

Korean Children's Knowledge of Reciprocal Sentences with Active and Stative Verbs

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Meesook Kim. 2005. Korean Children's Knowledge of Reciprocal Sentences with Active and Stative Verbs. *Language and Information* 9.2, 127–139. In this paper I investigate whether Korean-speaking children know the basic meaning of reciprocal anaphors like *each other*. I further examine whether they have knowledge of subtle differences in the interpretations of such anaphors depending on the two types of verbs. Fiengo and Lasnik (1973) pointed out a contrast between reciprocal sentences with active verbs and stative verbs. For example, a sentence with an active verb like *The men in the room are hitting each other*, has both a strong reciprocal reading (i.e., every one of them in the room is hitting every other one) and a weak reciprocal reading (i.e., certain pairs of men are not engaged in the action of hitting each other). In contrast, a sentence with a stative verb like *The men in the room know each other* allows only a strong reciprocal reading (i.e., every one of them know every other one). 16 Korean children and 15 Korean adults were tested using the Truth Value Judgment Task methodology. The results of the present study show that like English children, Korean children know the meaning of reciprocal anaphor, and that they also know the semantic difference of reciprocal sentences with active and stative verbs. Therefore, the present study strongly supports the claim that the semantic distinction of reciprocal sentences with active and stative verbs may be universal, and that children's ability of this semantic distinction might be innately given. (Sangji University)

Key words: reciprocal anaphor, active verb, stative verb, strong/weak interpretations, UG

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1. Introduction

A lot of research on language acquisition has been carried out to examine whether children have certain linguistic knowledge and whether that knowledge is part of innate universal grammar (UG)(Baker, 1979; Chomsky, 1981; Crain, 1991 etc.). In this paper, I primarily focus on the interpretation of reciprocal anaphor *each other* with active and stative verbs. More specifically, I investigate whether the subtle differences in semantic interpretations of reciprocal sentences with active and stative verbs are found cross-linguistically, and whether knowledge of the different interpretations in reciprocal sentences caused by different types of verbs is present in young children's grammar.

Fiengo and Lasnik (1973) first observed the subtle differences in semantic interpretations of reciprocal sentences with active and stative verbs, as illustrated in (1) and (2).

(1) The men in the room are hitting each other.

(2) The men in the room know each other.

Example (1) with an active verb allows both weak and strong interpretations for reciprocity. That is, (1) is interpreted as meaning that every one of them in the room is hitting every other one (a strong interpretation). In addition, one more interpretation of example (1) with an active verb is that not every member is required to hit each other member (a weak interpretation). In other words, certain pairs of men are not engaged in the action of hitting each other member. In contrast, example (2) with a stative verb allows only a strong interpretation for reciprocity. For instance, (2) is only interpreted as meaning that every one of them in the room know every other one. In other words, example (2) with a stative verb does not allow a weak interpretation of "A knows B, B knows A, C knows D, and D knows C".

Matsuo (2000) investigated whether English-speaking children aged 4 to 5 could understand the basic meaning of reciprocal anaphor *each other*, and whether they could distinguish two different types of verbs in the semantic interpretation of reciprocal sentences illustrated in (1) and (2). She found that English children know the different interpretations in reciprocal sentences caused by different types of verbs by an early age. In addition, she claimed that this contrast in interpretations of reciprocal sentences with stative and active verbs was found across languages. Therefore, she suggested that children's ability of understanding this semantic distinction must be innate.

In order to confirm the universality and the innateness in the interpretations of reciprocal sentences, I present data from an experiment designed to investigate how both children and adult speakers of Korean interpret sentences containing reciprocal anaphors and two types of verbs. As in the experiment for English-speaking children by Matsuo (2000), this study also consists of two experiments. Experiment 1 examines whether Korean-speaking children understand the basic meaning of *each other*. Experiment 2 examines both adults and children's interpretation of reciprocal sentences with the two different types of verbs.

