Children’s Acquisition of Clefts Revisited: New Evidence from Japanese

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1. Introduction

The aim of this study is to provide a new observation of children’s acquisition of cleft sentences in Japanese. That is, Japanese children find object clefts easier than subject clefts.

It is widely known that subject-extracted constructions are easier than object-extracted constructions (henceforth, the subject-extraction advantage) in a number of head-initial languages (e.g. English, Italian, Greek, and Hebrew). The subject-extraction advantage has been observed in various constructions, such as relative clauses (de Villiers et al. 1979, Friedmann et al. 2008, Guasti et al. 2012, a.o.), wh-questions (Stromswold 1995, Tyack and Ingram 1977, Tavakolian 1981, and Philip et al. 2000), sluicing (Mateu et al. 2018), and clefts (Bever 1970, Lempert and Kinsbourne 1980).

On the other hand, in Japanese, previous findings are mixed. Japanese children perform better at subject clefts than object clefts (K. Sano 1977, Dansako and Mizumoto 2007), whereas they perform better at object relative clauses than subject relative clauses (Harada et al. 1976, Hakuta 1981, Suzuki 2011).

This study focuses on Japanese children’s comprehension of subject clefts and object clefts. Clefts (exemplified in 1-4) contain a presuppositional clause, which states old information, and a focused phrase, which states new

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1 The syntactic structure of Japanese clefts is controversial in various previous studies. First, Hiraiwa and Ishihara (2002, 2012) propose that clefts including case-marked focused phrases involve an extraction, but clefts including non-case-marked focused phrases do not involve an extraction. On the other hand, Kizu (2005) proposes that even non-case-marked clefts include an extraction of a null operator. In this way, the existence of an extraction in Japanese clefts is still under discussion.

information. One of the differences between Japanese and English clefts is that a presuppositional clause comes first in Japanese whereas a focused phrase comes first in English.

\[\text{Presuppositional clause} \quad \text{focused phrase}\]

(1) Subject Cleft: \[t_i \text{ neko-}\text{o oikake-teiru no wa] inu(-ga), da.}\]
\[\text{cat-Acc chase-Prog C Top dog-Nom Cop}\]
\text{‘It is a dog that is chasing the cat.’}\n
(2) Object Cleft: \[\text{Inu-ga} \quad t_j \text{ oikake-teiru no wa] neko(-o)_j da.}\]
\[\text{dog-Nom chase-Prog C Top cat-Acc Cop}\]
\text{‘It is a cat that the dog is chasing.’}\n
\[\text{Focused phrase} \quad \text{Presuppositional clause}\]

(3) Subject Cleft: \text{It is a dog} [that } t_i \text{ is chasing the cat].\n
(4) Object Cleft: \text{It is a cat} [that the dog is chasing } t_j \text{].\n
Although previous studies of clefts report that children have difficulty with object clefts, Aravind et al. (2016, 2018, English) and Ohba and Yamakoshi (2018, Japanese) recently report that children are actually able to comprehend both types of clefts (like adults do) when felicitous contexts are provided. However, we identify some methodological concerns with these studies and propose that their results are a false positive. We demonstrate that Japanese children find object clefts easier than subject clefts, which is an opposite observation from previous studies in Japanese (K. Sano 1977 and Dansako and Mizumoto 2007).

The outline of this paper is as follows. In Section 2, we provide a summary of previous studies and point out their flaws. In Section 3, we show our experiment and discuss the results in detail. Finally, Section 4 concludes this paper.

2. Previous Acquisition Studies

Aravind et al. (2016, 2018) showed that English-speaking children comprehended both subject and object clefts very well when felicitous contexts were provided (84% vs 83%). However, it is possible that the English-speaking children were able to answer correctly by using an alternative strategy. Consider a sample context and a subject cleft in (5). The left picture is provided with the context in (5a), and the right picture is provided with the test sentence in (5b). The felicitous context makes a cleft natural; the presuppositional clause of the cleft contains a statement which should be already mentioned, and the felicitous context satisfies this requirement.
(5) Example context and subject cleft (true condition)  
  a. Context: Something is chasing the cat. I wonder what it is.  
  b. Subject cleft: It’s a dog [that is chasing the cat].  

