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A Cognitive Approach to the Acquisition of Passives in Korean

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0. Introduction

Previous studies on the acquisition of passives have shown that English-speaking children do not produce full passive sentences in their spontaneous speech until 4 or 5 years of age, although they occasionally produce truncated passives that omit an overt agent (*by*-phrase) somewhat earlier (deVilliers and deVilliers 1985; Israel, Johnson, and Brooks 2000; Maratsos, Fox, Becker, and Chalkley 1985). On the other hand, there has been a debate among previous researchers whether some sentence types seem to be more difficult than others in terms of passives. For instance, Maratsos et al. (1985) found that 4-5 year-old English children have more difficulties in the comprehension and production of non-actional passives (e.g. with the verbs *see*, *hear*) than with actional passives (e.g. with the verbs *hit*, *touch*). In contrast with findings from earlier research, Pinker et al. (1987) showed that in spontaneous speech 3-year-old English children produce passive sentences with an eventive interpretation that is usually associated with verbal passives. Using elicitation and act-out tasks, they found that 4-year-old English children were able to produce and comprehend passive sentences involving novel actional and non-actional verbs, but they often failed to produce the *by*-phrase.

In contrast to the substantial literature on English-speaking children's comprehension and production of passives, relatively few studies have investigated the acquisition of passives in children acquiring other languages. More specifically, it has been reported that children acquiring languages like Inuktitut, Sesotho, and Zulu produced both truncated and full passives quite regularly at the age of 2 to 3 (Allen and Crago 1996 for Inuktitut; Demuth 1989, 1990 for Sesotho, Suzman 1985 for Zulu). In contrast, Hebrew-speaking children demonstrated productive use of passives much later, around 8 years of age (Berman 1985).

In spite of the fact that there is variability in the age of acquisition of the passive, a common finding from child data across languages is that children acquire active sentences much earlier than passive sentences. Meanwhile, we might raise a question of when speakers make a decision of using the passive construction. One possibility is that speakers use passives to focus attention on the

Meesook Kim

patient of a transitive action event and what happened to it, by defocusing on the agent in the process (Shibitanin 1985). For instance, in the full passive sentence like *The rabbit was chased by the tiger*, the focus is on the rabbit and what happened to it, rather than on the tiger's act of chasing as in the active description of this event. Similarly, speakers may choose passives to topicalize the patient in an event, by promoting it to syntactic subject, which is reflected in accounts of the passive sentence construction (Dik 1989, Langacker 1990). Accordingly, if we could manipulate speakers' attention on the patient, then they would be able to use passives sentences frequently. This possibility has been empirically tested by Tomlin, using the fish film in an on-line production task (Tomlin 1995, 1997). More specifically, he set up an experimental paradigm of attention manipulation, which focuses on subject assignment in English and its accompanying voice alternation (active vs. passive sentences). This experimental paradigm predicted that if English native speakers paid attention to a particular referent, the referent would be encoded as the syntactic subject of the sentence. He found a one-to-one mapping between referents currently in the focus of attention of the speaker and the syntactic subject, suggesting that the language-independent cognitive factor of focal attention plays a direct role in subject assignment.

If the experimental manipulation of focal attention affects subject assignment in voice alternation, in particular in the case of adults, it would be interesting to see if data from language acquisition could also confirm it. Therefore, this study extends Tomlin's (1995, 1997) experimental paradigm of attention manipulation to language acquisition, by testing Korean children aged 4 to 5 to investigate how the development of passives and the development of attention correspond to each other. In addition to the on-line production task, this study examines the extent to which Korean children understand active and passive sentences, using a sentence-picture matching comprehension task. In pursuing the goal, this study begins by reviewing Tomlin's experimental framework and some background on Korean passives. Next, two experimental studies are presented. Finally, the results and some implications are discussed.