This paper is organized as follows: Section 2 provides some background information about the semantics of reciprocal sentences. As the main section of the paper, Section 3 includes the experiments and their results. Section 4 summarizes the results and presents some important implications.

2. Theoretical Background

As mentioned above, Fiengo and Lasnik (1973) discussed the different meanings of reciprocal sentences depending on whether the verb is active or stative, by using the following examples (Examples in this section come from Fiengo & Lasnik (1973)).

(3) Each of the men is hitting the other.

(4) The men are hitting each other.

(5) Each of the men is hitting the others.

If only two men are involved in the action described in (3) and (4), there is no ambiguity in the readings of these examples because the only available reading is *Each man both hit and was hit by the other man*.

However, in the case where four people are involved in the action described in (4) and (5), Fiengo and Lasnik said that (5) must be interpreted as meaning that every man hits and is hit by every other man. In other words, (5) requires every hitting relationship among the four men. This is called a strong interpretation for reciprocity.

In contrast with the sentence (5), (4) allows both strong and weak interpretations for reciprocity. For instance, (4) is interpreted as meaning that every one of them in the room is hitting every other one (a strong interpretation). Another reading of (4) is that not every member is required to hit each other member (a weak interpretation).

Fiengo and Lasnik (1973), therefore, described a strong interpretation for reciprocity as in (6) and a weak interpretation for reciprocity as in (7).

(6) Every member of S hit every other member of S.

(7) S can be divided into subsets S_i such that every member of S_i hit every other member of S_i .

We have seen that reciprocal sentences with an active verb in (4) allow both strong and weak interpretations for reciprocity. In contrast, the sentences (8) and (9) with a stative verb allow only a weak interpretation for reciprocity. For instance, the only available interpretation of (8) is that every one of them in the room see every other one. In other words, the sentence (8) with a stative verb does not allow a weak interpretation.

(8) The men in the room see each other.

(9) The men in the room know each other.

In order to explain why active verbs and stative verbs can be differentiated with regards to reciprocal sentences, Fiengo and Lasnik (1973) pointed out the contrasts between active and stative verbs in imperative and progressive sentences. It has been widely accepted that active verbs can occur in both imperatives and progressives, whereas stative verbs usually cannot, as shown in (10)-(13) (Kratzer, 1995; Yamagata, 1998).¹

(10) *I am knowing Mary.

(11) *Know Mary.

(12) I am hitting Mary.

(13) Hit Mary.

According to Fiengo and Lasnik (1973), the differences in the types of verbs might have an effect on the semantic interpretation in understanding reciprocal sentences, although they did not provide an explicit account of why the differences in imperatives and progressives are relevant to the difference in interpreting the reciprocal sentences caused by two types of verbs. They proposed that since an action can be divided into subgroups as shown in (7), reciprocal sentences with active verbs can allow a weak interpretation. In contrast, since a state cannot be divided into subgroups, reciprocal sentences with stative verbs allow only a strong interpretation.

Given the fact that there are differences between active and stative verbs in reciprocal sentences, Matsuo (2000) reports that the semantic differences of reciprocal sentences with active and stative verbs discussed in Fiengo and Lasnik were also observed in a number of languages, such as Bengali, German, Japanese, Russian, and Spanish (Following examples come from Matsuo (2000)).

(14) Bengali

a. Je lokgulo gore ache tara ake aporke marche.
Those men the room-in are they one another hitting
'The men in the room are hitting each other.' (strong and weak)

b. Je lokgulo gore ache tara ake aporke jane.
Those men the room-in are they one another know
'The men in the room know each other.' (only strong reading)

(15) German

a. Die Manner in Raum schlagen sich (gegenseitig).
The men in the room hit them each other
'The men in the room are hitting each other.' (strong and weak)

¹ Matsuo(2000) mentioned in a note that Snyder pointed out some exceptions to this. For example, although the following verbs are stative, they can appear in imperative sentences and progressive sentences:

(i) Be good/kind (ii) I am being good/kind
(iii) Stay where you are (iv) I am staying where I am

