Identifying Co-reference of *Zibun* and *Caki*: The Case of Reflexives in Japanese and Korean*

Noriyasu Li and Alan Juffs
University of Pittsburgh

Abstract

This study examines the properties of co-reference in DPs and the Japanese reflexive *zibun*, and the Korean reflexive *caki*. We posit that the resolution of local and long distance binding ambiguity in Japanese and Korean is influenced by the case particles that mark the reflexives. Results from a truth-value judgment task showed that Japanese and Koreans not only have different binding patterns but local and long distance binding varies based on case-marked reflexives. Bonferroni post-hoc tests revealed that Japanese prefer local binding when *zibun* is marked by the nominative case and long distance binding for the dative and accusative cases, while the Koreans prefer long distance binding when *caki* is marked by the genitive, dative, and accusative cases. Overall, our results show that further studies of reflexives should closely examine the role of case markers in ambiguity resolution and also examine how native speakers parse and process ambiguous sentences.

Key words
Binding theory, case, reflexivity, *zibun*, *caki*

1. Introduction

It has been well established since the early formulations of principles that govern co-reference (Chomsky 1981, 1986) that anaphors must be bound in their governing category. However, subsequent research revealed that reflexive-antecedent binding in Japanese and Korean are not as restrictive as the principles originally stated, and that cross-linguistic differences in binding domains exist. Specifically, reflexives may be bound with subjects outside the clause containing the first available antecedent in a process that involves movement at LF (Cole and Sung 1994). This covert local movement allows the reflexives *zibun* and *caki* to take either a local or LD subject as its antecedent, leading to certain sentences being ambiguous, as shown in sentence (1):

1. Japanese: John$_i$ ga [Mike$_j$ ga *zibun*$_{i/k}$ o hihansita to] itta.
   Korean: John$_i$ i [Mike$_j$ ka *caki*$_{i/k}$ lul pinanhayssta ko] malhayssta.
   John$_i$ NOM Mike$_j$ NOM *self*$_{i/k}$ ACC criticized COMP said
   "John$_i$ said that Mike$_k$ criticized *self*$_{i/k}$."

Beyond this ambiguity, lacking a definite contextual indication, one must decide who the proper subjects of *zibun* and *caki* are in reflexive-antecedent binding. Moreover, it is often assumed that Japanese and Korean share similar binding constraints with few differences. We argue that the identification of co-reference is determinable and possibly restricted through syntactic cues, with a particular focus on case particles that mark *zibun* and *caki*, and that in spite of some superficial similarities, Japanese and Korean cannot be assumed to share ambiguity of co-reference.

2. Literature review

2.1 Binding theory

According to Binding Principle A, all anaphors must have a co-indexed and c-commanding antecedent noun phrase (Chomsky 1981, 1986), and the antecedent must be within "a certain range of syntactic structure, defined as the governing category" (Broselow and Finer 1991:49). One of the central issues of the theory has been clearly defining the conditions through which an anaphor is bound to an antecedent. For example, consider the following sentences:

2. John$_i$ believes himself$_i$
3. John$_i$ believes that Jim$_k$ admires himself$_{*i}$
4. John$_i$ believes that Jim$_k$ admires himself$_k$

Sentence (2) is grammatical because 'himself' is bound within its binding domain and c-commanded by the DP governing 'John.' Sentence (3) is ungrammatical if 'himself' is co-indexed with 'John' but grammatical in (4) because 'himself' is locally bound by 'Jim.' This locality constraint that is ascribed to anaphors in English (White, Bruhn-Garavito, Kawasaki, Pater, and Prévost 1997) is one of several central concepts of Binding Principles that have thus far been generally acknowledged in the field (see Culicover and Jackendoff 1995 for some issues).

However, the definitions of governing categories can be language dependent. For example, sentence (3) would be grammatical in Japanese and Korean as *zibun* and *caki* can participate in long distance (LD) binding, i.e., certain reflexives can co-index with antecedents that are outside of their governing category (Manzini and Wexler 1987). Hence, certain binding conditions are different from the grammatical restrictions of English, which has led to extensive research in the field not only on Japanese and Korean but also on other East Asian languages.

