

On the acquisition facts of Japanese passives

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1. Introduction

Japanese passive is widely acknowledged to have some different subtypes as shown below.

(1) direct passive

a. passive

John-ga Mary-ni tatak-are-ta.
John-NOM Mary-by hit-PASS-PAST
'John was hit by Mary.'

b. active

Mary-ga John-o tatai-ta.
Mary-NOM John-ACC hit-PAST
'Mary hit John.'

(2) indirect passive with an intransitive verb (Vi)

a. passive

John-ga Mary-ni nak-are-ta.
John-NOM Mary-by cry-PASS-PAST
'John was affected by Mary's crying.'

b. active

Mary-ga nai-ta.
Mary-NOM cry-PAST
'Mary cried.'

(3) indirect passive with a transitive verb (Vt)

a. passive

Nancy-ga Mary-ni John-o ker-are-ta.
Nancy-NOM Mary-by John-ACC kick-PASS-PAST
'Nancy was affected by Mary's kicking John.'

b. active

Mary-ga John-o ket-ta.
Mary-NOM John-ACC kick-PAST
'Mary kicked John.'

(4) possessive passive

a. passive

Nancy-ga Mary-ni asi-o ker-are-ta.
Nancy-NOM Mary-by leg-ACC kick-PASS-PAST
'Nancy was affected by Mary's kicking her leg.'

b. active

Mary-ga Nancy-no asi-o
Mary-NOM Nancy-POSS leg-ACC
ket-ta.
kick-PAST
'Mary kicked Nancy on the leg.'

As in (1), the direct passive (1a) has its own direct active counterpart as in (1b). The object NP in the active sentence (1b) now appears as the subject NP in the passive sentence (1a), while the agent NP, i.e., the subject NP in (1b) appears with the postposition *ni* and thus the Accusative Case is no longer there in the passive sentence (1a). We also have the type of passive called the indirect passive as in (2) and (3). In (2a), the intransitive verb *nak-u* 'cry' is passivized, and in (3a), not an intransitive verb but a transitive is passivized and the object NP in the active counterpart (3b) remains in the passive sentence (3a). Note here that the passives in (2a) and (3a) both share the additional argument at the subject position which does not appear in each of their active counterparts (2b) and (3b) despite the difference of their surface structures. Traditionally this additional argument has been analyzed to bear the semantic role of affectee: *John* in (2a) and *Nancy* in (3a) are not the participants of the event described by the verb meaning, but they are affected by the event in some way (and thus this type of passive is sometimes called the adversative passive as in Howard and Niyekawa-Howard 1976, N.A. McCawley 1972 and so on). In the regard that the passives such as (2a) and (3a) both have the affectee subject which is absent in their active counterparts, they are considered to be the same type of passive, the indirect passive. Finally consider the sentence called the possessive passive (4a). It looks just like the indirect passive with a transitive verb in (3a). However, recall that the additional argument NP, i.e., the affectee subject of the indirect passive is not present in its active counterpart while the sentence (4b) shows that the subject NP in (4a) also appears as a possessor NP in its active counterpart. Given

that the existence of an additional argument at the subject position is part of the distinctive property of the indirect passive, a passive sentence such as (4a) is not considered to be identical to the indirect passive.

These subtypes, as we have seen, make Japanese passive one of the research topics to have gained great interests not only in theoretical linguistics but in the study of language acquisition especially within the theoretical framework of Generative Grammar. However, there still remains certain disagreement among these studies. For example, some recent studies such as Sugisaki (1997), Harada and Furuta (1997, 1998, 1999) and Minai (1998, 2000) have provided their own data on child Japanese passives, but their results are contradictory especially on in which order each type of passives is acquired by children. This is a non-trivial problem since the acquisition studies heavily depend on the relevant data in child language for their arguments.

This paper concerns the problem and fills the gap in the literature on child Japanese passives by presenting the conclusive facts. In the next section, we will present our original data on the acquisition of Japanese passives from some different points of view and discuss in which order children acquire each type of Japanese passives. Then in section 3 we will discuss certain problems in the literature on child Japanese passives in light of our data, in conclusion.

2. Acquisition Facts

This section presents the data on the acquisition of Japanese passives. These data were collected by using several different methods so as to examine the facts from various angles.

First in 2.1, we will survey the results of the experimental studies. One of the chief

merits of experiments as a way of collecting data is that we are able to control the situations which children face to solve the problems with their linguistic competence. In normal linguistic environments where we see only what children actually comprehend or produce, it is hard to tell whether children do not comprehend or produce certain linguistic form or whether they cannot. These experiments, necessarily with suitable control, thus help us to ascertain children's inability, if any, with their own linguistic competence in the course of language acquisition. The experiments to be reported in the following sections were all carried out in a cross-sectional way. This also enables us to obtain the facts hardly found in the longitudinal observations.

The section 2.2 will introduce the results of the observational studies into our data. These longitudinal observations of naturalistic speech fail to reveal children's inability in their comprehension or production but lead us to children's actual developmental process in individuals in using the target structure.

Through both the cross-sectional experiments and the longitudinal observations, which overcome each other's defects, this section aims to show the crucial facts on children's acquisition of Japanese passives.

The summary of this section, stated in 2.3, will be that there is a fixed order of the acquisition of Japanese passives depending upon their subtypes.

2.1 Experimental Studies

This section shows the results of the experimental studies. Four different experiments were all conducted in a cross-sectional way. As stated above, by carefully setting the experimental situations which the subjects face to make use of their linguistic knowledge, we aim to examine whether there are any

differences among the subtypes of Japanese passives in children's comprehension and production.

2.1.1 Experiments on Comprehension

Here we survey the details of two experiments on children's comprehension of Japanese passives and examine how differently or similarly children comprehend each different type of Japanese passives. Two different methods, the Agent Identification method and the Truth-value Judgment method, were adopted for the experiments presented in this section.

2.1.1.1 Experiment 1: Agent Identification Task

In this experiment, we used the Agent Identification method, which requires the subjects to identify the agent (and the patient if any) of a given test sentence. By finding out how the subjects identify the agent in the test sentences, we examined their knowledge on Japanese passives.

A total of eighty-one Japanese-speaking children were counted in the results.¹⁾ The children, varied in age from 3;6 to 6;5, were divided into six groups for the analysis of the results. In addition to these children, six adults were also tested as a control group in order to compare their responses with those of the children. Table 1 shows the information on the subjects.

Table 1
The Subjects in Experiment 1 (and 3)

Group	Male	Female	Total
3;6 - 3;11	7	7	14
4;0 - 4;5	7	6	13
4;6 - 4;11	5	9	14
5;0 - 5;5	8	6	14
5;6 - 5;11	7	6	13
6;0 - 6;5	6	7	13
Adults	3	3	6
Total	43	44	87

The experiment was carried out at five day-care centers and kindergartens in Nagoya. The experimenters visited these day-care centers and kindergartens several times to join in classroom activities before starting the experiment. This helped the experimenters and the children to get familiar with each other. In the experimental session, every subject was tested individually in a quiet room by two experimenters. This experimental session took us about ten minutes and preceded Experiment 3, which the same subjects as in this experiment took part in.

