Korean System of Reflexives: Experimental Evidence in Comprehension and Production

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1 Introduction

There exists substantial research, theoretical and empirical, in the investigation of reflexive binding in Korean; it is generally assumed that *caki* is a primarily long distance reflexive and that *caki-casin* is a primarily local reflexive, while *casin* takes both local and long distance antecedents (J. M. Yoon 1989, Kang 1998). Empirical research has generally corroborated these distributions, but there is noted variability, as well as interspeaker variation, in the findings of previous research, suggesting that the system of multiple reflexives is in flux.

However, the majority of previous empirical research has been conducted via comprehension-based or corpus-based methods; there is a notable lack of elicited oral production that controls for speaker consistency, making it difficult to systematically compare the comprehension and production of Korean reflexives in order to identify potential changes in the system of reflexives.

The current study tested thirty-five native Korean speakers in both the comprehension and elicited oral production of *caki*, *casin*, and *caki-casin*. Participants completed a Picture-Based Production Task and a Picture-Sentence Judgment Task. Group analysis and individual analysis were conducted for both comprehension and production.

In the context of local binding, the distribution of reflexives conformed largely with what has been reported in the previous literature; *caki-casin* was preferred both in comprehension and in

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production. In the long distance binding context, however, comprehension and production diverged. While the comprehension task results largely conformed with previous findings, there was a pronounced tendency in the production task for speakers to use *caki-casin*, which, given the results of previous literature, is unexpected.

The results of the current study show that the native speaker treatment of Korean reflexives in comprehension and production are quite different, as it is not predicted by previous research or by the comprehension results of the current study that *caki-casin* will be produced most in the long distance context. It is possible that *caki-casin* is becoming a reflexive which is preferentially local but which is licensed as a logophor in long distance contexts, an analysis which is consistent with previous research regarding the ability of *caki-casin* to be licensed as a logophor (J. H. Kim & J. Yoon 2009, E. H. Kim & J. Yoon 2020, J. H. Kim & Y. H. Lee 2022). The logophoric usage of *caki-casin* is shown in the current study to occur more in production than is indicative from the comprehension data, suggesting that the system of Korean reflexives may be changing.

2 Properties of Reflexives in Korean

2.1 Attested Distributions

Korean is a language with a rich anaphor inventory, in which there are three reflexives, *caki, casin,* and *caki-casin.* It is generally assumed (J. M. Yoon 1989, Kang 1998) that *caki* behaves primarily like a long distance reflexive and *caki-casin* remains strictly local, while *casin* seems to take both local and long distance antecedents. Example (1) presents a biclausal sentence with the attested distributions for the reflexive forms occurring in the embedded clause.

(1) Inho$_i$-nun Yenghuy$_j$-ka caki$_{i/?j}$/casin$_{i/j}$/caki-casin$_{?i/j}$-(l)ul
Inho-TOP Yenghuy-NOM self-ACC
yeyppu-key kuli-essta-ko sayngkakhay-ss-ta.
pretty-ADV draw-PST-COMP think-PST-DECL.
'Inho thought that Yenghuy drew (him/her)self prettily.'

Of the works that have examined the distribution of all three Korean reflexives based on informal judgments, J. M. Yoon (1989) is well known, and a general consensus has been reached that *caki* and *caki-casin* are long distance and local reflexives, respectively, while *casin* is able to take both local and long distance antecedents.

2.2 Experimental Research on Korean reflexives

Intuition-based studies, such as J. M. Yoon (1989), are valuable; however, given the overlapping distribution of the three reflexives and possible variation across speakers (Kang 1998), subsequent studies have adopted experimental and/or corpus methods to investigate the properties of *caki, casin*, and *caki-casin*.

The generally attested binding preferences for these forms are corroborated to some extent by experimental work, summarized in Table 1.[1]

[1] Table 1 was constructed based on the findings of Choi and Kim (2007), Kim and Yoon (2008), Kim et al. (2013), Kim and Lee (2022), and Kang (1998).