1. Tomlin's (1995, 1997) Experimental Framework and Korean Passives

Focal attention or attention detection is a cognitive system that has been described over and over for more than a century (see Tomlin and Villa 1994 for more details). More specifically, Tomlin (1995, 1997) has claimed that the general cognitive process of focal attention or attention detection has a direct role in the grammatical formulation of speech utterances, on the base of an experimental paradigm of attention manipulation. In terms of subject assignment in English and its accompanying voice alternation, he set up the experimental paradigm to investigate a causal relationship between a pragmatic function and grammatical form by explaining why a particular referent is encoded as the subject in English. More specifically, the paradigm predicts that if English native speakers pay attention to a particular referent, the referent will be encoded as a subject of the sentence that represents the event perceived. Accordingly, the paradigm suggests

Acquisition of Passives in Korean

that the role of a syntactic subject in English is encoding focal attention, which can be also referred to attention detection.

The experimental framework Tomlin designed uses a computer animated film to elicit on-line discourse. The film consisted of a set of 32 trials that show the simple transitive event of one fish eating another. The fish are identical in shape and size, differing only in color. The two fish in each event approach each other from opposite sides of the video display, moving at equal speeds. At the center of the screen, one fish swallows the other. During each event, the participant's attention is directed to one particular fish by means of flashing arrow over the fish. The arrow flashes twice and then disappears approximately 75 milliseconds before the eating event occurs.

Tomlin (1995, 1997) predicted that in cases where the arrow focuses on the agent, English speakers will produce active sentences in which the focused referent is the subject. On the other hand, in cases where the arrow focuses on the patient, passive sentences will be produced in which the focused fish is also in subject position. He tested 12 English native speakers to find out whether the cued referent would be assigned to a syntactic subject on every trial, as predicted. What he found from the experiment is that 10 out of 12 speakers performed as predicted. More specifically, the participants produced the active sentence when the agent was focused by the arrow, whereas they produced the passive sentence when the patient was focused by the arrow. In other words, the results imply that the agency of the cued referent determined the voiced of the sentence. Therefore, Tomlin suggests that the assignment of the attentionally detected referent to be syntactic subject and the concomitant alternation of voice seem to occur automatically in L1 discourse production.

In the present study I investigate how the development of passives and the development of attention correspond to each other, by testing Korean-speaking children aged 4 to 5. Before presenting two experimental studies, let me briefly review the literature on Korean passives.

One characteristics of the Korean passive is that Korean uses voice suffixes *i*, *hi*, *li*, *ki*, which are attached to verb stem, as shown in (1b). Note that in Korean voice suffixes are used both for the passive and causative constructions.

- (1) a. ppalkan mwulkoki-ka pharan mwulkoki-lul (cap-a)-mek-ess-ta.
 Red fish-Nom blue fish-Acc eat-Past-Dec
 'The red fish ate the blue fish.' (active sentence)
- b. pharan mwulkoki-ka ppalkan mwulkoki-eykey (cap-a)-mek-hi-ess-ta.
 Blue fish-Nom red fish-by eat-Pass-Past
 'The blue fish was eaten by the red fish.' (passive sentence)

It is a well-known fact that the active form in Korean is a much more common way of expressing transitive relations in everyday speech and is mastered early in life, whereas the passive form appears less frequently in language input. In particular, a recent study by Song (2002) suggests that Korean is more agent-

Meesook Kim

dominant than Japanese is (see Song 2002 for more details). Given that the passives in Korean are not productive in the input, we may expect that Korean children may not use the passives frequently. Unfortunately, few studies have been reported on Korean children's acquisition of passives. Therefore, the present study could provide us with developmental pattern of comprehension and production of passives in Korean.

2. Experiment

In the present study, I asked two questions about young children's acquisition of the Korean passive. First, I wanted to know if young children aged 4 to 5 could take advantage of visual focal attention when making choices between active and passive sentences. My second question concerned the extent to which young children could understand active and passive sentences.

2.1. Participants

Thirty Korean monolingual children who live in Korea participated in this experiment. The children were divided into two groups on the basis of age. The first group (the four-year-olds) included 15 children with an average age of 4:6 (range=4;2-5;0). The second group (the five-year-olds) included 15 children with an average age of 5:8 (range=5;4-6;0). In addition, 15 adult speakers of Korean as a control group participated in this experiment.