The experimental session started with a pre-test. This was done for checking some factors related to the main test: whether the subjects know the meanings of the verbs that appear in the test sentences, whether the subjects know the names and the relationships of the characters on the pictures used in the main test, and whether the subjects understand what the task requires them to do. One of the experimenters first had a chat with a subject, using all the verbs to appear in the test sentences of the main test. Then the experimenter told the subject that they were going to play a 'game' (the word used to the children for the experimental session) with some pictures, explained the schema of the game and tried a few pilot tests in the same manner as the main test but using actives not passives for the test sentences of these pilot tests. The other experimenter checked the subject's responses throughout the pre-test session and made sure that the subject understood what the task expected him/her to do. Only the subjects who passed this pre-test could join in the succeeding main test.

The procedures of the experimental session (for both the pre-test and the main test) were as follows. One experimenter first showed

the subject five pictures one by one always in the same order, telling him/her the names and the relationships of the characters painted in each picture, which were to appear in the test sentences. Then, after making sure that the subject could identify the names of the characters and their relationships, the experimenter read a test sentence aloud and asked the subject to identify the agent when the test sentence was an indirect passive with Vi but to identify both the agent and the patient when the sentence was a direct passive or an indirect passive with Vt.²⁾ The pictures were kept shown to the subjects as reminders during the session. The test sentences were given to every subject in the same fixed order (but regardless of the types of the sentences) and were repeated three times at most. The other experimenter recorded the responses by the subjects.

A total of nine test sentences, three for each type of passive (the direct, the indirect with Vi and the indirect with Vt), were used in the main experiment.³⁾

(5) direct passive

Doraemon-wa Syokupanman-ni
Doraemon-TOP Syokupanman-by
ker-are-ta.
kick-PASS-PAST
'Doraemon was kicked by
Sokupanman.'

(6) indirect passive with Vi

Syokupanman-wa Anpanman-ni
Syokupanman-TOP Anpanman-by
nak-are-ta.
cry-PASS-PAST
'Syokupanman was affected by
Anpanman's crying.'

- (7) indirect passive with Vt
 Doraemon-wa Anpanman-ni
 Doraemon-TOP Anpanman-by
 Dorami-tyan-o sikar-are-ta.
 Dorami-tyan-ACC scold-PASS-PAST
 'Doraemon was affected by
 Anpanman's scolding Dorami-tyan.'

Note that the NPs in the above sentences are all animate and that each of the NPs can be associated with any theta role available in the sentences. This experimental control is necessary because the task of this experiment requires the subjects to choose an NP interpreted as the agent in a given sentence and the nature of inanimate NPs itself might lead us to the wrong data, that is, if the test sentences had an inanimate NP in them, the NP could serve to provide the subjects with some clue about the correct interpretation even when they failed to comprehend the sentences. This possible failure, however, does

not occur when we use sentences with no inanimate NPs such as those in (5) through (7), where all the NPs, being animate, are valid candidates for the agent if the subjects are not able to comprehend the sentences correctly. Thus in order to keep the subjects from relying on any semantic cues related to the NPs in comprehending the test sentences in the task, we did not use possessive passives as in (4a) or indirect passives with Vi with an inanimate NP as in (8) below.

- (8) John-wa ame-ni hur-are-ta.
 John-TOP rain-by fall-PASS-PAST
 'John was affected by the rain falling.'

Following the procedures described above, we have obtained the results in Table 2. It shows us the rate of the subjects who correctly identified the agent (and the patient if any) in the test sentences.

Table 2

The Results of Experiment 1:

Percentages of the Number of the Subjects Correctly Comprehending Two-Thirds or More of the Test Sentences of Direct, Indirect (Vi) and Indirect (Vt) Passives

	3;6 - 3;11	4;0 - 4;5	4;6 - 4;11	5;0 - 5;5	5;6 - 5;11	6;0 - 6;5	Adults
Direct	35.7	38.5	50.0	64.3	69.2	92.3	100.0
Indirect (Vi)	35.7	38.5	64.3	64.3	46.2	53.8	100.0
Indirect (Vt)	14.3	15.4	24.3	35.7	15.4	46.2	100.0

The numbers of the above table reflect fully correct answers by the subjects only: when a subject could identify only either the agent or the patient in a direct passive or an indirect passive with Vt, then he/she was not counted in these results because the task required him/her to correctly identify both the agent and the patient for these test sentences. As for the indirect passive with Vi, the subjects were asked only for the agent in a test sentence, so the subjects who could identify the agent were all counted in the results.

Further, there were three test sentences for each type of passives, and the subject was considered to comprehend a given type of passive when he/she correctly identified the agent (and the patient) in two-thirds or more of the test sentences for that type of passive.

First, the results show that the subjects in the control group identified all the agents (and the patients) in the test sentences without exception. This indicates that we are successful, to some extent at least, in eliminating the so-called experimental noises from the

experimental design. We find no performance factors which seemed to affect adults' comprehension of passives in the results of this experiment, either.

The results for the children indicate that older children correctly identified the agent (and the patient) in the test sentences, and that the children who gave the correct interpretation to the test sentences increased in number in proportion to their age.

Among the types of passives, the number of the children who could comprehend the direct passives is the largest, but the number of the children who gave the correct answers is the smallest when the test sentences involved indirect passives with Vt.

Note that the children in younger groups comprehended the indirect passives with Vi as well as the direct passives. At a first glance, children appeared to treat these passives similarly. However, here we should keep in mind that the task of this experiment required the children to identify only the agent in the indirect passive with Vi but both the agent and the patient in the direct passive. This means the task itself was much easier for the subjects when the test sentence was an indirect passive with Vi. Yet the children's performance in comprehending indirect passives with Vi was not so good as expected from this fact. In other words, we are able to conjecture that children in fact distinguished these two passives but that the difference in the requirement of the task between the two possibly distorted the facts especially found in the results of younger children. In this connection, note that the older children from 5;6 to 6;5 clearly treated the indirect passive with Vi differently from the direct passive.

As an additional piece of information (though not shown in the above table), only

21 percent of the children among those who correctly interpreted two-thirds or more of the direct passive sentences could comprehend (two-thirds or more of) the indirect passives. On the other hand, about 90 percent of the children among those who correctly interpreted two-thirds or more of the indirect passives did give the correct interpretation to (two-thirds or more of) the direct passive test sentences. This may indicate, again regardless of their age, the children who have already acquired the indirect passives found few difficulties in comprehending the direct passives, but not vice versa. This finding is also consistent with the results reported in Tables 2 which shows that the direct passive is more easily comprehended and seems to be acquired earlier than the indirect passive.

As a summary of this section, the results of the experiment with Agent Identification method show that more children in the older age groups correctly comprehended the passive sentences than those in younger age groups. The crucial fact, moreover, is that, for all age groups, there were more correct answers in the direct passives than in the indirect passives. Thus the experimental study in this section leads us to the conclusion that the direct passive is acquired earlier than the indirect passives with Vi or Vt.

2.1.1.2 Experiment 2: Truth-value Judgment Task

In this section, the results of another experiment on children's comprehension of Japanese passives are reported. Here we employed the Truth-value Judgment method that has been made up and refined relatively recently (Crain and MacKee 1985, Gordon 1996, Crain and Thornton 1998 etc.). By requiring the subjects to judge if the test sentences correctly describe the experimental

situations, this method tests children's knowledge of the target structure and investigates if children give any different meaning to the test sentences from adults. The advantages of using this method are discussed later in more detail.

As shown in Table 3, a total of thirty Japanese-speaking children aged 4;0 to 6;5 are counted in the results of this experiment.⁴⁾ They were divided into five age groups for the analysis of the results. A control group of four adults also participated in the experiment.