	TASK TYPE		
REFLEXIVE	**COMPREHENSION**	**ELICITED PRODUCTION**	**CORPUS**
CAKI	LD >> Local	LD	Local = LD
CASIN	LD > Local	LD	Local
CAKI-CASIN	Local	Local	Local*

Table 1: Summary of Findings in Previous Research on Korean Reflexives (LD = Long Distance)

*Based on very few overall occurrences.

Although there seem to be some general patterns which emerge when comparing comprehension and production, there exists variability, particularly with respect to *caki* and *casin*. It is possible that, if the system of multiple reflexives in Korean is in flux, examining primarily comprehension will not allow us to have a comprehensive understanding of the typology of these forms. There is a notable lack of research regarding the treatment of multiple reflexives in Korean in elicited oral production.[2]

3 The Current Study

The current study examines the comprehension and production of Korean reflexives *caki, casin,* and *caki-casin* at both the group and individual speaker level. The purpose of this study is to gain insights into potential comprehension-production asymmetries in order to help clarify the current state of Korean reflexives in the L1 Korean speaker grammar(s).

The research question for the current study is as follows:

1. Does the distribution of Korean reflexives in production match the distribution of Korean reflexives in comprehension?

3.1 Participants and Procedure

Thirty-five native Korean speakers residing in Midwestern US (mean age: 25.8; range: 18–33) were recruited to participate in this experiment.[3] Participants were required to be native Korean speakers and have spent less than five years in the United States.

Participants completed the tasks in the following order: a picture-based production task measuring the production of reflexives; a language background questionnaire (adapted from Montrul & Slabakova 2003); an OSPAN working memory task (adapted from Turner & Engle 1989, Janssen

[2] Kim and Lee (2022) included a production task, and the authors found differences between the comprehension and production of Korean reflexives; however, there were methodological issues related to production modality and controlling for speaker consistency. The current study aims to improve upon these issues.

[3] There were originally 36 participants in this study, but 1 participant was excluded because they did not complete the production task as instructed.

et al. 2022);[4] and a picture-sentence judgment task measuring the comprehension of reflexives. The experiment was piloted with five native speakers who were not included in the final data analysis, and a short informal interview was conducted with each pilot participant in order to receive feedback; the experiment was adjusted based on this feedback.

3.2 Picture-Based Production Task

In order to test the preference for reflexive forms in a given locality context, participants were asked to complete a picture-based production task. For experimental items, participants were shown a visual context depicting two individuals and an event depicting either a local or long distance interpretation. A word bank with six cells was provided, three of which contained verbs depicting the action in the embedded clause, the relevant matrix verb (*sayngkak-hata* 'think' or *mal-hata* 'say'), and all three reflexive forms *caki, casin,* and *caki-casin*. The other three cells contained options for content words, such as referent names/titles, adverbs, or objects in the picture.

A single factor was manipulated for this task, which was the interpretation of the reflexive which participants used to describe the picture. This resulted in two conditions total for this task (Local vs. Long Distance), where the dependent variable was the reflexive form produced by participants in each context. This task contained a total of twelve experimental items and eighteen filler items. For each item, participants were asked to describe the event in one complete sentence. The intended result was the production of a single biclausal sentence containing both NP referents, an embedded action verb, a matrix verb, and a reflexive form for experimental items; an example of the intended results can be seen in (1) above.

Participants were randomly assigned to one of two counterbalanced lists, and all items presented were pseudorandomized into three blocks of ten items, each block containing four experimental items and six filler items. Both counterbalanced lists contained all filler items.

3.3 Picture-Sentence Judgment Task

In order to measure the acceptability of each of the three reflexive forms in both local and long distance contexts, participants were asked to complete a picture-context judgment task (Harris, Clifton, & Frazier 2013, as cited in Harris 2021). In experimental items, participants were presented with a picture containing two labeled individuals and either a local or long distance interpretation. They were also presented with a single, biclausal sentence describing the picture, which contained a reflexive and two possible NP antecedents for the reflexive, denoting the two individuals in the picture.