It is possible that children were able to answer “true” only by hearing the first part of the cleft, “it’s a dog.” This is because the hidden animal, the dog, matches the focus phrase of the subject cleft. However, this strategy does not apply to Japanese because a focused phrase comes at the end of the sentence in Japanese as shown in (1) and (2). Therefore, the possible strategy for the English-speaking children is not a problem for Japanese.

Ohba and Yamakoshi (2018) also report that Japanese children comprehend both subject and object clefts very well when felicitous contexts are provided, following Aravind et al. (2016). Specifically, correct acceptance rates of both types of clefts were more than 90% and correct rejection rates were more than 85%. (6) and (7) show sample contexts and subject/object clefts in false conditions.

(6) Example of a context and a subject cleft (False condition)  
     Look bear-Nom someone-Acc poke-Prog SFP  
     ‘Look! A bear is poking someone.’  

  b. Subject Cleft: [Kumasan-o tutui-teiru no wa] pandasan da yo.  
     Bear-Acc poke-Prog C Top panda Cop SFP  
     ‘It is a panda that is poking the bear.’
(7) Example of a context and an object cleft (False condition)

   Look someone-Nom pig-Acc chase-Prog SFP
   ‘Look! Someone is chasing the pig.’

   Pig-Nom chase-Prog C Top lion Cop SFP
   ‘It is a lion that the pig is chasing.

Although Japanese children performed very well with both subject and object clefts, it was possible that the children used an alternative strategy other than the knowledge of clefts. More specifically, the children were able to answer correctly only by hearing the first case-marked NP of the cleft. Let us explain the case of the subject cleft (6 above).

When a child hears the accusative-case-marked NP, kumasan-o ‘bear-Acc’ at the beginning of the sentence, the child may expect the following: the bear has the accusative case marker at the beginning of the cleft, thus the bear should be a patient, but the picture depicts a bear as an agent. Because the theta role of the first case-marked NP, a patient, and the depiction of the bear in the picture do not match, this sentence can easily be falsified. Moreover, the upcoming focus phrase is always the animal which has not been mentioned, so the second NP is irrelevant to judge the truth value. The same strategy works for object clefts as well. If the Japanese children used this strategy, Ohba and Yamakoshi (2018) did not test children’s actual knowledge of clefts precisely.

To summarize, while previous studies seem to show good knowledge of clefts by English and Japanese children, it is possible that they used alternative strategies to produce correct answers.

3. Experiment

The purpose of this experiment is to test Japanese children in a way that removes the alternative strategies and examines the children’s actual knowledge of clefts.
3.1. Method and Test Sentences

In order to remove these alternative strategies, we used pictures including three animals as shown in (8) and (9) (henceforth, the three-animal condition) in the truth value judgment task (Crain and Thornton 1998). We hid two animals in the picture because the two hidden animals are candidates for the focus of a cleft, which bears new information.

(8) Example of a context and a subject cleft (false condition)

a. Context: Mite! Dareka-ga zousan-o arat-tei te,
Look someone-Nom elephant-Acc wash-Prog and
zousan-ga dareka-o arat-tei ru yo.
elephant-Nom someone-Acc wash-Prog SFP
‘Look! Someone is washing the elephant and the elephant is washing someone.’

b. [Zousan-o arat-tei ru no wa] usisan da yo. (False)
Elephant-Acc wash-Prog C Top cow Cop SFP
‘It is a cow that is washing the elephant.’

c. The pictures used for (8a) and (8b)

(9) Example of a context and an object cleft (false condition)

a. Context: Mite! Dareka-ga butasan-o arat- tei te,
Look someone-Nom pig-Acc wash-Prog and
butasan-ga dareka-o arat-tei ru yo.
pig-Nom someone-Acc wash-Prog SFP
‘Look! Someone is washing the pig and the pig is washing someone.’

b. [Butasan-ga arat-tei ru no wa] inusan da yo. (False)
pig-Nom wash-Prog C Top dog Cop SFP
‘It is a dog that the pig is washing.’

