Laura said that I robbed **Laura** of Laura’s opportunity.)

Ⓐ Laura-nun [nay-ka Mary-uy kihoy-lul kalochayssta-ko] malhayssta.

(= Laura said that I robbed **Mary** of Mary’s opportunity.)

C. Neither of the above is a possible interpretation.

Procedures.

Participants were first asked to fill out a simple one-page questionnaire survey about biographical information such as age, gender and dialect(s) of Korean they use. They were then asked to read the instructions for the main task and proceed to the task. In the main task, participants were required to judge the degree of grammaticality of a given sentence in a 5-point Likert scale and then to choose an appropriate interpretation of an immediately following (underlined) sentence containing VP-ellipsis/proform.

However, based on the performance on the Preferential Sentence Interpretation task, responses that were not reliable and might confound the pattern of the results were screened. For example, if subjects judged the test sentence as ungrammatical, their responses on the following sentences with VP-ellipsis/proform cannot be considered reliable unless they choose response C (=‘Neither of the above is a possible interpretation.’). This is because an ungrammatical sentence cannot have an interpretation. Therefore, responses which judged the sentences as ungrammatical but nevertheless chose A or B readings were set aside in the statistical analysis of judgments on strict/sloppy readings. Also, responses which rated the sentences as grammatical (giving a score higher than 3) but chose C for interpretation were also dropped, as these responses cannot be considered to be reliable. Subjects who responded this way might have chosen local binding, even when the local antecedent does not match the anaphor in features, and might have based their high grammaticality ratings upon the local binding interpretation. When they turned to the interpretation task, they failed to find the local construal and hence chose C. If this is what they were doing, their responses cannot be considered in judging the acceptability of long-distance exempt binding.

On the other hand, responses which assigned a low grammaticality score (1 or 2) for the target sentence and chose C for interpretation were considered for the analysis, since these are valid responses that fall into the category of ‘not accepting LD binding’ even when pragmatically plausible contexts are provided.

Analysis

Mean responses for the different sentence types in the Grammaticality Judgment Task were compared by repeated measures ANOVAs (Type 1, Alpha-level = .05) and Paired-Sample T-Tests. Also, data analysis among tasks to investigate different linguistic variables (i.e. core vs. exempt anaphor, logophoric role of the antecedent, structural conditions of the antecedent, strict vs. sloppy reading, etc.) was performed.

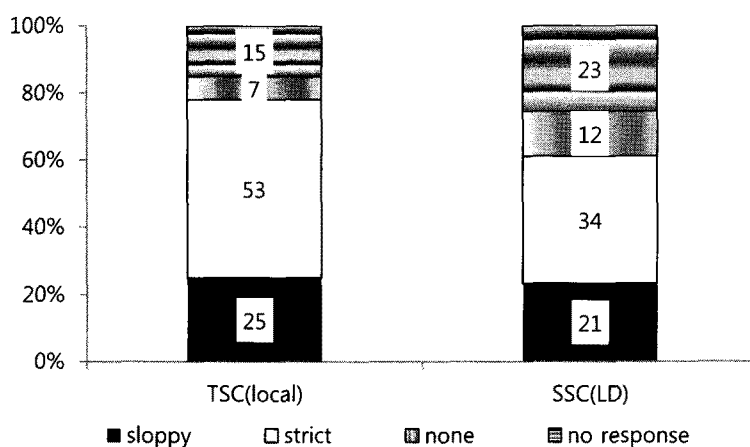
3.2.2 Results.