There were six conditions total for this task. They were created in a 2×3 Latin square design, crossing two context types (Local vs. Long distance) and three reflexive forms (*caki, casin,* and *caki-casin*), for a total of twenty-four experimental items. There were thirty-six filler items. Participants were randomly assigned to one of three counterbalanced lists. Participants saw both the local and long distance contexts for each reflexive, and lists differed in the reflexive-embedded

[4] The OSPAN working memory task data were collected for use in future research in which native and nonnative Korean speakers' reflexive acquisition/usage will be compared, with the role of working memory taken into account. The data were not analyzed for the purposes of the current study.

verb pairing. Items were separated into four blocks; within each block, items were pseudorandomized into three sub-blocks of five items, each block containing two experimental items and three filler items.

For each item, participants were asked to read each sentence and rate the extent to which it corresponded to the event in the picture. They were given a 7-point Likert Scale and told that a rating of 1 represented 'No Correspondence' and that a rating of 7 represented 'Complete Correspondence'. The dependent variable for this task was the Likert Scale score given by participants for each sentence. Three practice items were included before the task which contained no anaphoric elements or elements related to the experimental items.

3.4 Predictions

All three reflexive forms can be bound by local and long distance antecedents to varying degrees. Therefore, it cannot be expected that any form would not be produced at all, and/or be rated as completely acceptable in any particular context. However, based on the findings of previous research, it is predicted that *caki* will be treated primarily as a long distance reflexive and that *caki-casin* will be treated mostly as a local reflexive. The variability of results regarding *casin* makes it difficult to predict if it will be treated as a long distance or local reflexive, but, given previous findings that it can be both, it is predicted that *casin* will be rated lower than and produced less than *caki* and *caki-casin* in the long distance and local conditions, respectively. Based on these reflexive-specific predictions, the following predictions regarding comprehension and production can be posited:

1. Comprehension Prediction:
   Based on the results of previous literature, it is predicted that, for the local condition, speakers will rate *caki-casin* highest; for the long distance condition, speakers will rate *caki* highest.
2. Production Predictions:
   There are two ways to predict the results of the production task if production aligns with comprehension. First, it is possible to examine the results within the local and long distance conditions in order to analyze which reflexive is produced most in each locality. Alternatively, it is possible to examine the results for each reflexive in order to analyze if each form is produced more in the local or long distance condition. The two different types of production predictions are listed below.
   a. Condition-based Prediction
      If production and comprehension align, then, for the local condition, speakers will produce *caki-casin* most frequently; for the long distance condition, speakers will produce *caki* most frequently.
   b. Reflexive-based Prediction
      If production and comprehension align, then *caki* and *casin* will be produced more in long distance contexts than local contexts; *caki-casin* will be produced more in local contexts than long distance contexts.

   If comprehension and production do not align, it is difficult to predict what patterns will be found in production, given that there exists only one previous study which has investigated the relationship between the comprehension and production of Korean reflexives.

4 Results

Production data were interpreted by a native Korean speaker, who listened to each trial and marked which reflexive was produced by the participant. If a form other than a reflexive was produced in the embedded object position, the trial was coded as 'Other'; this includes instances where participants used names, body parts, or other forms which were not a reflexive.

4.1 Group Analysis

4.1.1 Comprehension Data

Overall, *caki* was rated highest in the long distance condition (M = 6.04), while *caki-casin* was rated highest in the local condition (M = 5.92). There was a main effect of context, with ratings in the local condition significantly lower than ratings in the long distance condition, regardless of reflexive ($p < 0.001$). Additionally, there was a main effect of reflexive, with *caki-casin* rated significantly lower than *caki* ($p < 0.001$). Finally, ratings for *casin* were lower than those for *caki*; however, this difference was not significant ($p = 0.338$). There was also an interaction between context and reflexive, both when *caki* was compared to *caki-casin* ($p < 0.001$) and also when *caki* was compared to *casin* ($p = 0.044$). This indicates that the reflexives were differently affected by context.

In order to explore the source of these significant interactions, additional post hoc pairwise comparisons were conducted. An effect of context was found for *caki* ($p < 0.001$), *casin* ($p = 0.0017$), and *caki-casin* ($p < 0.001$); *caki* and *casin* were both accepted significantly more in the long distance context than the local context, and *caki-casin* was accepted significantly more in the local context. Additionally, *caki* and *casin* were each rated significantly higher than *caki-casin* in the long distance context ($p < 0.001$) and each rated significantly lower than *caki-casin* in the local context ($p < 0.001$), but *caki* and *casin* did not differ from each other in either context.