- b. Die Manner in Raum kennen sich (gegenseitig).
 The men in the room know them each other
 'The men in the room know each other.' (only strong reading)

(16) Japanese

- a. Heya-no naka-no otoko-tati-ga tataki-atte-iru.
 The room-Gen inside-Gen men-Nom hit-AW-prog-pres
 'The men in the room are hitting each other.' (strong and weak)
- b. Heya-no maka-no otoko-tati-ga siri-ai-da.
 The room-Gen inside-Gen men-Nom know-AW-be-past
 'The men in the room know each other.' (only strong reading)

(17) Russian

- a. Ljudi v komnate bjut drug druga.
 people-pl in room hit-pl friend friend-Acc (each other)
 'The men in the room are hitting each other.' (strong and weak)
- b. Ljudi v komnate znajut drug druga.
 people-pl in room know-pl friend friend-Acc (each other)
 'The men in the room know each other.' (only strong reading)

As the examples show, these languages all show the subtle semantic differences of reciprocal sentences with active and stative verbs. That is, a sentence with an active verb allows both strong and weak interpretations, whereas a sentence with a stative verb allows only a strong interpretation. Based on the cross-linguistic data, Matsuo concluded that the semantic distinction proposed by Fiengo and Lasnik might be universal.

In addition to the cross-linguistic data, Matsuo (2000) examined whether English-speaking children know the meaning of reciprocal anaphors like *each other*, and whether they also have knowledge of subtle differences in the interpretations of such anaphors depending on the type of verbs. The results of the experiment by Matsuo (2000) indicate that the English-speaking children, who know the basic meaning of the reciprocal anaphor, can differentiate interpretations of reciprocal sentences with active and stative verbs. Therefore, her findings that young children know the basic semantics of reciprocal anaphors, and that they can further differentiate interpretations of reciprocal sentences with stative and active verbs, provide evidence that children's ability of understanding this semantic distinction might be innately given.

Let us now turn to the Korean reciprocal anaphor. It has been generally assumed that the so-called reciprocal anaphor in Korean, *selo*, corresponds to the English reciprocal anaphor *each other* (Daeho, Chung & Hong-Keun Park, 1998; Dong-Whee, Yang, 1984, etc), regardless of whether or not their syntactic behaviors are different.² Although there are a lot of studies on children's acquisi-

² Since the syntactic analysis of the Korean reciprocal anaphor is still controversial, I will not discuss the issue in detail here. See Chung & Park (1998) for a more detailed discussion of this.

tion of reflexive anaphor (Chien & Wexler, 1990; Hye-Ryun, Kim, 1995; Hyunjin, Lee, 1992), few researchers have examined children's understanding of reciprocal anaphor. Furthermore, few researchers have examined the scope interaction between reciprocal anaphor and different types of verbs in Korean. Therefore, in this paper I examine whether like other languages such as Bengali, German, Japanese, Russian, and Spanish, the Korean reciprocal anaphor *selo* will be able to show the semantic distinction proposed by Fiengo and Lasnik (1973).

3. Experiments

In this section, I discuss two sets of experiments to investigate what kind of semantic knowledge children have in understanding reciprocal sentences with active and stative verbs. Experiment 1 is conducted as a pretest for Experiment 2, and it examines whether children know the basic meaning of *each other*. Experiment 2 examines whether both children and adults speakers of Korean make the semantic distinctions.

The purposes of the experiments are to explore the following research hypotheses:

Research Hypotheses:

- (1) If the contrast in interpretations of reciprocal sentences with active and stative verbs is universally found across languages, Korean adults should differentiate two different types of verbs in the semantic interpretation of reciprocal sentences.
- (2) If Korean-speaking children who know the basic meaning of reciprocal anaphor, succeed in distinguishing subtle semantic interpretations in *each other* sentences with the two types of verbs, it will support the previous study by Matsuo (2000) that children's ability of understanding this semantic distinction might be innately given.

3.1 Experiment 1

As mentioned above, Experiment 1 is conducted as a pretest for Experiment 2, and it examines whether children know the basic meaning of *each other*.