2.2 *Zibun* and *caki*

Zibun and *caki* evince many morphosyntactic similarities, such as lacking gender (unlike him/herself), phi-features, and specification of a person (Aikawa 2002; Madigan 2015). The two reflexives also have similar basic binding constraints, as demonstrated in the sentences from above. In Japanese and Korean, the antecedents of the reflexives can be either the matrix or embedded subject in multi-clausal sentences, a phenomenon not predicted by Binding Principles alone, but explained by the principles of LF movement. Based on early work by Lebeaux (1983), it has been proposed that all anaphors initially undergo movement from V to INFL (Cole and Sung 1994), and move to a position that is c-commanded by a subject (Katada 1991). Head-to-head movement (V to INFL) allows monomorphemic reflexives, such as *zibun* and *caki*, to not only be able to bind with the LD antecedent, but block object-binding. The ability to move to an LD position is made possible by covert local movement based on the head movement analysis (Cole and Sung 1994).

Using sentence (1) from above, the process of movement at LF is as follows: first, *zibun* and *caki* move out of the VP position and raise to the T position within the same binding domain as 'Mike' (the embedded/local antecedent). At this juncture, the reflexives are bound with 'Mike.' However, *zibun* and *caki* can further move to the T position of the matrix clause and complete LD binding with 'John.' In this way, *zibun* and *caki* can participate in local and LD binding without modifying the current Binding Principles. However, the question remains as to which subject is the correct antecedent when there is more than one possible candidate, as is the situation in (1). We argue that the case particles that mark *zibun* and *caki* play a role in acceptability of local or LD binding, and this point, which to our knowledge has not yet been thoroughly addressed in the literature to date, is the focus of this study.

2.3 Case

In standard Principles and Parameters theory (P&P), the formal role of case is to make the DP visible in the syntax.[1] Case is the theoretical tool in P&P that determines grammaticality that is not satisfied by other constructs, such as the Extended Projection Principle.

Case is especially important in Japanese and Korean as it is considered to be one of the most important pieces of information in the parse. As one will notice from the example in sentence (1), case particles in Japanese and Korean are marked overtly by a post-positional suffix in the grammar; thus, Japanese and Korean speakers rely on case information, instead of word order, to make associations between various DPs. Although it is still unclear as to what representations are constructed by the parser on the basis of case information (Aoshima, Yoshida, and Phillips 2009), given its importance in sentence processing, we believe case plays an important role in co-reference. To explore this in more detail, the stimuli that were created for this study were all constructed in the same following sentence structure as shown in example (5):

> 5. DP-TOP   [DP-NOM   *reflexive*-<u>CASE</u>   VP-COMP]   VP

In this structure, the two possible antecedents appear prior to the reflexive, and all DPs appear before any VP. While it has been established that the verb plays a central role in processing the structure of a clause (e.g., Juffs and Rodriguez 2014), because the VP does not appear until the end of the clause in Japanese and Korean, native speakers (L1) must build various DP associations without VP information (Inoue and Fodor 1995). This can be potentially costly, but they seem to be able to do so without delay. Thus, while the sentence structure in (5) maximizes ambiguity, we

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[1] This theoretical construct is part of the motivation of DP movement in P&P approach.

believe that because L1 Japanese and L1 Korean initially build DP constructions and make co-reference decisions before accessing the VP (waiting until the end of the parse to select the antecedent is unlikely as this strategy of parsing is taxing; see Aoshima et al. 2009 for incremental processing and co-reference), certain local and LD binding patterns based on sentence types divided by case-marked reflexives will emerge. This is the innovative approach in examining local and LD binding acceptability, especially in Japanese, as previous research has suggested that L1 Japanese speakers accept both local and LD bound sentences at similar rates (e.g., Yoshimura, Nakayama, Shirahata, Sawasaki, and Terao 2012), while LD preference for *caki* has been widely reported in Korean (e.g., Kim and Yoon 2008).