c. The pictures used for (9a) and (9b)
In the three-animal condition, Japanese children need to listen until the end of the sentence to answer correctly. In the case of the subject cleft in (8), when a child hears the accusative case-marked NP, *zousan-o* ‘elephant-Acc,’ the child may expect that the elephant should be a patient because it is accusative marked. Then, the child hears the focus phrase, *usisan* ‘cow.’ Here, the second nominal is crucially relevant to judging the truth value of the cleft. That is, the child has to notice that the animal who is washing the elephant is not the cow, but the dog. In this way, we exclude a possibility that Japanese children produce correct answers only by hearing the first case-marked NPs.

### 3.2. Participants and Materials

We tested 23 Japanese monolingual children aged from 4;0 to 6;7 (Mean: 5;2). The materials included 4 subject clefts, 4 object clefts, and 8 declarative sentences. Half of each sentence type were true conditions and the other half were false conditions. We used two verbs throughout this experiment, *arau* ‘wash’ and *oikakeru* ‘chase.’ The reason why we tested declarative sentences shown in (10) is to make sure that the children do not have difficulty with the three-animal condition itself.

(10) Example context and a declarative sentence (false condition)

a. Context: Look! Someone is chasing the mouse and the mouse is chasing someone.

b. Declarative sentence: Nezumisan-ga osarusan-o oikake-teiru yo.
   Mouse-Nom monkey-Acc chase-Prog SFP
   ‘The mouse is chasing the monkey.’

### 3.3. Results

Table 1 and Figure 1 show the percentages of children’s correct responses to each sentence type.

<table>
<thead>
<tr>
<th>Age (Number)</th>
<th>Declarative sentences</th>
<th>Object Clefts</th>
<th>Subject Clefts</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-year-olds (N=11)</td>
<td>96.6% (85/88)</td>
<td>88.6% (39/44)</td>
<td>59.1% (26/44)</td>
</tr>
<tr>
<td>5-year-olds (N=8)</td>
<td>96.9% (62/64)</td>
<td>100% (32/32)</td>
<td>56.3% (18/32)</td>
</tr>
<tr>
<td>6-year-olds (N=4)</td>
<td>100% (32/32)</td>
<td>93.8% (15/16)</td>
<td>81.3% (13/16)</td>
</tr>
<tr>
<td>Total (N=23)</td>
<td>97.3% (179/184)</td>
<td>93.5% (86/92)</td>
<td>62.0% (57/92)</td>
</tr>
</tbody>
</table>

Table 1: The percentages of children’s correct responses
First, let us look at the correct response rates to declarative sentences. As shown in the Table 1 and Figure 1, the children of all age groups performed very well with the declarative sentences. Hence, it seems that the 4- to 6-year-old children did not have difficulty with the three-animal condition itself.

Next, let us see the results of the clefts. As for the object clefts, the correct response rates of all age groups were very high. Even 4-year-olds answered correctly 88.6% of the time (39/44). On the other hand, as for subject clefts, 4- and 5-year-olds’ accuracy rates was only at chance (59.1% and 56.3% respectively). We found statistically significant differences between the object clefts and the subject clefts in the results of the 4- and 5-year-olds ($p = 0.01$ and $p = 0.008$ respectively), but not in the results of the 6-year-olds ($p = 0.39$). In total, there is a statistically significant difference between the object and subject clefts ($F(1, 22) = 15.519, p = 0.000303$).

Our finding is different from the previous acquisition studies in two ways; this is different from the results of K. Sano (1977) and Dansako and Mizumoto (2007), who report that Japanese children are better at subject clefts, and this is also different from Ohba and Yamakoshi (2018), who report that Japanese children do not have any difficulty with clefts. We propose that our three-animal condition corrects the flaws of the previous studies and demonstrates that Japanese children do indeed have difficulty with subject clefts.