The overall results are as follows.

i) The participants' overall responses showed that they rated TSC-violating 'caki' as more acceptable (mean = 4.27) than sentences where LD-bound 'caki' violated both TSC and SSC (mean = 3.46). The Paired Sample T-test showed that the difference is significant ($p < .05$). This pattern of results seems to show that 'caki' is better accepted when it was bound as core anaphor than as exempt anaphor, which seems to support Hypothesis A. However, since the sentences containing TSC only violation were not the pure case of local binding (i.e. clause-mate binding), we need more care to interpret this results in light of different hypotheses.

ii) As for the result with VP-ellipsis, LD bound 'caki' yielded both sloppy and strict readings in the case of sentences violating only the TSC (sloppy: 25%, strict: 53%), as well as in sentences where both TSC and SSC were violated (sloppy: 19%, strict: 35%). In both cases, strict reading was chosen dominantly as preferred reading. This pattern of results seems to rule out hypothesis A, which does not allow strict reading in any case of VP-ellipsis. This will be discussed in the section 3 in more detail.

The choice between sloppy vs. strict reading as the preferred interpretation in contexts of VP ellipsis is shown in Figure 1.



[Figure 1] Sloppy vs. strict reading in VP-ellipsis

A portion of the bar graph marked as ‘none’ indicates responses in which the subjects did not choose either the strict or the sloppy reading as the preferred interpretation. I take these responses to reject long-distance construal of the anaphor as presented in the VP-ellipsis.

iii) LD-bound ‘caki’ as categorized by the logophoric roles of antecedents did not respect Sells’ 1987) hierarchy of logophoric roles (SOURCE>SELF>PIVOT), in that the sentences with logophoric SELF got the highest grammaticality score (mean = 3.84), followed by SOURCE (mean = 3.56) and PIVOT (mean = 3.45). The sentences with Less Logophoric antecedents obtained an even lower score (mean = 3.26). A repeated measures ANOVA demonstrated that there was a significant difference among sentences with different logophoric roles [$F(3, 11) = 26.35$, $MSE = 4.54$, $p < .05$]. A series of Paired Sample T-Tests revealed that the mean difference between less logophoric antecedent and other logophoric antecedents was significant (SOURCE vs. less logophoric ($p < .05$); SELF vs. less logophoric ($p < .05$); PIVOT vs. less logophoric($p < .056$)). This means that even though the canonical hierarchy was not supported, logophoric antecedents as a class scored higher than less logophoric ones.

iv) The acceptability of the sentences with ‘caki’ was not much influenced by grammatical-structural factors. That is, ‘caki’ bound by a c-commanding antecedent and by a non-c-commanding antecedent did not differ from each other in their acceptability (c-commanding antecedent: mean = 3.37, non-c-commanding antecedent: mean = 3.32; [$t(29) = .628$, $p = .535$, not significant]).

The overall pattern of the results with different sentence types is shown in Table 1.

[Table 1] Acceptability ratings of various sentence types representing binding of ‘caki’

Sentence types (n = 36)	Subjects (n = 30) Mean (S.D.)
TSC-only violation (n=3)	4.27 (.35)
SSC+TSC violation (n=3)	3.45 (.45)
Logophoric SOURCE (n=3)	3.56 (.53)
Logophoric SELF (n=3)	3.84 (.52)
Logophoric PIVOT (n=3)	3.45 (.61)
Less logophoric antecedent (n=6)	3.26 (.51)
C-commanding antecedent (n=3)	3.37 (.48)
Non-c-commanding ant. (n=6)	3.32 (.52)
Subject antecedent (n=3)	3.38 (.58)
Non-subject antecedent (n=3)	3.63 (.84)

4. Discussion and Conclusion

The present study attempted to investigate the binding behavior of ‘caki’, focusing on subjects’ choices between the strict and sloppy readings in VP-ellipsis and their

judgments regarding the different logophoric roles of the antecedent, which were also the two parts of the test instruments employed in Kim and Yoon (2009) with the anaphor 'caki-casin'. However, it turned out that we need more types of sentence types to pick a unique hypothesis from among the three possibilities. Nevertheless, the results may still allow us to eliminate some options. The summary of the results and how they might bear on the different hypotheses given earlier are as follows.

i) Hypothesis A says that 'caki' is only a core anaphor—with a larger GC than 'caki-casin' (i.e., both TSC and SSC are ineffective in defining the GC for this anaphor). This predicts 'caki' will require c-commanding antecedents even when LD-bound. This is falsified, since the sentences with non-c-commanded 'caki' were not treated differently from those with c-commanded 'caki'. It is also predicted that sloppy readings should be dominant with 'caki' in all cases (i.e. local and LD binding)—as long as an antecedent is there which c-commands it, which is also falsified through the results of the experiment. Therefore, Hypothesis A is rejected.