The case markers of interest for this study are the nominative, genitive, dative, and accusative when they mark the reflexives in the location of where <u>CASE</u> is underlined in example (5). These case markers were selected based on pilot results that confirmed both local and LD binding are possible (without context) when they mark the reflexives (see Table 1 in Section 3.1.2 for example stimuli). We predict that the case particles that mark reflexives may reveal patterns in local and LD binding, and subsequently leading to resolving ambiguity of *zibun* and *caki* binding. No previous study of *zibun* and *caki*, to our knowledge, has examined binding through the scope of case-marked reflexives. Specifically, we hypothesize that 1) local and LD binding patterns will contrast between the Japanese and Korean participants, and 2) case will play a role in resolving ambiguity of *zibun* and *caki* in reflexive-antecedent binding, and specific local and LD binding patterns will emerge based on case-marked reflexives.

3. Current study
3.1 Participants
In the present study, we collected data from 98 adult L1 Japanese and 110 adult L1 Korean, all recruited from universities in Japan and Korea, respectively. Participants who did not complete the task were not included in the final analysis. Any outliers from the initial data set were excluded before statistical analysis. Ultimately, results from a total of 163 participants, 80 Japanese (39 males and 41 females, mean age = 18.7) and 83 Koreans (43 males and 40 females, mean age = 22), were used for the final analysis.

3.2 Materials
We prepared a truth-value judgment task in Japanese and Korean for this study. The task consisted of 50 written short stories, about two to five sentences each, plus one-sentence statements commenting on the stories. All stories were first written in English, then translated into Japanese and Korean, and were proofread by several native speakers of Japanese and Korean. The sentences in both languages were matched as closely as possible.

Among the 50 stories and sentences, 24 of them were relevant to the issues being addressed in the study. The 24 sentences commenting on the stories were divided evenly among four case particles (nominative, genitive, dative, and accusative) that marked the reflexives. Each case-marked sentence type involved 2 locally-bound, 2 LD-bound, and 2 false sentences. All stories that correspond with locally- and LD-bound sentences were constructed with the intention that participants can interpret such sentences based on the context as true. All stimuli sentences were multi-clausal and structured as shown in (5): the matrix (LD) subject was marked by the topic marker, the embedded (local) subject by the nominative case, followed by *zibun* or *caki* + case, and then the clause VPs. Table 1 shows examples of each sentence type divided by case-marked reflexives (case markers of interest are **boldfaced**, Japanese appears first, followed by Korean):

Table 1. Example sentence types divided by case from the truth-value judgment task

Type A: Nominative-marked reflexive sentence: 'John said Mary likes *self*.'									
John	wa	Mary	ga	*zibun*	**ga**	sukida		to	itta
John	un	Mary	ka	*caki*	**ka**	cohta		ko	malhayssta
John	TOP	Mary	NOM	*self*	**NOM**	likes		COMP	said
Type B: Genitive-marked reflexive sentence: 'Mary said Alice went to *self*'s home.'									
Mary	wa	Alice	ga	*zibun*	**no**	ie	ni	itta	to	itta
Mary	nun	Alice	i	*caki*	**uy**	cip	ey	kassta	ko	malhayssta
Mary	TOP	Alice	NOM	*self*	**GEN**	house	DAT	went	COMP	said
Type C: Dative-marked reflexive sentence: 'Mary said John bought snacks for *self*.'									
Mary	wa	John	ga	*zibun*	**ni**	okasi	o	katta	to	itta
Mary	nun	John	i	*caki*	**hanthey**	kansik	ul	sassta	ko	malhayssta
Mary	TOP	John	NOM	*self*	**DAT**	snack	ACC	bought	COMP	said
Type D: Accusative-marked reflexive sentence: 'John said Mike criticized *self*.'									
John	wa	Mike	ga	*zibun*	**o**	hihansita		to	itta
John	un	Mike	i	*caki*	**lul**	pinanhayssta		ko	malhayssta
John	TOP	Mike	NOM	*self*	**ACC**	criticized		COMP	said

Finally, it is important to note that although we "forced" a local or LD interpretation onto the participants with the provided context, whether a participant answers true or false is dependent on how they ultimately bind reflexives and antecedents during the parse. We assumed that providing context would override preference for local or LD binding, following White et al.'s (1997) methodology. However, if a participant locally-bound the reflexive even if the context should have induced LD binding, they will answer false. Such instances, though, should also provide evidence for whether certain cases influence local or LD binding.