3.4. Discussion

Let us discuss why Japanese children show the subject-object asymmetry in the comprehension of cleft sentences. We assume, consistent with much
previous literature, that Japanese children take the first NP to be the agent and the second NP to be the patient (henceforth, the agent-first strategy) following Hayashibe (1975) and Hakuta (1981). Let us see how this strategy explains the reason for the children’s better performance of the object clefts.

(11) Object Cleft: [Butasan-ga arat-teiru no wa] inusan da yo. 
Pig-Nom wash-Prog C Top dog Cop SFP  
‘It is a dog that the pig is washing.’

(12) Subject Cleft: [Zousan-o arat-teiru no wa] usisan da yo.  
Elephant-Acc wash-Prog C Top cow Cop SFP  
‘It is a cow that is washing the elephant.’

In the object cleft (11), the first NP is an agent and the second NP is a patient. On the other hand, in the subject cleft (12), the first NP is a patient, and the second NP is an agent. If a child interprets the first NP as an agent and the second NP as a patient, he/she assigns opposite theta roles to the arguments in the subject cleft. Therefore, this strategy causes a low correct response only for the subject clefts.

If this is correct, then we might ask why children used the agent-first strategy in the current experiment but not in the previous experiment involving the two-animal condition (i.e., Ohba and Yamakoshi, 2018). If Japanese children use the agent-first strategy in the two-animal condition, their performance on subject clefts should have been degraded. We suggest that children may rely on the agent-first strategy when they cannot use their linguistic knowledge under pressure. Let us show you what kind of pressure there was in our current experiment. Compare the previous two-animal condition in (13b) and the current three-animal condition in (13c) with the object cleft in (13a).

(13) a. [Butasan-ga oikake-teiru no wa] lionsan da yo. (False)  
Pig-Nom chase-Prog C Top lion Cop SFP  
‘It is a lion that the pig is chasing.’

Recall that when the object cleft in (13a) is presented with the picture in (13b), a child is able to answer “false” just by hearing the nominative-marked NP,
butasan-ga ‘pig-Nom,’ because of the mismatch of theta roles of the first NP and the picture. Therefore, the second NP is irrelevant to the truth value in the two-animal condition. On the other hand, when the picture in (13c) is presented, the second NP comes to be crucially relevant to the truth value. This is because the first nominative NP, the pig, is both an agent and a patient of the chasing event and the truth value cannot be judged until the child hears the focused phrase. In other words, the first encountered NP is nominative marked, but it is depicted as both a patient and an agent in the picture. Therefore, it is possible that this causes ambiguity and uncertainty for children, and this pushes children to default to the agent-first strategy.

Furthermore, children’s agent-first strategy has been observed in various other constructions in Japanese. For instance, Hayashibe (1975) and Otsu (1994) report that Japanese children tend to interpret sentence-initial NPs as agents in scrambled sentences when scrambled sentences are presented without contexts. Otsu (1984) examined scrambled sentences with and without contexts. (14a) is a context and (14b) is a scrambled sentence, where the first NP is the accusative marked NP, ahirusan-o ‘duck-Acc.’

   Park-at duck-Nom exist-Past
   ‘There was a duck in the garden.’

   [Patient] [Agent]

b. (Sono) Ahirusan-o butasan-ga osimasi-ta.
   that duck-Acc pig-Nom push-Past
   ‘A pig pushed the duck.’

Hayashibe (1975) and Otsu (1994) suggest that Japanese children assign an agent theta role to the first accusative NP, and this causes low performance for scrambling in Japanese. 2

Moreover, Suzuki (2011) reports that Japanese children’s comprehension of object relative clauses was better than subject relative clauses when the children have difficulty in using the case markers. (15a) and (15b) are the tests of case markers and (16a) and (16b) are the tests of relative clauses. The case marker test involved sentences with just one nominal, either nominative or accusative marked. Children therefore had to use case marking information to correctly respond. As for the experimental task, Suzuki (2011) used different types of a picture selection task for each test. For the case marker test, Suzuki (2011) provided two pictures depicting opposite events (i.e. a panda is scratching a bear

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2 Although Otsu (1994) showed Japanese children’s difficulty with scrambling, the main finding of Otsu’s (1994) experiment is that Japanese children’s comprehension of scrambling is improved by topicalizing the first accusative case-marked NPs with attaching sono ‘that.’ This shows that the Japanese children do not use the agent-first strategy when the first NPs are topicalized.
and the bear is scratching the panda). On the other hand, for the relative clause test, Suzuki (2011) provided one picture including three pairs of bears and pandas. As for the first pair, the animals are doing nothing. As for the second pair, the bear is scratching the panda, and as for the third pair, the panda is scratching the bear. Here, the children’s task was to choose either a particular animal or a scene that matches the given relative clause.