2.2. Materials

Each child was asked to do two tests: (1) the fish film on-line production test and (2) the sentence-picture matching comprehension test. First, the experimental materials used in the production test were the same as those designed by Tomlin (1995, 1997), except for the several modifications. For instance, I used the modified version of fish film, by enlarging the size of fish and using 6 color terms instead of 8 color terms.

The experimental framework in this study consists of a production test where subjects are to produce on-line descriptions of a sequence of 20 events. It shows two computer-animated fish swimming towards each other until they meet and one of them eats the other and swims off the screen. The colors of each pair of fish and the outcome of each eating event are randomly determined. The direction of the agent, either from the right or from the left is counterbalanced. More importantly, the film used two flashing arrows to attract subjects' attention to one of the two fish. Half of times the agent is primed by the arrow, and half of times the patient is primed by the arrow. The arrow flashes twice and then disappears before the eating event occurs.

In addition to the fish film production test, I used a sentence-picture matching test for the comprehension task. Each comprehension item consisted of two picture cards which contain two pictures, and a sentence that described one of them. One picture card contained two fish, and the other picture card contained two eating event by two fish. The participants were asked to point to or choose

Acquisition of Passives in Korean

which picture the experimenter described. Each sentence was presented orally by the experimenter, along with a corresponding pair of pictures. There were a total of 10 comprehension items. Half of the sentences contained transitive constructions in the active voice, and half of them in the passive voice.

2.3. Procedure

All participants were tested individually in a separate room. The children were administered two tests in the following order: (1) the fish film production test (2) the sentence-picture matching comprehension test. This order was preserved for all children because I did not want to give children examples of a lot of passives in the comprehension task before I asked them to produce examples in the production task.

First, in the fish film on-line procedure, participants were asked to report each event that they perceive in the film where the eating event is repeated 20 times. Participants were asked to pay attention to the fish to which the arrow was pointing and to tell the experimenter about each event in the film in which the eating event was repeated 20 times. The flash arrow was manipulated randomly in order to attract subjects' attention on the agent fish in half of the 20 trials and on the patient fish in the other trials.

Prior to the main experimental task, the children were given a short vocabulary test to make sure that they knew the color terms, the noun (fish), and the verb (eat) which were used in this task. All of the children who participated in the experiment passed the vocabulary test. In addition, four eating events were used as a filter.

After the on-line production task, the children were asked to point to or choose the picture that corresponds to a sentence described by the experimenter. Each comprehension item consisted of two picture cards. The first picture card was used to introduce two fish to the participants, whereas the second picture card was used to be described one of them by the experimenter. For instance, after showing the first picture card to the participants, the experimenter said, "Look at these pictures. There are yellow fish and blue fish." After showing the second picture card to the participants, the experimenter said, "Can you point to or choose which picture I'm telling you? The yellow fish was eaten by the blue fish."

2.4. Results

Table 1 shows the number and percentage of sentences that were produced following either active or passive primes. Overall, children were much more likely to produce active sentences in describing the fish film of transitive actions, regardless whether either the agent or the patient was primed. More specifically, the four-year-old children and the five-year-old children produced active sentences almost 100% of the time even when the patient was primed. In contrast with the children, the adult speakers of Korean produced active sentences 100% of the time when the agent was primed, whereas they produced passive sentences 81.22% of the time when the patient was primed.

Meesook Kim

Table 1 Number and Percentage of Responses on the Production Task

	Agent-Primed(AP)		Patient-Primed(PP)	
	Active	Passive	Active	Passive
4-year olds	150(100%)	0(0%)	150(100%)	0(0%)
5-year olds	150(100%)	0(0%)	147(98%)	3(2%)
Adults	150(100%)	0(0%)	28(18.67%)	122(81.33%)

As shown in Table 1, like English native speakers, the Korean adults were affected by focal attention when they assigned syntactic subject. However, the Korean children did not produce passive sentences even when the patient was focally primed, showing that they were not sensitive to focal attention when assigning syntactic subject.