3.3 Procedure
At the time of testing, participants were instructed to read the story first and determine whether the sentence that follows is true or false based on the context in the story. Instructions as to how to complete the task were given in oral and written form. Specifically, participants were instructed to focus on the subjects that were presented in the story and the statements, not on any non-present plausible referents. The task was self-paced and participants were not under a time limit.

4. Results
Table 2 shows the overall accuracy scores from the task for nominative, genitive, dative, and accusative marked reflexives for local and LD binding. The percentages indicate the proportion of correct true choices based on the context of the stories. The results suggest that both Japanese and Korean participants seem to prefer the LD-bound subject as the proper antecedent of *zibun* and *caki* over the locally-bound subject, but there is a stronger preference for this in Korean. The Japanese accept 460 out of 640 (71.9%) sentences when we forced LD binding, and only 363 out of 640 (56.7%) sentences for local binding; the Koreans accept 500 out of 664 (75.3%) sentences for LD binding, and only 281 out of 664 (42.3%) sentences for local binding.

In examining these results by case, the Japanese participants accept more local, as opposed to LD, subjects when *zibun* is marked by the nominative (107 local to 69 LD) and genitive (130 local to 118 LD). On the other hand, the Korean participants seem to prefer the LD subject when *caki*

is marked by the nominative (95 LD to 94 local) and genitive (116 LD to 93 local). Both Japanese and Korean participants overwhelmingly prefer the LD subject over the local when *zibun* and *caki* are marked by the dative (146 to 65 for Japanese, 139 to 30 for Korean) and accusative (127 to 61 for Japanese, 150 to 64 for Korean). Overall, the data by case show that Koreans accept sentences with LD-bound subject antecedents more than locally-bound, whereas the Japanese participants are more willing to accept locally-bound subjects than their Korean counterparts.

Table 2. Overall results by local/LD binding (for each case, n=160 for Japanese, 166 for Korean)

L1	Binding	Total	Nominative	Genitive	Dative	Accusative
Japanese	Local	363 (56.7%)	107 (66.9%)	130 (81.3%)	65 (40.6%)	61 (38.1%)
	LD	460 (71.9%)	69 (43.1%)	118 (74.8%)	146 (91.3%)	127 (79.4%)
Korean	Local	281 (42.3%)	94 (56.6%)	93 (56.0%)	30 (18.1%)	64 (38.5%)
	LD	500 (75.3%)	95 (57.2%)	116 (69.9%)	139 (83.7%)	150 (90.4%)

The results from Table 2 were submitted to a repeated measures ANOVA to test for statistical significance between local and LD accuracy between the Japanese and Korean groups. The differences are significant with an L1 effect, $F(1, 161) = 25.330$, $p < .001$, confirming our hypothesis that the Japanese and Koreans have different local and LD binding patterns.

We further investigated for differences within locally- and LD-bound sentences. For this, we extracted participants who answered true to both sentences per case-marked reflexive. That is, if a participant answered true to both locally-bound sentences that involved the reflexive marked by the nominative case, they were tallied under the Nominative column and Local row in Table 3. 37 of the 80 Japanese participants did so, and the remaining results are as follows:

Table 3. Results from participants correctly answering 'true' to locally-bound sentences
(n=80 for Japanese, 83 for Korean)

L1	Binding	Nominative	Genitive	Dative	Accusative
Japanese	Local	37	54	14	16
	LD	9	42	68	51
Korean	Local	20	28	3	19
	LD	22	37	59	68

The results show Japanese participants are more willing to accept locally-bound subjects than the Koreans for certain case-marked reflexives, and the Korean participants exhibit a preference for LD-bound subjects regardless of case. These results were submitted to chi-squared analyses to test for significance within local and LD-bound sentences. The results are significant for both local, $X^2(2, N = 163) = 11.303$, $p < .025$ and LD, $X^2(2, N = 356) = 8.132$, $p < .05$, establishing that Japanese and Koreans have different patterns in accepting local and LD antecedents.