Table 3

The Subjects in Experiment 2

Group	Male	Female	Total
4;0 - 4;5	2	4	6
4;6 - 4;11	5	1	6
5;0 - 5;5	3	3	6
5;6 - 5;11	3	3	6
6;0 - 6;5	4	2	6
Adults	1	3	4
Total	18	16	34

The experimental session started with a pre-test as in Experiment 1. We carried out this pre-test to see if the subjects knew the meaning of the verbs in the test sentences and if the subjects could understand the requirement of the task. First, one of the experimenters had a chat with a subject, using all the verbs in the test sentences of the main test. Then the subject was told that he/she was going to listen to picture stories read by one experimenter with the puppet joining him/her which was manipulated by another experimenter. After explaining the schema of the task, the experimenters tried some pilot tests in the same manner as the main test, using actives as the test sentences. Only the subjects that could understand the task and pass this pre-test were allowed to continue to take part in the following main test.

The procedures of the experimental session (for both the pre-test and the main test) were as follows. One experimenter told the subject and the puppet a short story, showing some pictures. Finishing the story, the experimenter picked up a picture used in the short story once again and presented it to the subject and the puppet. Then the puppet (actually manipulated by one of the experimenters) orally gave a test sentence to the subject, who was expected to judge whether the test sentence given by the puppet correctly described the action depicted in the presented picture.

In this experiment, we offered each subject a card and two kinds of stickers. The subjects were instructed to put a sticker of Figure 1 on the provided card as a 'reward' to the puppet when he correctly described the picture (that is, when the subject judged the given test sentence to be correct). The subjects, however, were told to put a sticker of Figure 2 on the card as a 'warning' to the puppet when the subjects judged that the test sentence incorrectly described the picture.

Figure 1
'Reward' Sticker
for Experiment 2



Figure 2
'Warning' Sticker
for Experiment 2



The subjects were told that the experimenter and the subjects should see if the elephant (the puppet used in this experiment) was able to understand the picture stories as he was not a human and so might wrongly understand even easy picture stories. In this way, the task itself helped the children not to feel 'tested', though it in fact tested the subjects' comprehension.

A total of thirty test sentences were used in the main experiment and they consisted of four types of Japanese passives: eight direct passives, six indirect passives with Vi, eight indirect passives with Vt and eight possessive passives. As shown in (9) through (12), where each type of the test sentences in this experiment is given, the NPs used in the sentences are all animate except in possessive passives.⁵⁾ This was intended to avoid the subjects' using non-linguistic cues like the plausibility of the event described by a test sentence in the real world and so forth, as mentioned earlier.

- (9) direct passive
 Kitune-san-wa kuma-san-ni tatak-are-ta.
 fox -TOP bear -by hit-PASS-PAST
 'The fox was hit by the bear.'
- (10) indirect passive with Vi
 Buta-san-wa kuma-san-ni nak-are-ta.
 pig -TOP bear -by cry-PASS-PAST
 'The pig was affected by the bear's crying.'
- (11) indirect passive with Vt
 Anpanman-wa usagi-san-ni
 Anpanman-TOP rabbit -by
 Syokupanman-o homer-are-ta.
 Syokupanman-ACC praise-PASS-PAST
 'Anpanman was affected by the rabbit's

praising Syokupanman.'

- (12) possessive passive
 Buta-san-wa kitune-san-ni osiri-o ker-pig -TOP fox -by hip-ACC kick-are-ta.
 PASS-PAST
 'The pig was affected by the fox's kicking his hip.'

For the test sentences, two different sentences with the same verb were prepared for each type of passive, that is, two direct passive sentences with the verb *tatak-u* 'hit', two possessive passive sentences with the verb *ker-u* 'kick', and so on. These two test sentences with the same verb for a certain type of passive were further divided into two types: one correctly described the event shown in a picture (True Type sentence) and the other incorrectly described the event shown in a picture (False Type sentence). If a subject made a correct judgment on both True Type and False Type sentences with the same verb (for example *tatak-u* 'hit', *ker-u* 'kick', etc.) of a certain type of passive (such as direct passive, possessive passive, etc.), then he/she was considered to comprehend the test sentences of that type of passive.

Table 4 informs us of the rate of the subjects who correctly comprehended the test sentences.

Table 4
 The Results of Experiment 2:
 Percentages of the Number of the Subjects Correctly Comprehending the Test Sentences of Direct, Possessive, Indirect (Vi) and Indirect (Vt) Passives

	4:0 - 4:5	4:6 - 4:11	5:0 - 5:5	5:6 - 5:11	6:0 - 6:5	Adults
Direct	41.7	54.2	37.5	70.8	83.3	100.0
Possessive	25.0	45.8	50.0	45.8	66.7	100.0
Indirect (Vi)	50.0	50.0	33.3	44.4	61.1	100.0
Indirect (Vt)	20.8	45.8	25	16.7	45.8	100.0

The above table shows that the subjects in the control group correctly comprehended all of the test sentences. This is the same result as in Experiment 1, indicating that the adults' responses in this experiment were free from experimental noises or performance factors.

The results here are also the same as those in Experiment 1 in that older children correctly comprehended more test sentences and the children who made the correct judgments on the test sentences increased in number in proportion to their age overall.

The number of the children who correctly comprehended the direct passives is the largest among all types of passives, while the number of the children with correct answers is the smallest when the test sentences were indirect passives with Vt, according to Table 5.

The children in younger groups comprehended the indirect passives with Vi as well as the direct passives, and this also appears the same result as in Experiment 1. In this respect we should admit that we cannot tell how differently or similarly these younger children treat the direct passive and the indirect passive with Vi on the basis of our experiment. Yet we should notice here that it was the younger children who comprehended the indirect passives with Vi as well as the direct passives and that the rate of correct comprehension of the test sentences on the whole was very low among these children. Furthermore, we have the crucial fact that the older children with better performance overall in the task did comprehend the direct passives at the high rate but not the indirect passives with Vi. In other words, once the children have acquired the direct passive, they can possibly tell the difference between the direct passive and the indirect passive

with Vi and no more treat them in the same way. This in fact is probably a more important finding for the purposes of the present study.

Turning to the children's performance on the possessive passive, which was first examined in this experiment but not in Experiment 1, we find that the relation between the possessive passive and the indirect passive with Vt is similar in an interesting way to the relation between the direct passive and the indirect passive with Vi which we have seen before. Recall that, as in the results in Table 5, the younger children whose performance in the experiment was poorer in general appeared to comprehend the direct passive and the indirect passive with Vi in the same way, but that the older children with better performance in the task did not comprehend the indirect passives with Vi as well as the direct passives. The same tendency obtains with the children's comprehension of the possessive passive and the indirect passive with Vt: the younger children comprehended the indirect passives with Vt as well as the possessive passives but the older children comprehended the possessive passives much more than the indirect passives with Vt. The more crucial fact of interest to us is again found in the results of the older children with better performance on the whole: the children clearly distinguish the possessive passive from the indirect passive. These children also realize the difference between the direct passive and the possessive passive in their comprehension: they comprehended the direct passives more easily and better than the possessive passives.

To sum up, Experiment 2 with the Truth-value Judgment method has shown us the same results that have been found in Experiment 1: the older children

comprehended the passives better than the younger children. The results also suggest a possible order in which Japanese passives are acquired: the direct passive first, the possessive passive second and the indirect passive last.