1) Participants

Sixteen children (nine girls and seven boys) from a kindergarten in Korea were participated in this experiment. They ranged in age from 3;8 to 5;10 with a mean age of 4;5. Fifteen adults were tested as well. They were all undergraduate students of Sangji University.

2) Procedure

As in the experiment for English-speaking children by Matsuo (2000), Korean participants were tested using the Truth Value Judgment Task (TVJT) methodology (Crain & McKee, 1985; Crain & Thornton, 1998; Crain & Wexler, 1999), which has been mainly used in the experimental study of L1 acquisition. This task usually involved two experimenters and toys. For example, when Matsuo (2000) tested the

children using the TVJT, one experimenter told stories with toys and the other experimenter played the role of a puppet who said things about the stories. On the other hand, she tested the adult controls using a written questionnaire. In contrast, this experiment used four pictures for each story and was also administrated on a portable computer. Accordingly, both the children and adults were shown an array of four pictures for each story. The first experimenter explained four pictures for each story and the second experimenter mentioned the target sentence containing reciprocal anaphor with active and stative verbs. At the end of the story, the participants had to determine whether the second experimenter's statement was correct or not. Each participant was tested individually. True or False answers to the second experimenter's statements were taken as a measure of participants' ability to access one reading or the other. Notice that Korean participants were tested through similar materials as the ones used by Matsuo (2000).

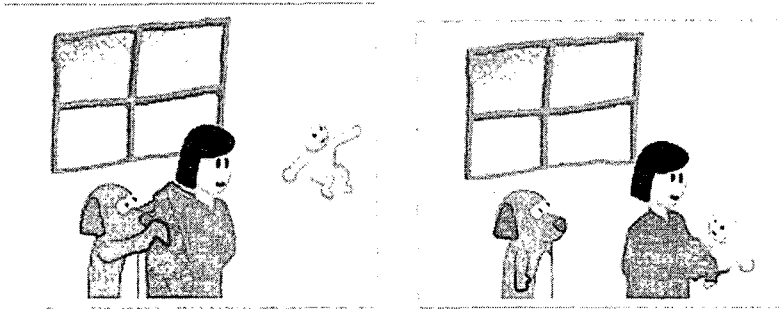
3) Materials

The target sentences of Experiment 1 are given in (18) to (22):

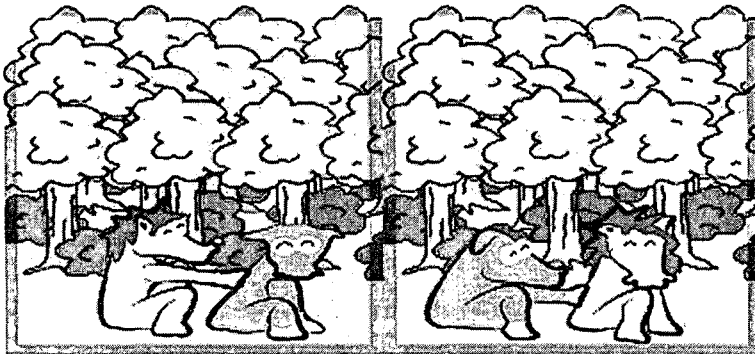
- (18) Kaeguri-tul-un selo ssit-kyeo cwuessta.
 Frog-plural-Top each other wash gave
 'The frogs washed each other.'
 Expected response: No
- (19) Emma-wa kangaci-nun selo iphyeo cwuessta
 Mother-and dog-Top each other wear gave
 'The mother and the dog dressed each other.'
 Expected response: No
- (20) Mal-kwa so-nun selo keulke cwuessta.
 horse-and cow-Top each other scratch gave
 'The horse and the cow scratched each other.'
 Expected response: Yes
- (21) Namca ai-wa yeoca ai-nun selo-ekey kong-ul chassta.
 boy-and girl-Top each other-Dat ball-Acc kicked
 'The boy and the girl kicked a ball to each other.'
 Expected response: No
- (22) So-wa mal-un selo-ekey senmul-ul cwuessta.
 cow-and horse-Top each-Dat present-Acc gave
 'The cow and the horse gave a present to each other.'
 Expected response: Yes

One example, (19), is the situation where the dog dressed the mother but the mother did not dress the dog. Instead, the mother dressed her son, as shown in Figure 1. Therefore, the expected response is "no".