Finally, we conducted multiple pair-wise post hoc comparisons of mean scores by using the Bonferroni correction of multiple significance t-tests to specifically identify which case markers influence local or LD binding (significant at the $p < .005$ level). There is no main effect on only two case markers: the genitive case for the Japanese participants, $t(79) = -1.683$, $p = .096$, and the nominative case for the Korean participants, $t(82) = 0.139$, $p = .890$. All other results report a reliable interaction between case and local or LD binding: $t(79) = -5.141$, $p < .001$ for nominative,

$t(79) = 11.058$, $p < .001$ for dative, and $t(79) = 8.645$, $p < .001$ for accusative in Japanese; $t(82) = 3.038$, $p = .003$ for genitive, $t(82) = 13.351$, $p < .001$ for dative, and $t(82) = 10.770$, $p < .001$ for accusative in Korean. These figures show that the Japanese prefer local binding when *zibun* is marked by the nominative and LD binding for the dative and accusative cases, while the Koreans prefer LD binding when *caki* is marked by the genitive, dative, and accusative cases.

4. Discussion

4.1 Discussion of research questions

In the following section, we will discuss the results in relation to the hypotheses that guided the current study.

First, the results show that there is a significant difference in local vs. LD binding patterns between the Japanese and Korean groups. The Korean participants reject more locally-bound sentences and accept more LD-bound sentences compared to the Japanese participants, indicating that the Koreans have a stronger preference for LD-bound subjects, and Japanese do not have a particular preference for either local or LD-bound subjects. This finding supports the previous literature of *zibun* and *caki*. These differences may also be explained by other fundamental differences between the two reflexives. As mentioned earlier, *zibun* and *caki* share many morphological and syntactic similarities; however, one of the differences between the two reflexives is that *zibun* can take the first, second, or third person as the antecedent, but *caki* generally only takes the third person (Madigan 2015).[2] While all subjects in the sentences in the task were presented in the third person, we suspect that the third person restriction of *caki* is a factor in strong LD preferences. However, we take this approach with caution. Local binding preference is, supposedly, fulfilled in Korean by *caki-casin*, and while Japanese also has a corresponding form, *zibun-zisin*, which has a locality constraint ascribed to the reflexive, the availability of *zibun-zisin* does not seem to impact how L1 Japanese interpret *zibun* the way L1 Koreans do with *caki*. Further testing of all reflexive forms may be necessary to uncover the entire picture of local and LD binding in Japanese and Korean.

In contrast with the previous research outlined above, the results also indicate that differences between Japanese and Korean are not only based on whether the reflexives prefer local or LD binding. As the data show, the nominative and genitive cases exhibit different binding patterns when they mark *zibun* and *caki*. First, there is no reliable effect for local or LD binding when *caki* is marked by the nominative case, while there is for local binding with *zibun*, which indicates that *caki* does not always have strong preference for LD binding. In turn, while there is no reliable effect in Japanese when the genitive case marks *zibun*, the results did show one for LD binding in Korean when *caki* is marked by the genitive. The influence of case is particularly evident with dative and accusative case-marked reflexives, as both Japanese and Korean participants significantly accept the LD subject over the local subject as the proper antecedent. Even in situations where the context in the story guides the reader to locally-bind the reflexive, the majority of the participants strongly dis-prefer and reject such sentences that involve local binding with the dative and accusative cases. This contradicts previous research that showed zero local and LD binding biases of *zibun*. Based on the initial analysis, we suggest binding patterns in Japanese and Korea emerge based on the case particles that mark reflexives.

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[2] The one example of *caki* used in the second person is between unmarried couples as an affectionate term (Madigan, 2015).