As for logophoricity, it is actually hard to tell what the relevance of logophoricity is to the core-exempt distinction, since Cole et al (2006) presume that even core (LD) anaphors might be subject to these conditions. The result with 'caki' seems to show that the Sells' hierarchy is not supported with this anaphor. On the other hand, the sentences with less logophoric antecedent got significantly lower scores than those with logophoric antecedents, which implies that logophoricity is still relevant in the binding of LDA 'caki'.

ii) Hypothesis B says that 'caki' will not require c-commanding antecedents and that it will allow both strict and sloppy interpretations, even when it is locally bound (that is, clause-mate binding). Since it turned out that experimental sentences actually did not include the real cases of clause-mate binding, it is difficult to tell whether this is the case. Further testing should be done for testing this aspect. As for the LD-cases, the results are compatible with Hypothesis B, since strict readings were dominant in the ellipsis conditions.

iii) Hypothesis C agrees with Hypothesis A that 'caki' is a core anaphor with a larger GC (no SSC or TSC), but differs from it in that it allow 'caki' to be exempt—when it is unbound or un-c-commanded. That is, it predicts that 'caki' can be unbound/un-c-commanded. The relevant result is that the sentences with non-c-commanded 'caki' were not treated differently from those with c-commanded 'caki', which seems to go with Hypothesis C or with B.

From the pattern of the results compared to the proposed hypotheses, it seems clear that LDA 'caki' is not Type I anaphor, since it does not require a clause-internal c-commanding antecedent and allows both 'sloppy' and 'strict' interpretations under VP-ellipsis. Then what can decide whether 'caki' is more like Type II anaphor or Type III anaphor?

If 'caki' is Type II anaphor, it should behave like pronouns, which need not be bound by an antecedent or bound by a discourse antecedent. Though the experimental results actually did not contain data supporting or rejecting this prediction, the example in (8) seems to show that 'caki' cannot be bound by the discourse antecedent 'Yenghi', if there is a potential antecedent within the sentence. Also, the strict reading in the VP-ellipsis seems hardly possible.

- (8) Yenghi-ka tuleo-ass-ta. Na-nun **caki-lul** kitali-ko iss-ess-ta.
 Yenghi-NOM entered I-TOP self-ACC wait-and-be-PAST.
 ‘Yenghi entered. I was waiting for self (*Yenghi).’
 Dongswu-to kulayss-ta.
 Dongswu-too do so (PAST)
 ‘So did Dongswu (= Dongswu was waiting for self (Dongswu; *Yenghi))’

On the other hand, if ‘caki’ is a Type III anaphor as in the case of ‘caki-casin’ in Kim and Yoon (2009), but is bound within a GC larger than ‘caki-casin’, we should decide the GC size for ‘caki’ and ‘caki-casin’ respectively. Kim and Yoon (2009) suggest that TSC-violating ‘caki-casin’ may be bound as exempt anaphor, since strict reading was available and even preferred in VP-ellipsis/pro-form. Then, is ‘caki’ bound as core anaphor in the sentences with TSC-violation, showing dominant sloppy reading in VP-ellipsis as a case of core binding? The result from the present study does not support this idea, since TSC-violating ‘caki’ also allowed both sloppy and strict readings in VP-ellipsis. However, due to the lack of sentence type representing pure case of local binding (i.e. clause-mate binding) in the experiment, it is also difficult to see if ‘caki’ bound by a clause-mate local antecedent would show the same pattern. Though the data was not included in the experiment, we can still think of the sentence with ‘caki’ bound by clause-mate antecedent as shown in (9). In this example, the strict reading in the proform/ellipsis condition do not seem to allow strict reading, unless special discourse information is given. Such sentence type as shown in (9) should be included to the following experiment testing binding of ‘caki’ in a near future.