Example (20), on the other hand, is the situation where the horse scratched the cow and the cow scratched the horse, as shown in Figure 2. So the expected response is "yes".



[Figure 1] A Sample Story of No Response



[Figure 2] A Sample Story of Yes Response

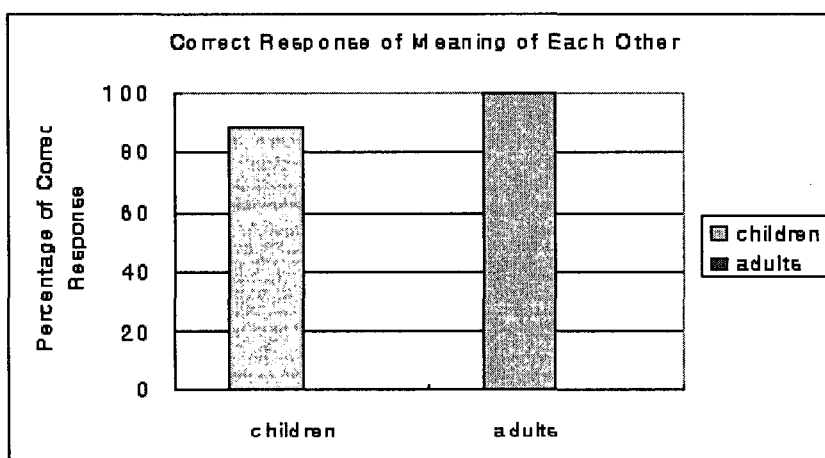
In addition to the five test stories, two control stories were also given to each participant. Finally, the five test sentences were randomly assigned to the participants.

4) Results

The results of Experiment 1 are summarized in Table 1 and Figure 3. Table 1 and Figure 3 show that overall, adults performed better than children (100% vs. 90%). More specifically, children gave YES answers to the reciprocal conditions such as (20) and (22) about 93.8% of the time, whereas they gave NO answers to the non-reciprocal conditions such as (18), (19), and (21) 87.5% of the time. Adult controls always gave the correct answers to both reciprocal and non-reciprocal conditions. The result of T-test indicates that the contrast between children and adults is significant ($t(29)=-2.002, p<.000$). Although the significant difference between children and adults was found, the fact that children gave the correct answer to both conditions 90% of the time indicates that they know the basic meaning of the reciprocal anaphor *each other*.

Participants	Reciprocal Condition	Non-reciprocal Condition	Total	SD
Children	93.8% (30/32)	87.5% (42/48)	90% (72/80)	<1.03>
Adults	100% (30/30)	100% (45/45)	100% (75/75)	<0>

[Table 1] Percentage of Correct Response of Basic Meaning of Each Other



[Figure 3] Results of Experiment 1

3.2 Experiment 2

The goal of experiment 2 is to test whether children know the different interpretations in reciprocal sentences with active and stative verbs.

1) Participants and Procedure

The children who passed pretest participated in this experiment. That is, when children did not give correct answers for all of the target sentences in the first experiment, they were excluded in the second experiment. Therefore, twelve of the sixteen children who passed the first experiment (pretest) participated in this experiment. The same fifteen adults as in Experiment 1 were tested in this experiment. In addition, the same Truth-Value Judgment Task was used for both children and adults.