2.1.1.3 Summary for the Experiments on Comprehension

We have examined children's comprehension of Japanese passives through two different experiments, one with Agent Identification method and the other with Truth-value Judgment method. These two experiments, though very different in their methods, produced the results which lead us to the same conclusion: the younger children have difficulty in comprehending the passives in general, but irrespective of their age, the children who correctly comprehend the direct passive are also able to comprehend other types of passives. Moreover, according to the results in Experiment 2, the possessive passive is acquired earlier than the indirect passive but later than the direct passive. Thus, our experiments on children's comprehension have led us to a conclusion that the direct passive is acquired earlier than any other type of passive.

2.1.2 Experiments on Production

This section deals with another aspect of children's linguistic performance, i.e. production, through which we are going to investigate children's knowledge on Japanese passives.

The results of two experiments are discussed in this section, and in both experiments we employed the same experimental method called the Elicited Production. The actual procedures, however, differ in each experiment, and we are going to survey the details of Experiment 3 and those of Experiment 4 respectively.

2.1.2.1 Experiment 3: Elicited Production Task 1

The Elicited Production method was adopted in Experiment 3. This method elicits the target structure from the subjects in experimental settings with careful control. Our target structure is Japanese passive, which needs experimental settings where the subjects are not allowed to make use of other structures than Japanese passives in their production. By controlling the experimental settings in this way, we tested the subjects' knowledge of Japanese passives.

Eighty-one Japanese-speaking children were counted in the results in total.⁶⁾ The children aged from 3;6 to 6;5 were divided into six groups for the analysis of the results and six adults were also tested in this experiment as a control group in order to compare their responses with those of the children. They all actually joined Experiment 1 as well as this experiment, and thus Table 1 in 2.1.1.1 also shows the information on the subjects in this experiment.

This experiment preceded Experiment 1. Thus we conducted this experiment in the same place and in the same situation as explained in detail in 2.1.1.1. The whole experimental session was divided into two parts and started with the pre-test. The purpose of this pre-test was to see if the subjects knew the meaning of the verbs that were expected to appear in the target sentences and if the subjects understood the requirement of the task. One of the experimenters first had a chat with a subject, using all the verbs to appear in the target sentences of the main test. Then the experimenter tried a few tests in the same manner as the main test by eliciting actives, not passives, for the target sentences. Throughout the session, the other experimenter checked the subject's responses and

made sure that the subject understood what the task expected him/her to do. Only the subjects who passed these pre-tests could join in the following main test.

The procedures of the experimental session (for both the pre-test and the main test) were as follows. One experimenter told a subject a story showing some pictures, and then asked him/her a question about the event of the story. This question elicited the production of a target sentence from the subject. The subjects' responses were tape-recorded by the other experimenter. The target sentences in

this experiment consisted of three direct passives, six possessive passives and three indirect passives with *Vi*, twelve in total.

The results of Experiment 3 are indicated in the table below. We have counted the children in the results when they produced the same type of passive that we were intended to elicit from them in the experiment. In other words, the subjects in the experiment were required to produce the same type of passive but not the very same sentence as the target sentence word by word.

Table 5

The Results of Experiment 3: Percentages of Correct Elicited Productions of Direct, Possessive, and Indirect Passives

	3;6 - 3;11	4;0 - 4;5	4;6 - 4;11	5;0 - 5;5	5;6 - 5;11	6;0 - 6;5	Adults
Direct	40.5	46.2	50.0	54.8	79.5	74.4	66.7
Possessive	15.5	11.5	34.5	38.1	21.8	42.3	83.3
Indirect	4.8	10.3	14.3	14.3	20.5	20.5	55.6

First, we notice that older children produced more correct target sentences and that the number of the correct production of the target responses increased with age in all types of the target sentences. These results are consistent with the previous facts obtained in Experiments 1 and 2 where older children correctly interpreted more test sentences than younger children.

The children overall performed much better when the target sentences were direct passives. Among the three types of Japanese passives, children's worst performance was found in the indirect passives. The children produced the possessive passives more than the indirect passives but less than the direct passives. These findings are also expected when we consider the results in the experiments on comprehension in the previous section 2.1.1.

However, there is a crucial difference

between the results obtained here and those obtained in Experiments 1 and 2. Recall that in both Experiments 1 and 2 all adults in the control group comprehended all the test sentences perfectly. However, Table 5 shows poor performance by the adults in Experiment 3. This indicates that the experiment failed to elicit the target responses not only from the children but even from the adults: some experimental noises or performance factors might have affected and intervened in the results of Experiment 3. This problem is to be discussed further in 2.1.3, but here with some noises in this experiment admitted, it is still worth recognizing that we have obtained the same general results here as those in the experiments on comprehension of Japanese passives.

In summary, the results of Experiment 3 show that more children in the older groups correctly produced the passive sentences than

those in younger groups. Moreover, more target sentences were elicited in the direct passive than in the indirect passive. As for the possessive passive, the children produced this type of passive more than the indirect passive but less than the direct passive. The overall results in this experiment are consistent with the facts found in Experiments 1 and 2.

2.1.2.2 Experiment 4: Elicited Production Task 2

We have surveyed the experiment on children's production of Japanese passives in the previous section, and here the results of another experiment with the Elicited Production method are reported. As mentioned before, our two experiments on production both adopted the same method, but they are different in details, especially in their procedures. In fact, Experiment 4 was conducted after we obtained the results of Experiment 3, and thus there are some refinements in the present experiment, further to be reported later in this section.

The number of the subjects counted in the results of this experiment was twenty-eight, including three adults as a control group.⁷⁾ The information of our subjects is summarized in Table 6.

Table 6
The Subjects in Experiment 4

Group	Male	Female	Total
4:0 - 4:5	3	2	5
4:6 - 4:11	1	4	5
5:0 - 5:5	3	2	5
5:6 - 5:11	2	3	5
6:0 - 6:5	2	3	5
Adults	1	2	3
Total	12	16	28

The experiment was conducted at a day-care center and a kindergarten in Nagoya. The experimenters visited the day-care center

and kindergarten several times before starting the experiment. This helped the children and the experimenters to get familiar with each other. Every subject was tested individually in a quiet room by two experimenters in the experimental session. It took about half an hour to complete the whole experimental session, so the whole session was further divided to three or four sessions with an interval of about one or two day(s) in order to avoid the children getting tired and losing their concentration on the task.

We started the experimental session with a pre-test. This pre-test was necessary for us to make sure that the subjects knew the meaning of the verbs in the target sentences and that the subjects understood the requirement of the task. One of the two experimenters had a chat with a subject, using all the verbs expected to appear in the target sentences used in the main test. Then after explaining the schema of the task, the experimenter tried some pilot tests in the same manner as the main test, using actives for the target sentences. Only the subjects that passed this pre-test were allowed to take part in the main test.

The procedures of the experimental session (for both the pre-test and the main test) were as follows. A subject was told that he/she was going to listen to picture stories read by one experimenter with a child-sized stuffed toy panda called Bamboo joining him/her. The stuffed toy panda itself was eye-banded and manipulated by another experimenter. The child was also told to help the panda, which was not able to see the pictures, to understand the contents of the stories. At the end of the short stories with some pictures, the experimenter asked the subject about a certain event of the stories shown on the picture and elicited the target

sentence from him/her. In eliciting the target sentences in this experiment, the child was told to explain what was shown on the picture to the eye-banded panda, and this created the desirable experimental situation that was wanted in Experiment 3. Note that in the procedures of this experiment the last picture presented at the end of the story always has two different scenes in it. This was made up to elicit full passive sentences. According to Kuno (1978), in Japanese older and less important information can be dropped more easily and more often than newer and more important information. However, the subjects in this experiment were required to explain the pictures to the eye-banded panda, and thus they had

to utter a sentence with every piece of information, regardless of its discourse properties, on the event in the pictures.