Next, let us take a look at the results of the children's responses on the comprehension test. Table 2 summarizes the number and percentage of correct responses on the sentence-picture matching test. Overall, children understood active sentences better than passive sentences. The four-year-old children understood active sentences 77% of the time, whereas they understood passive sentences 48% of the time. This finding indicates that the four-year-old children still have trouble in understanding passive sentences. In contrast with the four-year-old children, the five-year-old children understood active sentences 97% of the time, whereas they understood passive sentences 80% of the time, as shown in Table 2.

Table 2 Number and Percentage of Correct Responses on the Comprehension Task

	Active Sentence		Passive Sentence	
	Number (%)	SD	Number (%)	SD
4-year olds	58/75(77%)	0.9904	36/75(48%)	1.1212
5-year olds	73/75(97%)	0.3519	60/75(80%)	0.8452
Adults	75/75(100%)	0	75/75(100%)	0

I carried out a statistical comparison of the number of correct responses on the comprehension task in the two conditions (active and passive). The analyses of variance (ANOVA) show that there was a significant difference between age groups in both conditions: a significant difference between age groups in the active condition ($F(2, 44) = 15.62, p < .01$), and a significant difference between age groups in the passive condition ($F(2, 44) = 39.26, p < .01$). More specifically, the post-hoc comparison shows that there was a significant difference between the four-year-old children and the five-year-old children in both conditions ($p = .000$ for both active and passive conditions), whereas there was no significant difference between the five-year-old children and the adults in the active condition ($p = .82$).

*Acquisition of Passives in Korean***3. Discussion and Conclusions**

Previous studies conducted by the fish film on-line production task have shown that the cognitive manipulation of focal attention affects subject assignment in voice alternation (Tomlin 1995, 1997). For instance, adult speakers produced active sentences when the agent was primed, they produced passive sentences when the patient was primed. However, the results from the current production study show that Korean-speaking children age 4 to 5 were not capable of assigning a focally attended referent to syntactic subject. Specifically, both the four-year-old children and the five-year-old children produced active sentences almost 100% of the time even when the patient was primed. In other words, they produced only active sentences, regardless of whether the agent or the patient was primed. These findings are consistent with the well-known fact that English-speaking children do not produce the full passive form of the transitive construction until the age of 4 or 5.

In addition to the on-line production task, the current study included the sentence-picture matching comprehension task. The results from the comprehension task show that overall Korean children, in particular the four-year-olds, were much better in understanding active sentences than in understanding passive sentences. The 4-year-old children understood passive sentences 48% of the time, whereas the 5-year-old children understood them 80% of the time. It also indicates that there is a dramatic development in understanding of passive sentences. In addition, it was found that both the younger children and the older children were better in understanding passive sentences than in producing them. In particular, whereas the five-year-old children did not produce passive sentences even when patient was primed, whereas they understood them 80% of the time. It indicates that Korean-speaking children's understanding of passive sentences appears early, compared to their production, suggesting that children's comprehension usually precedes their production in development.

A remaining question is why the 5-year-olds were not capable of using visual focal attention in subject assignment, even though they understood passive sentences. One possibility is that the experimental design primed by the flashing arrow might not be enough for young children aged 5 to use the focal attention when making syntactic choices. Similarly, a previous on-line study by Trueswell et al. (1999) has reported that English-speaking children aged 4 to 5 were not capable of using relevant contextual factors like discourse/pragmatic information when they resolved temporary syntactic ambiguous sentences, whereas adults showed sensitivity to these discourse constraints at the earliest possible stages of processing. Accordingly, their finding seems to be similar to the present finding that five-year-old Korean children did not take account into the focally attended referent to syntactic subject. However, further research needs to investigate when children are ultimately able to use extra-linguistic cues like focal attention or discourse focus.

Meesook Kim

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Acquisition of Passives in Korean

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