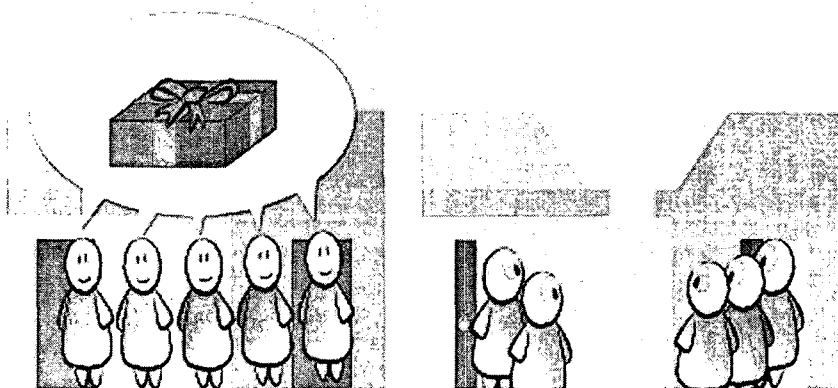
2) Materials

The target sentences of Experiment 2 are given in (23) to (26).

- (23) I chinku-tul-un selo tullul suissessta.
 this friend-plural-Top each other hear could
 'These friends could hear each other.' (stative)
 Expected response: No

- (24) I mal-tul-un selo-lul alko issta.
 this horse-plural-Top each other know
 'They know each other.' (stative)
 Expected response: No
- (25) Yae-tul-un selo meri-lul pitkyeo cwuessta.
 They-Top each other hair-Acc comb gave
 'They combed each other.' (active)
 Expected response: Yes
- (26) I mal-tul-un selo mekyeo cwuessta.
 this horse-plural-Top each other feed gave
 'These horses fed each other.' (active)
 Expected response: Yes

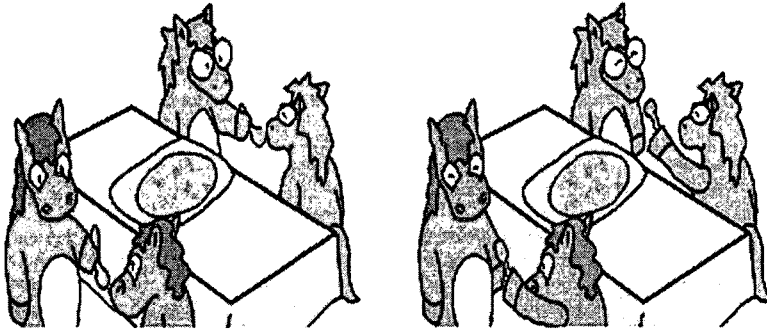
One example, (23), is the reciprocal sentence containing a stative verb. The situation of (23) is illustrated in Figure 4. As Figure 4 shows, (23) has five characters. Five characters decided to exchange presents for Christmas, but they promised that they would not tell each other what they would buy as a present. After that, they were separated into two groups. Two characters went to the same room, and three went to another room. They whispered to each other what they would buy as a gift. Accordingly, the two groups of characters did not know what each person would buy for Christmas. At this point, the puppet mentioned the situation using a stative verb. Therefore, the expected adult response to the sentences containing stative verbs (23) and (24) is "no".



[Figure 4] A Sample Story of Reciprocal Sentences with Stative Verbs

On the other hand, example (26) is the reciprocal sentence containing an active verb. The situation of (26) is illustrated in Figure 5.

As we can see in Figure 5, two groups of horses found that there was some food in the center of the room. They all decided to feed each other within the group.



[Figure 5] A Sample Story of Reciprocal Sentences with Active Verbs

There was no interaction between the two groups. They each fed the others within two separate groups. At this point, the puppet mentioned the situation using an active verb. Therefore, the expected adult response to the sentences containing active verbs (25) and (26) is “yes”.

In addition to the four test stories, two control stories were also given to each participant. Since this experiment was conducted to find out the semantic difference of two types of verbs, the target stories given to the participants only consisted of the reciprocal stories for weak interpretation. However, the two control stories consisted of the reciprocal stories for strong interpretation which both active and stative verbs allow. Finally, the four test sentences were randomly assigned to the participants.