A total of ten target sentences were prepared for the main experiment and they consisted of four types of Japanese passives: two direct passives, four possessive passives, two indirect passives with Vt and two indirect passives with Vi.

The results of the experiment are shown in the following table, where the correct productions of the target sentences are summarized. Just like the results in Experiment 3, the children here were counted in the results when they produced the same type of passive that we were intended to elicit from them in the experiment.

Table 7

The Results of Experiment 4: Percentages of Correct Elicited Productions of Direct, Possessive, Indirect (Vi) and Indirect Passives (Vt)

Target	4;0 - 4;5	4;6 - 4;11	5;0 - 5;5	5;6 - 5;11	6;0 - 6;5	Adults
Direct	70.0	100.0	90.0	100.0	100.0	100.0
Possessive	55.5	80.0	95.0	90.0	100.0	100.0
Indirect (Vi)	20.0	0.0	40.0	80.0	80.0	100.0
Indirect (Vt)	40.0	30.0	30.0	60.0	100.0	100.0

First we notice that, compared with the results in Experiment 3, Experiment 4 perfectly succeeded in eliciting the target sentences overall. Above all, one of the important results in this experiment is the perfect performance by the adults in producing all types of target sentences. This ensures that the experiment succeeded in excluding experimental noises or performance factors from the experimental settings (in the case of adults at least), which should be the minimum criterion required in the experimental design.

We also find the same tendency as in Experiments 1, 2 and 3, namely, that the performance of older children was better than that of younger children. In this experiment older children produced more correct target

sentences and the number of the correct productions of the target responses generally increased with age in all types of the target sentences.

Among the types of Japanese passives, the children performed the best in the direct passives and quite succeeded in producing possessive passives too: the percentages of the number of the correct target responses for these two types of passives were above the chance level in all age groups. However, children's performance, especially of younger children, was worse in the indirect passives. These findings are fully consistent with the results of the experiments discussed in the previous sections.

As a summary of Experiment 4, we see that

the same results as we have seen in the first three experiments are obtained in this experiment too: the older children correctly produced the passives more than the younger children. Another important fact found in this experiment is that the task elicited from the children the direct passives most, the possessive passives second most and the indirect passives least. This order among the types of Japanese passives is also found in our other experiments.

2.1.2.3 Summary for the Experiments on Production

Two experiments were conducted to examine children's production of Japanese passives and their results were discussed. We employed the same experimental method called the Elicited Production in these two experiments. There were some methodological problems in Experiment 3, but still we have obtained the same general results as found in the experiments on comprehension discussed in the previous section and in Experiment 4. The older children produced more passive sentences than the younger children, and, what is more, the children produced the direct passives most, the possessive passives second most and the indirect passives least in our experiments. Through these facts about children's production, we have found a fixed acquisition order depending on the types of Japanese passives.

2.1.3 Issues on the Experimental

Methodology

We have obtained the similar results from four different experiments so far, and our main concern now is whether children deal with each different type of passive distinctively. Before preceding our discussion, however, we should reconsider our results in the light of the experimental methodology, in order to make sure that most of our results

are free from experimental noises or possible performance errors and thus that they are reliable enough to show the actual state of the acquisition of Japanese passives by children.

A recent study by Crain and Thornton (1998) goes into particulars on the problems related to the experimental methodology which do not seem to have been discussed intensively in spite of their importance. Throughout their discussion, they adopt a particular model of language acquisition called the Modularity Matching Model. Because of its fundamental assumptions, the model demands a high standard of children's performance in experimental sessions, and consequently, severe conditions to be met in the experimental methodology. Although it is another question whether or not we support the model they propose, it is still worth taking note of their claims on the methodological problems in experiments, for in any study of language acquisition we should try to gain reliable pieces of data through well-designed experiments keeping experimental noises to a minimum.

According to the model, children innately share with adults UG principles and the modular system of language processing, and thus their linguistic performance should be very similar to that of adults. This is true of their performance in experimental situations. In this connection, Crain and Thornton (1998) state as follows:

According to the Modularity Matching Model, the linguistic performance of children and adults should be (close to) perfect in properly designed experimental studies, provided that children know the relevant points of the adult grammar. (p.97)

This seems a very strict criterion for us to design and conduct experiments, but it is very desirable at the same time if we are really able to avoid errors of any type in our experiments as they claim. In fact, Crain and Thornton (1998) examine the methodological problems of several experiments in view of the Modularity Matching Model.

They regard many of the experimental tasks adopted in the previous studies in language acquisition (such as the Imitation Task, the Act-Out Task, etc.) as those which induce too many artificial errors from the subjects, i.e., experimental noises. Crain and Thornton (1998) discuss the advantages (such as the degree of the achievement in the experimental control) of the Truth-value Judgment task over other comprehension tasks. However, in designing the procedures of the task, there are some points to be noted, and the most important point especially of our concern is that the context in which the test sentences are given should satisfy the pragmatic felicity conditions. In other words, the proper context is necessary for comprehension tasks, otherwise children cannot give proper meanings to test sentences.

As for the production tasks, Crain and Thornton (1998) point out that the Elicited Production method is the best for use to induce the target structure among many other methods. They consider that the method is very helpful especially when you would like to see if a child has already acquired some sentence structure or not. It is because such complex structures examined in the study of language acquisition are lacking in most of children's linguistic experiences. In normal linguistic environment, we usually have some alternative ways of expression: the uniquely felicitous context for a certain

sentence structure hardly exists in our everyday life. In this respect, it is indispensable to control the experimental setting so as to elicit the target structure in this method. Another point to be considered, according to Crain and Thornton, is to create a situation in which it is inevitable for the subjects to speak out in the experiments. This experimental control seems very simple in production tasks but in fact is not so easy to achieve. For this purpose we should prepare for every possible way, such as gestures, the children might use for their production of the target structure.

Now we turn to our experiments and reconsider the reliability of the results based on Crain and Thornton (1998)'s discussion of methodological issues in experiments.

First we recall the details of our experiments on comprehension. The two experiments were conducted with different methods. One of them adopted the Agent Identification Task, in which the children were instructed to identify the agent (and the patient) in a given test sentence. In this experiment, the test sentences were all given to the subjects in null context by the experimenter. This indicates that Experiment 1 did not satisfy the felicity conditions on the test sentences. Thus our results of Experiment 1 might be affected by some other factors, according to the Modularity Matching Model.

The other method used in our experiments was the Truth-value Judgment Task in Experiment 2. The children in the experiment were given all the test sentences with some context unlike in Experiment 1. Furthermore, as mentioned in 2.1.1.2, the test sentences were given by the puppet but not by the experimenter. This experimental setting was also very different from that in Experiment 1, and it in fact created a more normal situation where the children did not

feel tested and thus used his/her linguistic knowledge with less pressure than in Experiment 1.

Our results in Experiments 1 and 2 actually show similar patterns. However, the experimental design of Experiment 2 with the Truth-value Judgment task satisfied the demands made by the Modularity Matching Model to some extent while that of Experiment 1 with the Agent Identification task did not. Thus the results in Experiment 2 can be considered to be free from experimental noises or performance errors to a certain degree.