- (9) Yenghi-ka **caki-lul** mence sokayhay-ss-ta. Tongswu-to kulay-ss-ta
 Yenghi-NOM self-ACC earlier introduced Tongswu-too did so
 ‘Yenghi introduced herself earlier. So did Tongswu (= Tongswu introduced Tongswu>Yenghi)’

Though data presented in (8) and (9) seem to provide some implications, they cannot be used for the crucial determination of one hypothesis out of three, since such data were not tested in the experimental contexts. Therefore, for now, it is difficult to conclude which hypothesis is right for the present study, which calls for more carefully designed follow-up study with additional test items.

Finally, many of the subjects in the present study showed indeterminate judgment in rating grammaticality of the different types of sentences or rated overall sentences in the similar way. For example, the subjects in the present study did not show salient difference in treating the sentences containing target items and those representing ungrammatical distractors. They assigned similar grammatical scores to the sentences violating both TSC and SSC and those representing totally ungrammatical sentences (TSC+SSC violation: mean = 3.45, s.d. = .45; Ungrammatical distractors: mean = 3.21, s.d. = .36). This may imply that the subjects tested in the present study do not have similar grammatical sensitivity. Also, 14 out of 30 subjects did not seem to differentiate the sentences containing canonical logophoric antecedents and those with less logophoric antecedents, by assigning similar grammaticality scores to all types of the sentences, or by assigning SOURCE

type antecedent much lower scores than less logophoric antecedents. This also implies that the subjects in the present study are not very sensitive in discriminating distinct logophoric roles of the LD antecedent.

It is unfortunate that the present experimental study cannot make a conclusion to define the type of anaphor category to which 'caki' belongs, compared to 'caki-casin', which belongs to Type III anaphor. Nevertheless, this study calls for another study that can make more detailed conclusion and theoretical implications with better-designed materials including the target items absent in the present experiment. A future follow-up study will be able to deal with the problems of target items as well as individual variations to investigate properties of 'caki' as well as the other Korean anaphors such as 'casin' and 'pronoun-casin'.

<References>

- Chomsky, N. (1980). On binding. *Linguistic Inquiry*, 11-1-46.
- Cole, P, G. Hermon and C.-T. J. Huang (2001). Introduction. Long-distance reflexives: The State of the Art. *Syntax and Semantics*, 33, xiii-xvii.
- Cole, P, G. Hermon, and L.-M. Sung (1990). Principles and parameters of long-distance reflexives. *Linguistic Inquiry*, 21 (1), 1-22.
- Huang, C.-T. J., and C.-S. L. Liu (2001). Logophoricity, attitude, and *ziji* at the interface. *Syntax and Semantics*, 33, 141-195.
- Huang, C.-T. J., and C.-S. L. Liu (2006). Long-distance anaphors: An Asian perspective. In M. Everaert, H. van Riemsdijk, R. Goedemans and B. Hollebrandse (Eds.), *Blackwell Companion to Syntax*, Volume III (pp. 21-84), Oxford: Blackwell Publishers.
- Katada, F. (1991). The LF representation of anaphors. *Linguistic Inquiry* 22, 287-313.
- Kang, B.-M. (1998). Grammar and the use of language: Korean reflexives 'caki', 'casin', and 'caki-casin'. *Kwukchak*, 31, 165-204.
- Kim, J.-H. and J. H. Yoon (2008). An Experimental Syntactic Study of Binding of Multiple Anaphors in Korean, *Journal of Cognitive Science*, 9(1), 1-30.
- Kim, J.-H. and J. H. Yoon (2009a). The Exempt Binding of Local Anaphors: An Empirical Study of the Korean Local Anaphor *Caki-casin*, *Proceedings of 2006 Japanese-Korean Linguistics*, Kyoto: Japan
- Kim, J.-H. and J.H. Yoon (2009b). Long-Distance Bound Local Anaphors in Korean – An Empirical Study of the Korean Anaphor *Caki-casin*, *Lingua*, 119, 733-755.
- Manzini, R. and K. Wexler (1987). Parameters, binding theory, and learnability, *Linguistic Inquiry* 18, 413-444.
- Pollard, C. J., and I. A. Sag. (1992). Anaphors in English and the scope of Binding Theory. *Linguistic Inquiry* 23, 261-303.
- Pollard, C. and P. Xue (2001). Syntactic and non-syntactic constraints on long-distance reflexives. In P. Cole, G. Hermon and J. Huang (Eds.), *Long Distance Reflexives*, vol. 33 of *Syntax and Semantics Series* (pp. 317-342). New York: Academic Press.
- Reinhart, T, and E. Reuland (1993). Reflexivity. *Linguistic Inquiry*, 24(4), 657-720.