3) Results

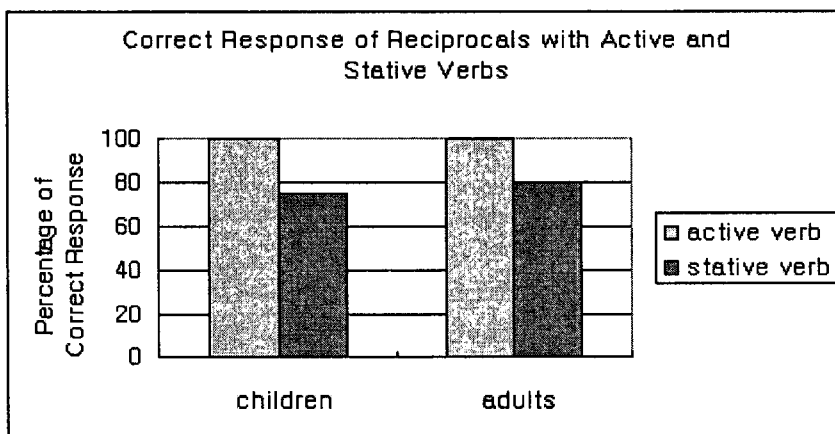
The results of Experiment 2 are summarized in Table 2 and Figure 6. Table 2 and Figure 6 show that overall, adults performed better than children (90% vs. 88%). That is, children did slightly worse than adults in this experiment. However, the result of T-test indicates that the contrast between children and adults is not significant ($t(25)=-0.317$, $p=.880$). More specifically, children gave YES answers to the reciprocal sentences with active verbs such as (25) and (26) 100% of the time, whereas they gave NO answers to the reciprocal sentences with stative verbs such as (23) and (24) 75% of the time. Adult controls gave YES answers to the reciprocal sentences with active verbs 100% of the time, whereas they gave NO answers to the reciprocal sentences with stative verbs 80% of the time.

In addition, all of the participants gave YES answers to the two control stories for strong interpretation. Therefore, it indicates that the reciprocal sentences containing both active and stative verbs allow strong interpretation, as we expected.

Based on the results, I conclude that children and adults do not differ in understanding sentences (23) to (26). Therefore, this experiment demonstrates that the subtle meaning difference in reciprocal sentences containing active and stative verbs was found in Korean, and that Korean children aged 4 to 5 do know the distinction between two types of verbs with respect to reciprocal sentences.

Participants	Active Verbs	SD	Stative Verbs	SD	Total	SD
Children	100% (24/24)	<0>	75% (18/24)	<0.79>	88% (42/48)	<0.60>
Adults	100% (30/30)	<0>	80% (24/30)	<0.82>	90% (54/60)	<0.61>

[Table 2] Percentage of Correct Responses of Reciprocals with Active and Stative Verbs



[Figure 6] Results of Experiment 2

3.3 Summary and Conclusions

Based on Experiments 1 and 2, I found that like other languages, Korean demonstrates the subtle semantic difference in reciprocal sentences caused by two different types of verbs, and that Korean-speaking children at an early age know the basic meaning of *each other*, and the distinction between two types of verbs. In addition, they succeeded in distinguishing the different interpretations in reciprocal sentences caused by different types of verbs, applying two basic forms of knowledge as adults do.

Therefore, the contrast in interpretations of reciprocal sentences with active and stative verbs found cross-linguistically provides evidence that this contrast may be universal. In addition, the fact that Korean-speaking children know from an early age the basic meaning of *each other*, and that they can differentiate interpretations of reciprocal sentences with active or stative verbs, strongly supports the previous study by Matsuo (2000) that children's ability of this semantic distinction might be innately given.

Nevertheless, there is a limitation to this study. In this paper, I did not provide an account of why the difference in interpreting the reciprocal sentences caused by two types of verbs is relevant to the differences in imperatives and progressives, as Fiengo and Lasnik (1973) did not. Therefore, further studies are required for explaining an explicit account of the different interpretations of reciprocal sentences containing two types of verbs in both English and Korean.

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