In both experiments on production we employed the same method i.e. the Elicited Production method. According to Crain and Thornton (1998), there are two requirements for the experimental design of the method: one is the uniquely felicitous context for a certain sentence structure and the other is the necessity of the subjects' speaking in the experimental setting.

Recall that in Experiment 3, the adults' performance was poor in the experimental session. Actually they as well as the children used other sentence structures than passives in the experiment. This means we failed to elicit the target structures from the subjects and to satisfy one of the important conditions on this method, the uniquely felicitous context for the passive. On the other hand, the good results of both the children and the adults in Experiment 4 indicate that we succeeded in providing the correct context for our purpose. As the Modularity Matching Model predicts, the children who joined in this experiment showed the nearly adult-like performance in the direct and the possessive passives.

Furthermore, the setting for this experiment was also different from that for

Experiment 3. In the task of Experiment 3, the subjects faced the questions asked by one of the experimenter. Recall that the short stories were told by the same experimenter who elicited the target sentences. Thus by the time of eliciting the target sentence, the experimenter and the subject fully understood what was happening in the stories. On the other hand, in Experiment 4, the eye-banded toy panda was next to the subject listening to the short stories together with the subject. The subjects were instructed to inform the panda what was happening on the pictures, and this time the subjects necessarily spoke out.

To sum up, our two experiments on production both adopted the Elicited Production method, but the designs were completely different. Experiment 3 failed to satisfy the minimum conditions on experimental settings, which resulted in the data with experimental flaws. Experiment 4, in contrast, satisfied the two important requirements for the experimental settings: the uniquely felicitous context for the target structure and the necessity of the subjects' speaking in the experimental sessions. The results obtained through the experiment were exactly as the Modularity Matching Model expected, that is, the children's linguistic performance was nearly adult-like.

In this section, we have reconsidered the data in our four experiments in the light of the strict conditions on the experimental designs imposed by the claims on the experimental methodology made by Crain and Thornton (1998). As a result, some problems were found in fact in the experimental designs of Experiments 1 and 3 while Experiments 2 and 4 were found to satisfy the minimum conditions on the experimental designs. Thus in other words some of our

results are still free from artificial errors and correctly reflect the subjects' knowledge of Japanese passives.

2.1.4 Summary for the Experimental Studies

We conducted the total of four experiments on the acquisition of passives. All the results show the tendencies summarized in (22).

- (22) a. The performance of older children was generally better than that of younger children.
 b. There is a fixed order in child acquisition of Japanese passives: the direct passives first, the possessive passives next and the indirect passives last.

Admitting some nontrivial experimental flaws in Experiment 1 and Experiment 3, we still maintain our results in (22), for the results of Experiment 2 and Experiment 4 are considered to have no artificial flaws and thus to reveal the subjects' knowledge on Japanese passives.

We do not commit ourselves to the Modularity Matching Model any further, but we should note one point here which is crucial to our following discussion. Recall that the Modularity Matching Model expects children to perform like adults in their linguistic behavior when they do know about the sentence structure, the constraint, or the principle in question. If we have a close look again at our results in Experiments 2 and 4, the results tell us that the children's performance was actually adult-like in the direct passive and the possessive passive but that they failed to show adult-like performance in the indirect passive. These findings cannot be reduced to experimental flaws or performance errors, as we have intensively discussed, and in terms of

the Modularity Matching Model, these findings show that the children lack linguistic knowledge concerning indirect passives. Even if we do not rely on the assumptions in the Modularity Matching Model, it is still clear that children deal with the different types of passives distinctively.

2.2 Observational Studies

The previous section has revealed through four experiments how children acquire each type of Japanese passives. This section now reports the results of the observational studies. These observational data consist of naturalistic speech by Japanese-speaking children, all collected in a longitudinal way. Through these data, we aim to find out children's developmental process in the course of the acquisition of Japanese passives.

The data sources for investigation in this section are Noji (1973, 1974), Iwabuchi and Muraishi (1976), and the Kinjo Corpus. The first two are published data and the last is our original. The brief information and the analyses of these data are going to be reported respectively in 2.2.1. through 2.2.3.

2.2.1 Sumihare (in Noji 1973, 1974)

This section examines the published data of naturalistic speech by Sumihare. When Sumihare was born, Noji started to write down and to record his son's spontaneous speech, and the recording continued until Sumihare reached 6;0. A part of the series of the collected data, Sumihare's speeches from 2;0 to 3;11, were selected for our analysis here, for it is very hard to collect the experimental data about children around this age range.

The total number of utterances by Sumihare reported in Noji (1973, 1974) is 12,618. The following table shows the number of passive sentences among his 12,618 utterances produced by Sumihare from his

age 2;0 to 3;11.

At first glance we notice that the number of passives was extremely small, as compared with the whole number of utterances under analysis here (12,618). The total number of passives in Sumihare's speech here was fifty-four.

Among the types of passives, the direct passive was used first (in 2;1) and most frequently. The possessive passive appeared first in Sumihare's speech when he was 2;5 and there were no uses of the indirect passive.

These findings are directly related to the results of our experimental studies i.e. the late acquisition of passives in general and the order of their acquisition depending on their types.

Table 8
The Number of Passives in the Naturalistic Speech by Sumihare from 2;0 to 3;11

Age	Direct	Possessive	Indirect
2;0			
2;1	2		
2;2	9		
2;3	3		
2;4	2		
2;5	2	2	
2;6	2		
2;7	1		
2;8	2		
2;9	1		
2;10	2		
2;11			
3;0	2		
3;1	7		
3;2	3	1	
3;3	4		
3;4	1		
3;5			
3;6	2		
3;7	3		
3;8			
3;9			
3;10			
3;11	3		

2.2.2 Izumi, Jun and Kayo (in Iwabuchi and Muraishi 1976)

In this section, utterances by three children Izumi, Jun and Kayo in Iwabuchi and Muraishi (1976) are examined. Iwabuchi and Muraishi (1976) report a total number of 1,051 Japanese words in order of the Japanese syllabary which were most frequently used in these children's speech from their birth to their age of 5;5. A set of several utterances by the children is also added to the entry for every reported word in order to illustrate children's actual use of the word.

All these utterances in the entries of the words reported in Iwabuchi and Muraishi (1976) were examined for our purposes in the present study and sixteen passive sentences were obtained in total. The following table shows the number of passives found in the children's speech.

We notice that the direct passive is used more often than any other type of passive though its number itself is very small. The direct passive appeared first in the speech of all children: Jun used the direct passive first in his age 2;6-2;11 and Kayo in her age 1;6-1;11. Izumi used the direct passive first in her age 2;6-2;11 as well as the possessive passive. This does not indicate the direct passive appeared later the possessive passive in Izumi's speech, however. Still we can say that the direct passive appeared first as well as the possessive passive, though.

The interesting finding related to the acquisition order of Japanese passives is that no indirect passives appeared when each child first used the direct passives. Actually the use of the indirect passive is found only in Kayo's speech at the age range of 4;6-4;11. The possessive passive is also an example of the very rare use in the data, found only in Izumi's speech in her age 2;6-2;11, but

appeared much earlier than the indirect passive found in Kayo's speech.

Here we find the same order of the

acquisition of Japanese passives that we have found in the results of the experiments and the observations so far.