Runner, J. T., R. S., Sussman, and M. K., Tanenhaus (2002). Logophors in possessed picture noun phrases., In L. Mikkelsen and C. Potts (Eds.), *WCCFL 21 Proceedings*(pp. 401-414). Somerville, MA: Cascadilla Press.

Sells, P. (1987). Aspects of logophoricity. *Linguistic Inquiry*, 18(3), 445-479.

Yoon, J-M. (1989). Long-distance Anaphors in Korean and Their Crosslinguistic Implications. *Chicago Linguistic Society* 25, 1-29.

Appendix Examples of 12 Sentence Types (36 target sentences)

1) Sentence types with TSC-only violations (3 tokens each)

현미가 영선이에게 지난 주에 있던 요리대회에서 자기가 우승했다고 말했다고 나는 알고 있다.

2) Sentence types with TSC-only violations (3 tokens each)

현진이가 석균이에게 내일 자기의 어머니가 학교에 오실 거라고 말했다고 나는 알고 있다.

3) Sentence types with TSC+SSC violations (3 tokens each) - SOURCE

지성이는 상대방회사가 몰래 자기가 만든 프로젝트를 빼돌렸다고 말했다.

4) Sentence types with TSC+SSC violations (3 tokens each) - SELF

기주는 내가 큰 돈을 받고 자기가 숨기고 있던 비밀을 상대방 회사에 팔아먹었다고 믿고 있다

5) Sentence types with TSC+SSC violations (3 tokens each) - PIVOT

철수가 자기를 찾아왔을 때, 영희는 매우 반갑게 맞아 주었다.

6) Sentence types with TSC+SSC violations (3 tokens each) - less logophoric antecedent 1 (logophoric POV clash)

철수는 학생들이 자기를 찾으러 갔을 때, 방에서 책을 읽고 있었다고 말했다

7) Sentence types with TSC+SSC violations (3 tokens each) - less logophoric antecedent 2 (non-logophoric verb)

국회의사당에 걸어놓은 자기의 초상화가 돌아가신 박대통령의 책상 위에 떨어져서 부서졌다

8) Sentence types with TSC+SSC violations (3 tokens each) - non-subject antecedent

나는 회라한테서 회사가 특별한 이유없이 자기를 해고했다는 소식을 들었다

9) Sentence types with TSC+SSC violations (3 tokens each) - backward binding with external SOURCE and internal PIVOT

영희는 철수가 자기를 회사로 불러온 후에 더욱 더 열심히 일하기 시작했다고 말했다

10) Sentence types with TSC+SSC violations (3 tokens each) - non-c-commanding antecedent (psych-predicate)

자기의 사진이 벽에서 떨어져서 사람들을 다치게 했다는 사실이 박대통령을 민망스럽게 했다

11) Sentence types with TSC+SSC violations (3 tokens each) - SOURCE + non-nominative *caki*

영희는 내가 사람들 앞에서 자기를 지나치게 비판했다고 말하고 다닌다

12) Sentence types with TSC+SSC violations (3 tokens each) - SELF + non-nominative *caki*

은호는 학생회가 재정에 관해서는 자기를 지나치게 믿고 있다고 생각한다

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