4.2 Qualitative review of issues in the materials

Although the results indicate that case plays a major role in identifying co-reference in *zibun* and *caki*, closer examination of the data also show considerable variability. The following section will discuss some of the results from nominative, dative, and accusative case-marked reflexives.

First, the following sentences that comment on the stories involve nominative-marked reflexives. The context in (6) and (7) guide the reader to take the LD subject antecedent in the underlined sentences, and (8) and (9) guide them to the local subject antecedent:

6. John told Mary that he likes her. Mary told her friends about John and what he said. Her friends were very happy for Mary. <u>Mary said that John likes *self*.</u>
   Japanese: 52/80 (65.0%) responded True; Koreans: 72/83 (86.7%) responded True
7. John and Bill do not like each other. Bill was telling his friends how much he didn't like John. Bill said it was because John was mean to him. <u>Bill said that John dislikes *self*.</u>
   Japanese: 17/80 (21.3%); Koreans: 23/83 (27.7%)
8. John is obsessed with himself. Mary found this unattractive and told her friends about John. <u>Mary said that John likes *self*.</u>
   Japanese: 42/80 (52.5%); Koreans: 24/83 (28.9%)
9. Mary is considered to be one of the fastest runners in the country. She often placed in the top 3 in races. She thinks she is the fastest and believes that she will win the next race. John heard about this and told his friends. <u>John said Mary thinks *self* is the fastest runner.</u>
   Japanese: 65/80 (81.3%); Koreans: 71/83 (85.5%)

The results from these sentences show much variability – the Japanese seem to demonstrate more acceptability of locally-bound sentences, while the Koreans are about half and half in terms of accepting both local and LD-bound sentences. Why is there such considerable variability within these four sentences? One possible explanation is the context and binding constraints compete against each other during the parse and interpretation of truth-values. For example, in sentence (8), there are two plausible interpretations from the sentence – John liking himself, or John liking Mary. Here, one could argue that the position of *miryokuteki*[3] and *cohta* in the story (which follow Mary) is what may cause false interpretations, and in the process block local binding in their syntax (see Kim and Yoon 2008 on LDA and LD preference by Koreans). However, it is important to point out that there are other instances throughout the data in which participants accept the local subject as the antecedent of the reflexives.

A more plausible explanation is based on feature checking of psych-predicates. In Korean, psych-adjectives such as *cohta* "like" or *silhta* "dislike" can take either nominative or accusative case, but in the third person, psych-adjectives must be conjugated with the *hata* (lit. to be) suffix, as in *cohahata* or *silhehata*, and can only be marked by the accusative case. In Japanese, *suki* 'like,' *kirai* 'dislike,' cannot take the accusative case, and can only be marked by the nominative case (Ura 1999). Based on this difference, the Korean participants may have been more sensitive to sentence constructions, because psych-adjectives, depending on first, second, or third person specification, can be marked by either nominative or accusative case markers (Jung 2011). In some of the feedback received from the Korean reviewers, they mentioned it may simply be a matter of preference that Koreans reject sentence (8) because of the use of nominative instead of accusative case (regardless of grammaticality), and accepted sentence (9) because the VP that follows *caki-*

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[3] In the Japanese sentence, the literal translation of "like" (*suki*) was changed to *miryokuteki* "attractive" in our task based on the pilot suggestions.

ka is not a psych-predicate. Nonetheless, it does not fully explain why they accept sentence (6) and reject sentences (7) and (8), and questions still remain on binding of tri-clausal sentence with nominative case-marked reflexives.