4.1.2 Production Data

Overall, *caki* and *casin* were both produced more in the long distance condition than the local condition. In the long distance condition, *casin* was produced more than *caki*, but in the local condition, they were produced in equal frequency. *Caki-casin* was produced more in the local condition than in the long distance condition, but, very interestingly, it was also produced most overall in both the local and long distance conditions. There was a main effect of context for all three reflexives, with utterances for both *caki* and *casin* found to be significantly lower in the local context than the long distance context ($p = 0.004$; $p < 0.001$), and utterances of *caki-casin* found to be significantly higher in the local context than the long distance context ($p < 0.001$).

4.2 Individual Speaker Analysis

Given that there is existing evidence of interspeaker variation (J. H. Kim & J. Yoon 2008), and since the results of the group data are revealing differences between comprehension and production, a qualitative analysis of the individual speaker data was conducted in order to detect potential comprehension-production (mis)alignments within individual speakers.[5]

[5] In the comprehension data for each speaker, a simplex or complex reflexive was considered to be preferred in the local or long-distance context if it was at least 1 point higher than the other in mean score. If the difference between

After the data were organized, the comprehension preferences were then compared to the production preferences, with the comprehension preferences used as the reference for comparison. The number of participants who were organized into each preference pattern in comprehension is indicated in the comprehension categories; then, within the participants in each category, the production preferences were analyzed, and speakers were distributed into the appropriate columns. The results of these individual speaker distributions are shown in Tables 2 and 3, which are split by context.

		PRODUCTION		
		SIMPLEX-PREFERRED	**COMPLEX-PREFERRED**	**EQUAL**
COMPREHENSION	**SIMPLEX-PREFERRED N = 1 (2.9%)**	–	1	–
	COMPLEX-PREFERRED N = 26 (74.2%)	4	20	2
	EQUAL N = 8 (22.9%)	1	3	4

Table 2: Individual Speaker Analysis (Local Context)

Note: Numbers in cells represent the number of individual participants organized into each comprehension-production pattern

In Table (2), two interesting observations emerge. First, of the 35 total speakers, 26 speakers (74.2%) preferred the complex *caki-casin* in the local context in comprehension. Of these 26 speakers, 20 of them (77%) also preferred *caki-casin* in the local context in production. Second, only 1 speaker of the 35 (2.9%) preferred a simplex reflexive in the local context for comprehension, but, even so, this speaker still preferred *caki-casin* in production. Additionally, of the 8 speakers (22.9%) who had no preference between simplex and complex forms in comprehension, the majority of those speakers either produced *caki-casin* most (37.5%) or also produced both simplex and complex forms in equal proportions (50%). This suggests that, in the local context overall, there is stability in that *caki-casin* seems to be preferentially local and is robustly preferred to the simplex forms. Even for speakers who did not prefer *caki-casin* in the comprehension task, there was still some preference for *caki-casin* in production.

The results of the individual speaker analysis in the long distance context, however, were much more variable.

the two types was less than 1 point, these reflexives were considered to be accepted at similar rates and categorized as equal. In the production data, a simplex or complex reflexive was considered preferred if it was produced at least 2 more times than the other. If the difference between the two types was less than 2 points, they were considered to be preferred in equal proportion.

		PRODUCTION		
		SIMPLEX-PREFERRED	**COMPLEX-PREFERRED**	**EQUAL**
COMPREHENSION	**SIMPLEX-PREFERRED N = 21 (60%)**	6	6	9
	COMPLEX-PREFERRED N = 1 (2.9%)	--	1	--
	EQUAL N = 13 (37.1%)	4	6	3

Table 3: Individual Speaker Analysis (Long Distance Context)

Note: Numbers in cells represent number of individual participants organized into each comprehension-production pattern

The first observation is that 21 of the 35 speakers (60%) preferred a simplex reflexive in the long distance condition for comprehension, followed by 13 of the 35 speakers (37.1%) who had no preference between simplex and complex forms for comprehension. In these groups, however, there was a variable distribution of production preferences. In the group that preferred simplex forms in comprehension, the majority of these speakers (n = 15, 71.4%) preferred either *caki-casin* or had no preference in production. Similarly, in the group that had no preference between simplex and complex forms, only 3 speakers (23.1%) were aligned in that they also did not have a preference in production. In fact, 6 of these speakers (46.2%) preferred *caki-casin* in production. Only 1 speaker (2.9%) was aligned in preferring *caki-casin* both in comprehension and in production.