Table 9

The Number of Passives in the Naturalistic Speech by Izumi, Jun and Kayo

Age	Direct			Possessive			Indirect		
	Izumi	Jun	Kayo	Izumi	Jun	Kayo	Izumi	Jun	Kayo
1;6-1;11			2						
2;0-2;5			1						
2;6-2;11	1	1	1	1					
3;0-3;5	1		2						
3;6-3;11		1							
4;0-4;5	1	1							
4;6-4;11			1						1
5;0-5;5		1							

2.2.3 A Girl M (in the Kinjo Corpus)

In this section our original data in the Kinjo Corpus on the utterances by a girl M are analyzed. Her spontaneous speech was video-recorded by an experimenter, and the recordings began when this girl turned one and a half years old. Every recording includes her speech collected in the one to two-hour session. We have examined her speech from 1;5 to 2;5 and have counted only her utterances with verbal predicates as the results.⁸⁾

The utterances by M are summarized in Table 10. Here, we gained no passives in her utterances. These results again show the rare occurrences of passives in children's speech but nothing about differences among the types of passives, unfortunately.

Table 10

The Number of Passives in the Naturalistic Speech by M⁹⁾

Age	passive	utterances	Age	passive	utterances
1;5	0	0	1;11(3)	0	231
1;6	0	11	1;11(4)	0	214
1;7	0	11	2;0(1)	0	172
1;8(1)	0	69	2;0(2)	0	248
1;8(2)	0	13	2;0(3)	0	144
1;9(1)	0	34	2;0(4)	0	87
1;9(2)	0	38	2;1(1)	0	66
1;10(1)	0	66	2;1(2)	0	78
1;10(2)	0	152	2;1(3)	0	105
1;10(3)	0	252	2;2(1)	0	67
1;10(4)	0	139	2;2(2)	0	31
1;10(5)	0	158	2;5	0	369
1;11(1)	0	168	Total	0	3007
1;11(2)	0	84			

2.2.4 Summary for Children's Naturalistic Speech

All the observations of children's naturalistic speech show that passives appeared rarely in their utterances. This finding, together with our results found in Experiment 4 on children's production, implies passives require certain context to be used, which results in the rare occurrences of passives in the naturalistic speech. In addition, almost all results show that the direct passive is first and most frequently used in children's utterances, except M in our data Kinjo Corpus, who used no passives in her utterances under investigation. This tendency is consistent with the results we have obtained in the experiments, that is, the direct passive is easier for children to deal with than any other passive.

2.3 Summary for the Acquisition Facts of Japanese Passives

This section has examined the acquisition data of Japanese passives from different angles. According to the results of our experiments and of our observations of the naturalistic speech, children actually display the order of timing in acquiring Japanese passives, i.e., children acquire the direct passive first, the possessive passive next and the indirect passive last.

3. Discussion and Concluding Remarks

Now we have obtained the following facts from four experiments and from the naturalistic speech by five children as shown in (23).

(23) the direct > the possessive > the indirect

* The symbol ">" indicates "be acquired earlier than."

As stated in section 1, the gap found in the previous studies on child Japanese passives have motivated this study to reconsider the acquisition facts of Japanese passives. Here we pick up and discuss the methodological problems of the experiments in the previous studies on child Japanese passives to make their problems clear.

First we introduce Sugisaki's (1997) study on the acquisition of Japanese passives. He employed the Two-choice Picture Identification Task for his experiment to examine children's comprehension of Japanese passives together with AKI's data in CHILDES (MacWhinney and Snow 1985, 1990).¹⁰⁾ The task requires a subject to choose one of the two pictures presented to him/her based upon the content of the test sentence. The test sentences in his experiment were four actives, four direct passives, and four indirect passives with Vi. Seventeen children from 3-year-olds to 5-year-olds were subject to the analysis of the experiment. Based on the results of his experiment, Sugisaki divides his subjects into four groups for the analysis as in Table 11. The numbers in the table indicate the number of the children.

Table 11 The Results in Sugisaki (1997)

	Pass on Direct Passive	Fail on Direct Passive
Pass on Indirect Passive	6	4
Fail on Indirect Passive	1	6

He reports that six children showed good performance on both the direct and the indirect passives, and that another six children showed poor performance on both the direct and the indirect passives. Here, the remaining two groups of children are the key to his argument. There are four children showing good performance on the indirect passive but poor performance on the direct passive on the other hand, and these children are considered to have difficulties in dealing with the direct passives. On the one hand, there is only one child who showed good performance on the direct passive but not on the indirect passive: in other words, the child was able to deal with the direct passives but not the indirect passives. Then, comparing the number of the children who comprehended the indirect passive but not the direct passive to that of the

children who comprehended the direct passive but not the indirect passive, that is four children vs. one child, Sugisaki points out that more children have difficulties in dealing with the direct passives but not the indirect passives.

Next, we survey Minai's (2000) study on child Japanese passives. She adopted the Two-choice Picture Identification Task in her experiment just as in Sugisaki (1997). She treated the direct, the possessive, and the indirect (with both Vi and Vt) passives as the test sentences along with the 12 active controls. The number of the subjects in her experiment was 35 in total from 3-year-olds to 6-year-olds. Her results are summarized in the following Table 12. The numbers in the following table indicate the percentages of correct responses by the children.

Table 12 The Results in Minai (2000)¹¹⁾

	Age 3	Age 4	Age 5	Age 6
Active Accusative	60.42	75.00	89.58	98.48
Active Possessive	68.75	72.72	64.58	93.94
Direct Pass	54.17	60.42	60.42	69.70
Possessive Pass	37.50	45.83	56.25	59.09
Indirect Pass (Vi)	62.50	70.83	70.83	81.82
Indirect Pass (Vt)	62.50	72.92	79.17	68.18

To analyze the data, Minai pays attention to the number of NPs in each type of passive. Recall that the direct and the indirect with Vi passives on the one hand, and the possessive and the indirect with Vt passives on the other share the same number of NPs in them. Hence, according to the number of the NPs in the sentences, she compares the results in the direct passive to those in the indirect passive with Vi, and also the results in the possessive passive to those in the indirect passive with

Vt. She has found out that the children in every group showed better performance on the indirect passive with Vi and Vt than on the direct and the possessive passives in both cases of comparison. Furthermore, she reports that the number of the children who performed better on the indirect passive with Vi and Vt than on the direct and the possessive passives was quite large (25 out of 35).

The previous two studies by Sugisaki (1997) and Minai (2000) both show that the

late acquisition of the direct passive (and the possessive passive in Manai's study) based on the results of their experiments. However, Harada and Furuta (1999) show completely opposite results in the acquisition of Japanese passives. Harada and Furuta have presented three different sets of experimental data on children's production and comprehension. They employed the Elicited Production Task for their production task and the Truth-value Judgment Task for their two comprehension tasks. Through these experiments, Harada and Furuta examined how children perform on the direct, the possessive, and the indirect passives. In fact, their experiments have already been reported as Experiments 1, 2 and 3 in section 2 of this paper: their findings are thus totally identical to what we have obtained now. Details aside, their results show that the acquisition order given in (23) above consistently shows up in child Japanese passives, which indicates that children perform the best on the direct passive, then on the possessive passive, and the poorest on the indirect passive.

Here something very strange happens concerning the studies of child Japanese passives: why do all the results of the experiments in those studies not show the same facts on child Japanese passives? To search for clues to this question, we focus on the methodology of the experiments in those studies and point out their problems.