The results for reflexives marked by the dative and accusative cases show significant preference for LD binding by both Japanese and Korean participants. These results seem to have been the critical evidence for case influencing local or LD binding. However, further analysis of locally-bound sentences revealed reasons as to why the majority of participants rejected these sentences. For example, consider the following sentences (10) and (11) from the data:

10. John went to the department store to buy some snacks. Mary asked who he is buying the snacks for, and John told Mary they are for her. Delighted, Mary told about this to her friend. <u>Mary said John bought snacks for *self*.</u>
    Japanese: 69/80 (86.3%); Korean: 62/83 (74.7%)
11. John went to the department store to buy some snacks. Mary asked if he was buying them for her, but he said they were for him. Mary was not happy and told her friends about it. <u>Mary said John bought snacks for *self*.</u>
    Japanese: 37/80 (46.3%); Korean: 23/83 (27.7%)

In sentence (10), the majority of the participants correctly identify the LD subject as the proper antecedent of *zibun* and *caki*. However, in sentence (11), only 46.3% of the Japanese participants report the sentence as true, and only 27.7% of the Korean. In this sentence, some native speaker reviewers mention that it is pragmatically strange to say "to buy *self* snacks" (or any object in that matter) in Japanese and Korean without the benefit terms *tame* (i.e., *zibun-no tame-ni*) and *wihay* (*caki-lul wihay-se*), which were not included in the original stimuli. In terms of the semantics, another explanation as to why the majority of the participants rejected sentence (11) may be because "give-type" verbs such as "to buy" in Japanese and Korean tend to only select recipients (Lee 1997; Miyagawa and Tsujioka 2004). The recipient then should not be the locally-bound subject; i.e., the Agent of the clause should not be the beneficiary/recipient of give-type verbs within the same clause. Thus, in (11), 'John' cannot be the proper antecedent of *zibun* and *caki*, since he is the Agent of the embedded clause, but 'Mary' can be in (10) because she is the Agent of the matrix clause. Based on this notion, we suggest that the Goal or Recipient of "buy for *self*" (DP-DAT VP-ACC) should be outside the embedded clause, namely, in the matrix clause.

The data from accusative marked reflexives, such as in the sentence (12), also result in low acceptance rates of locally-bound subject sentences.[4]

12. After three years in the way, the soldier finally went crazy and jumped out of a window. He died instantly. The doctor had to tell the soldier's family the sad news. <u>The doctor said that the soldier killed *self*.</u>
    Japanese: 22/80 (27.5%); Korean: 23/83 (27.7%)

The difference between these three examples is that real world knowledge should cancel out any possibility of 'self' binding with the 'doctor' in sentence (12) – the doctor would have to be a ghost in order for this to be conceivable; however, only 28% of the participants report this sentence

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[4] The other LD-bound sentence with the accusative verb had higher true response rates:
Sentence: Mike said John praised himself. (*Mike-wa John-ga zibun-o hometa-to itta* in Japanese, 48.8% responded True; *Minswu-nun Mincwun-i caki-lul chingchanhayssta-ko malhayssta* in Korean, 49.4% responded True).

as true. The first author believed the Japanese and Korean sentences (*isya-wa heisi-ga zibun-o korosita-to itta* in Japanese; *uysa-nun kwunin-i caki-lul cwukyessta-ko malhayssta* in Korean) to be good translations of the English sentence, and moreover, no problems arose in piloting. Upon further review, it was brought to our attention that one cannot literally "kill (one)*self*" in Japanese or Korean, and our literal translation of "the soldier killed *self*" has completely different semantic and idiomatic meanings from English. In Japanese, to "kill *self*" means: "To not indulge your own (*self*) desires or feelings, without exception." Other native speakers of Korean also confirm that the idiomatic meaning exists in Korean, but further mention that context should disambiguate any competing meaning, even if the literal meaning of "kill *self*" is not available in the semantics of the language.

5. Conclusion

This study investigated whether local or LD binding was influenced by the case particles that mark reflexives in Japanese and Korean. Our initial analysis showed that case plays a role in local or LD binding in Japanese, while LD binding is preferred over local binding in Korean regardless of case. However, given some of the shortcomings of certain sentences in the task, we are not able to definitively conclude that case plays a major role in local or LD binding. Thus, it would be necessary to analyze refined data to provide further evidence for whether certain binding patterns emerge based on case-marked reflexive DPs.