5 Discussion

In the group analysis, the observation of interest comes from the overall preference to produce *caki-casin* in both local and long distance contexts. In the local context, this was predicted both by previous research and confirmed by the results of the current study's comprehension task. In the long distance context, however, the preference of *caki-casin* is not expected from previous research or the results of the comprehension task in the current study. In the comprehension task, *caki-casin* had the lowest mean rating for the long distance condition (M = 4.01), and *caki* had the highest mean rating (M = 6.04). However, *caki* was produced least in this condition. Additionally, the overall frequency of *caki-casin* was unexpected, given the results of previous research.

In general, the proportion of utterances in each locality context for each reflexive is not unexpected. *Caki* and *casin* are produced most in the long distance context, and *caki-casin* is produced most in the local context; these results are predicted by previous research. However, it is unexpected that, even then, *caki-casin* is the preferred form not only in the local context, but also in the long distance context.

From the individual speaker analysis, interesting differences emerge between the local and long distance contexts, some of which are not revealed in the group data. First, in the local context,

the patterns of the group data and previous studies are corroborated in that the majority of participants prefer *caki*-*casin* both in comprehension and production. This suggests, again, that there is general stability in the treatment of reflexives in the local condition.

However, the most interesting observations in the individual speaker analysis come from examining the long distance context. We see that the majority of the production of *caki*-*casin* is not happening within the subset of speakers who had no preference in the comprehension task, but rather from the subset of speakers who distinctly preferred a simplex reflexive in the comprehension task. Even within the group of participants who had no preference, most speakers preferred to produce *caki*-*casin*, rather than a simplex form, as would be predicted by previous literature. This indicates a substantial misalignment between comprehension and production in the long distance context.

One potential reason for this misalignment can be found in the experimental work regarding Korean long distance reflexives in logophoric conditions. The patterns of production with respect to *caki*-*casin* in the current study are consistent with the findings of J. H. Kim and J. Yoon (2009), and E. H. Kim and J. Yoon (2020). In both studies, the authors found that *caki*-*casin* can occur long distance if licensed as a logophor. In J. H. Kim and Y. H. Lee (2022), a corpus study which examined the binding patterns of these reflexives, it was also found that *caki*-*casin* can be licensed as a logophor, supporting the findings in J. H. Kim and J. Yoon (2009), and E. H. Kim and J. Yoon (2020).

Although logophoricity was not a focus of the current study, the matrix verbs used in the study design were logophoric verbs (‘think’ and ‘say’); the matrix subject, therefore, can be considered a potential logophoric center. The previous experimental studies which found that *caki*-*casin* can be licensed as a logophor were comprehension-based studies, but the J. H. Kim and Y. H. Lee (2022) corpus study, which is a type of production study, also found that logophoric *caki*-*casin* can be long distance bound. The high production of *caki*-*casin* in the long distance context of the current study is consistent with the findings of these previous studies.

We can expect that, as *caki*-*casin* develops more long distance usages, it will have an impact on the system of multiple reflexives; rather than two reflexives (*caki* and *casin*) which can be used for long distance binding, *caki*-*casin* can also be used in long distance contexts. It is likely that, as there are now more options for long distance binding, this could lead to a simplification of the anaphor inventory. This is suggested by J. H. Kim and J. Yoon (2008), which found that, at least in the context investigated in this study, the use of *caki* is declining. More research on the developing variation and reconfiguration of the anaphor inventory is needed, but the discovery in the current study of a discrepancy between production and comprehension with respect to the long distance binding of *caki*-*casin* is an important contribution.

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