Recall that Sugisaki (1997) and Minai (2000) both adopt the Two-picture Identification Task in their experiments. Although this task is quite widely used in experiments that test children's linguistic knowledge, especially their comprehension abilities, it involves some problems in meeting experimental conditions as seen in section 2. First, the task cannot remove the

atmosphere of 'testing' from the experimental setting. In this task, children are given test sentences and are required to choose one of the two pictures which they think correctly describes the content of each test sentence: children may feel uncomfortable with the situation. Secondly, by presenting two pictures to the subject, this task always gives another (apparent) possibility to interpret the test sentence. The problem here is that the apparent possible interpretation indicated by one of the pictures is always ungrammatical, for the test sentences in these cases are all passives, which themselves are unambiguous. This situation might confuse the children in the experimental setting. Third, a problem arises when the subjects cannot understand the content of a given test sentence. For example, even if children do not give any interpretation to the sentence, they are still required to choose (or have only to choose) one of the two pictures in this task. Thus the subjects might choose the picture randomly even if they could not interpret a test sentence, and the experimenter would not know if their subjects were really able to give some interpretation to the sentence.

The Two-picture Identification Task has the problems mentioned above. Did these methodological problems ever affect their results in the experiments in Sugisaki (1997) and Minai (2000)? Concerning the experiment by Sugisaki (1997), we see no apparent problems caused by the experimental methodology. Yet the evidence that he points out as crucial, i.e. the difference in the number of the children between the two groups (four vs. one), does not seem (at least to me) decisive to claim that his results should support A-chain maturation. Next, let us look closely at the results obtained by Minai (2000). We see that there is a serious problem in her

experiment. The results of her experiment indicate that the subjects (especially in the younger groups) seem to have difficulties in dealing with not only the passives but also the actives. If this was the case, it would be impossible to expect those children to derive passives. However, she in fact used these actives as control sentences: she failed to elicit perfect performance on the controls from the children. Under this kind of experimental setting, it is difficult to expect that her results reflect children's true knowledge of Japanese passives.

Finally consider the experimental methodology in Harada and Furuta (1999). Recall that their experiments and the results are partly identical to ours. As intensively discussed earlier, our experiments are designed and conducted very carefully except one. As pointed out in section 2, one of the experiments on production (Experiment 3 in this paper) did not satisfy a requirement for the experimental methodology: it failed to set the uniquely felicitous context for the passive, and consequently it elicited poor performance from both adults and children. This situation is similar to that of Minai (2000) in that both fail to elicit perfect performance in control sentences or from the control group of adults. Hence the results of the experiments by Harada and Furuta (1999), together with those by Minai (2000), are considered not to capture children's (and adults') knowledge of Japanese passives correctly at least concerning their production abilities.

In short, there are some problems in the experimental methodology in all the studies we have surveyed so far, and what is worse, the problems seem to affect their results. However, these problems have been removed from our data concerning child Japanese passives, and our obtained facts on the

acquisition of Japanese passives support for the results by Harada and Furuta (1999), in spite of the problems in their experiments. Here we are not able to go into the details about their main arguments on A-chain maturation first proposed by Borer and Wexler (1987), but our data enable us to reconsider the claim and their arguments on the basis of more reliable facts.

Furthermore, by showing the reliable pieces of data on language acquisition as we have done in this paper, it is also possible to shed a light on the remaining issues in theoretical linguistics from the point of view of language acquisition. For example, there are two traditional conflicting views on the structures of Japanese passives called the non-uniform theory (Kuno 1973 among others) and the uniform theory (Kuroda 1965 among others). Taking it into account that a theory of grammar under the framework of Generative Grammar needs to take care of the acquisition facts as well as other linguistic facts in order to satisfy the explanatory adequacy, with sets of conclusive data on child language we possibly make some mentions on open issues such as those mentioned above. In this sense, this study indicates a way for the study of language acquisition to make a contribution to theoretical linguistics.

NOTES

*This paper is based on a part of my doctoral dissertation Furuta (2004).

1) Ninety-two children actually participated in the pre-test which preceded the main experimental session. Eleven children among them, however, were excluded from the subjects for the main session because they failed in the pre-test.

2) In an indirect passive with Vt, the surface subject is the affectee and the NP with the accusative Case marker, the object, is the patient. Thus the following sentence means that *Mike* but not *John* was hit by *Mary* but that the incident affected *John* in some way. If one knows the relationship between the subject *John* and the object *Mike* in the sentence, say they are friends or brothers, the sentence is perfectly acceptable.

John-wa Mary-ni Mike-o tatak-are-ta.
John-TOP Mary-by Mike-ACC hit-
PASS-PAST
'John was affected by Mary's hitting
Mike.'

On the other hand, an indirect passive with Vi has no NP bearing the theta role of the patient in it. The following sentence means that *Hanako* died and that it affected *Taro*. *Taro* is the affectee but not the patient in the sentence.

Taroo-wa Hanako-ni sin-are-ta.
Taro-TOP Hanako-by die-PASS-PAST
'Taro was affected by Hanako's death.'

In this way, the indirect passive with Vt and the indirect passive with Vi differ in the existence of the patient in the sentence, and thus we asked for the agent in the case of the indirect passive with Vi and for both the agent and the patient in the case of the indirect passive with Vt sentences.

3) All the test sentences in this experiment

include the subjects with the topic marker *wa* rather than the nominative Case marker *ga*. This *wa* refers to old information as the experimenter had already introduced all the NPs in the test sentences (the names of the characters on the pictures) to the subjects in explaining the task. Even if one takes account of the movement analysis of the topic NPs in Japanese as claimed in Minai (1998, 2000), the results of the experiment are still independent of this topic marker in the test sentences, for this *wa* was already used in the pre-test where the test sentences were actives and it was also used not only for some of the test sentences but for all of them in the main test.

4) Among fifty-four children that actually participated in the experimental session, thirty children passed the pre-test. Thus twenty-four children were excluded from the subjects for the main session and were not counted for the results.

5) All the test sentences in this experiment include the subjects with the topic marker *wa*. As in Experiment 1, this topic marker indicates old information. In Experiment 2, the experimenter had told short picture stories and introduced all the NPs in the test sentences (the names of the characters in the stories) to the subjects. Here the same reasoning as in Experiment 1 is true of Experiment 2. That is, this topic marker is not to blame for whatever results of the experiment here might be as this *wa* was already used in the pre-test where the test sentences were actives and it was also used for all of the test sentences in the main test. The movement analysis of the topic NPs in Japanese is thus an irrelevant issue here.

6) Ninety-two children actually participated in the pre-test which preceded the main experimental session. Eleven children among them, however, were excluded from the subjects for

- the main session because of their failure in the pre-test. Thus the total number of the subjects counted in the results was eighty-one, the same number as in Experiment 1.
- 7) A total of forty-six children participated in the experiment but twenty-one out of them were excluded from the results because of their failure to meet the criterion of the experiment checked in the pre-test.
- 8) Compound verbs are counted as one verbal predicate in the results.
- 9) The numbers in the parentheses indicate the different sessions carried out in the same month.
- 10) Sugisaki (1997) has reported that only two passives appear in AKI's data. Since there are such a small number of child passive utterances, which are also repetitions of an adult's utterances, he considers the data are not reliable enough as a fact. These two examples are direct passives, to give a notice.
- 11) The results presented here are cited from Table 1 in Minai (2000: 344).
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