As this study only examined one strict sentence structure for all truth-value judgment sentences, we suggest that future cross-linguistic studies of *zibun* and *caki* also examine other sentence constructions, such as mono-clausal sentences that have subject and object antecedents (although object-binding is generally restricted in Japanese and Korean, previous research has suggested that binding to an object is plausible). We propose that this be extended to not only further cross-linguistic examination, but also L1-L2 analysis between Japanese and Korean. Finally, we propose that self-paced reading or eye-tracking are potential methodologies that will assist in this process. Such extensions would potentially lead to a broader understanding of not only in the interaction between case and reflexive-antecedent binding, but also how L1 speakers incrementally construct DPs based on case information and ultimately select a proper antecedent. Overall, the current study has demonstrated that some specific co-referencing patterns occur based on case-marked reflexives, and that future research will do well in further analyzing the role of case in local and LD binding of *zibun* and *caki*.

References

Aikawa, Takako. (2002) Reflexives. In Natsuko Tsujimura (ed.), *The Handbook of Japanese Linguistics*. 154-190. Malden, MA: Blackwell Publishers.

Aoshima, Sachiko, Masaya Yoshida, and Colin Phillips. (2009) Incremental Processing of Coreference and Binding in Japanese. *Syntax* 12.2, 93-134.

Broselow, Ellen and Daniel Finer. (1991) Parameter Setting in Second Language Phonology and Syntax. *Second Language Research* 7.1, 35-59.

Chomsky, Noam. (1981) *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, Noam. (1986) *Knowledge of Language: Its Nature, Origins, and Use*. New York, NY: Praeger.

Cole, Peter and Li-May Sung. (1994) Head Movement and Long-distance Reflexives. *Linguistic Inquiry* 25.3, 355-406.

Culicover, Peter W. and Ray Jackendoff. (1995) Something Else for the Binding Theory. *Linguistic Inquiry* 26.2, 249-276.

Juffs, Alan and Guillermo A. Rodriguez. (2014) *Second Language Sentence Processing*. New York: Routledge.

Jung, Hyun Kyoung. (2011) Nominative/accusative Case Alternation in the Korean *Siph-ta* Construction. *The Coyote Papers* 18, 1-19.

Katada, Fusa. (1991) The LF Representation of Anaphors. *Linguistic Inquiry* 22.2, 287-313.

Kim, Ji-Hye and James H. Yoon (2009) An Experimental Syntactic Study of Binding: A Case Study of Korean Long-distance Anaphor *Caki**. *Language, Information and Computation* 23, 250-259.

Lebeaux, David. (1983) A Distributional Difference between Reciprocals and Reflexives. *Linguistic Inquiry* 14.4, 723-730.

Lee, In Que. (1997). *Dative Constructions and Case Theory in Korean*. Doctoral dissertation, Simon Fraser University.

Madigan, Sean. (2015) Anaphora and Binding. In Lucien Brown and Jaehoon Yeon (eds.), *The Handbook of Korean Linguistics*. 137-154. Malden, MA: Blackwell Publishers.

Manzini, M. Rita and Kenneth Wexler. (1987) Parameters, Binding Theory, and Learnability. *Linguistic Inquiry* 18.3, 413-444.

Miyagawa, Shigeru and Takae Tsujioka. (2004) Argument Structure and Ditransitive Verbs in Japanese. *Journal of East Asian Linguistics* 13.1, 1-38.

Ura, Hiroyuki. (1999) Checking Theory and Dative Subject Constructions in Japanese and Korean. *Journal of East Asian Linguistics* 8, 223-254.

White, Lydia, Joyce Bruhn-Garavito, Takako Kawasaki, Joe Pater and Philippe Prévost. (1997) The Researcher Gave the Subject a Test about Himself: Problems of Ambiguity and Preference in the Investigation of Reflexive Binding. *Language Learning* 47.1, 145-172.

Yoshimura, Noriko, Mineharu Nakayama, Tomohiko Shirahata, Koichi Sawasaki, & Yasushi Terao. (2012) Locality and *Zibun* in L2 Japanese. *Journal of Japanese Linguistics* 28, 89-110.