(15) a. Context: Kuma to panda-ga imasu.  
    bear and panda-Nom exist
    ‘There are a bear and a panda.’

    b. A test of the nominative case marker: Kuma-ga hikkaki-masi-ta.  
    Bear-Nom scratch-Polite-Past
    ‘The bear scratched (the panda).’

    c. A test of the accusative case marker: Kuma-o hikkaki-masi-ta.  
    Bear-Acc scratch-Polite-Past
    ‘(The panda) scratched the bear.’

(16) a. Context: Kuma to panda-ga imasu.  
    bear and panda-Nom exist
    ‘There are a bear and a panda.’

    b. Object relative clause: [kuma-ga tī hikkaita] panda
    bear-Nom scratched panda
    ‘The panda which a bear scratched’

    c. Subject relative clause: [tī kuma-o hikkaita] panda
    bear-Acc scratched panda
    ‘The panda which scratched a bear’

Suzuki (2011) reports that children who have difficulty with the sentences such as (15c) also have difficulty with the subject relative clauses such as (16c). On the other hand, they perform very well with the object relative clauses compared to the subject relative clauses (80.0% vs 48.8%). This shows that children have difficulty with sentence-initial accusative NPs regardless of the different sentence types. Suzuki (2011) explains this asymmetry by the agent-first strategy because the first NP in an object relative clause is an agent whereas the first NP in a subject relative clause is a patient.

Moreover, the agent-first strategy by children has been reported in several other languages. Huang et al. (2013) report on Chinese passives, Bever (1970) and Deen et al. (2018) report on English passives, and Shin and Deen (forthcoming) report on Korean passives.
Finally, let us summarize our findings. First, the 6-year-olds comprehend both subject clefts and object clefts very well. Hence, we consider that they have the adult-like knowledge of clefts, and they do not rely on the agent-first strategy.

As for the 4- and 5-year-olds, they showed a subject-object asymmetry in that they performed poorly on the subject clefts compared to the object clefts. We suggest that their degraded performance on the subject clefts was derived by the agent-first strategy.

On the other hand, because the 4- and 5-year-olds showed high accuracy on the object clefts, it seems that they have adult-like knowledge of object clefts. However, it is also possible that the 4- and 5-year-olds comprehend object clefts with the agent-first strategy. Consider the example of the object cleft in (17).

(17) Example of an object cleft

\[
\begin{array}{c|c}
\text{Agent} & \text{Patient} \\
\hline
\text{Butasan-ga oikake-teiru no wa} & \text{lionsan da yo.} \\
\text{Pig-Nom chase-Prog C Top lion Cop SFP} & \\
\end{array}
\]

‘It is a lion that the pig is chasing.’

Because the first NP of the object cleft is an agent, it is possible that the 4- and 5- year-olds assign an agent theta role to the first NP and a patient theta role to the second NP regardless of the syntax of clefts. Hence, it is possible that the Japanese children performed very well with the object clefts because of the agent-first strategy. We leave this possibility for future research.

4. Conclusion

Our contributions to the children’s comprehension of clefts are two-fold. First, this study demonstrates that the previous two-animal condition did not precisely test children’s knowledge of clefts and that our three-animal condition was able to correct this flaw. Second, this study also showed the opposite subject-object asymmetry from previous studies: Japanese 4- and 5-year-olds performed much better on object clefts compared to subject clefts. We analyzed that the degraded performance on subject clefts as derived from the agent-first strategy, which is widely observed in children’s acquisition of various constructions.

References


