

## A Note on Japanese-speaking Children's Interpretation of Superlatives\*

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### 1. Introduction

This note presents an experimental study about whether Japanese-speaking children can appropriately interpret ambiguous superlative sentences on the basis of context. Superlative sentences such as (1) have been considered to have two kinds of readings: Absolute reading (A-reading) in (2a) and Comparative reading (C-reading) in (2b) (Heim (1985, 1999), Jackendoff (1972), Ross (1964), Szabolcsi (1986), among others).<sup>1</sup>

(1) a. English

John climbed the highest mountain.

b. Japanese

John-ga itiban takai yama-ni nobot-ta.

John-Nom most high mountain-to climb-Past

‘John climbed the highest mountain.’

(2) John climbed the highest mountain.

- a. Absolute reading: John climbed the highest mountain among contextually relevant mountains.

‘John climbed a higher mountain than *any other mountains*.’

- b. Comparative reading: the mountain that John climbed is higher than any of mountains that other contextually relevant climbers climbed.

‘John climbed a higher mountain than *any other climbers*.’

The previous studies have observed that whether such superlative sentences have either the A- or C-reading depends on their comparison set. According to Kennedy (1997), the comparison set is a set of objects considered when one evaluates whether an object among them has a certain property (e.g. *high*). It has consequences for the truth value not only of superlative sentences but also of sentences which contain gradable adjectives in the positive form like (3).

(3) John is tall.

Suppose that John is 6 feet. When the comparison set consists of boys, (3) is true. On the other hand, when the comparison set consists of basketball players, (3) is false. The comparison set can be overtly expressed. In the former case, one can say “John is tall for a boy.” In the latter case, one can say “John is tall for a basketball player.” Similarly, the interpretation of superlative sentences depends on the comparison set. Speaking of the

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<sup>1</sup> Two theories have been proposed regarding the derivation of the A- and C-readings: DP-internal *-est* theory (Farkas & Kiss (2000) and Sharvit and Stateva (2002)) and DP-external *-est* theory (Heim (1985, 1999) and Szabolcsi (1986)). This note does not consider the derivation of the readings.

sentences in (1), when the comparison set consists of contextually relevant mountains, they yield the A-reading. On the other hand, when the comparison set consists of mountains climbed by each relevant climber, they yield the C-reading. The comparison set can be expressed overtly also in superlative sentences as shown in (4) and (5).

(4) A-reading

a. English

John climbed the highest mountain *among the mountains*.

b. Japanese

John-wa *yama-no naka-de* itiban takai yama-ni nobot-ta.

John-Top mountain-Gen among-at most high mountain-to climb-Past

‘John climbed the highest mountain among the mountains.’

(5) C-reading

a. English

John climbed the highest mountain *among the boys*.

b. Japanese

John-wa *otokonoko-no naka-de* itiban takai yama-ni nobot-ta.

John-Top boy-Gen among-at most high mountain-to climb-Past

‘John climbed the highest mountain among the boys.’

When the comparison set is not expressed overtly as in (1), one has to define it on the basis of context.

In order to examine whether children can use contextual information when defining a comparison set, I investigated Japanese-speaking children’s interpretation of ambiguous superlative sentences, which shows that many children around six years old cannot define the comparison set appropriately on the basis of context. This note suggests a possible explanation according to which children’s inability to define the comparison set can be an experimental artifact.

The organization is as follows. Section 2 shows characteristic features of Japanese superlative constructions. Section 3 reports an experiment on Japanese-speaking children’s interpretation of ambiguous superlative sentences. Section 4 reviews previous studies on children’s ability to define a comparison set and discusses the reason why children cannot use contextual information when defining a comparison set.

## 2. Japanese Superlative Construction

Japanese does not have adjectival inflection to mark superlatives unlike English. As shown in (6) and (7), Japanese adjectives in non-comparative and comparative sentences have the same form that adjectives in the superlative sentence have.

(6) a. Kono yama-wa takai.

this mountain-Top high

‘This mountain is high.’

b. Kono yama-wa ano yama-yori takai.

this mountain-Top that mountain-than high

‘This mountain is higher than that mountain.’

(7) John-ga itiban/mottomo takai yama-ni nobot-ta.

John-Nom most high mountain-to climb-Past

‘John climbed the highest mountain.’

Besides, Japanese superlatives are formed with an independent superlative marker *itiban* or *mottomo* ‘most.’ The literal meaning of *itiban* is ‘first,’ and it is also used for counting order. On the other hand, *mottomo* is used only as a superlative marker.<sup>2,3,4</sup> The superlative marker *itiban* can occur in a position apart from its associate gradable adjective as shown in (8). As for the interpretation of (7), Japanese adults have no preference for either the A- or C-reading. On the other hand, as for the interpretation of (8), where the superlative marker *itiban* is scrambled to the first position within its clause, they prefer to interpret it as the C-reading.<sup>5</sup>

- (8) *Itiban* John-ga takai yama-ni nobot-ta.  
 most John-nom high mountain-to climb-Past  
 ‘John climbed the highest mountain.’

As we have seen in the last section, a comparison set has consequences for determining the interpretation of superlatives. When the comparison set consists of contextually relevant mountains, (7) yields the A-reading. For example, when John climbed a mountain that is the highest among relevant mountains (e.g. Mt. Everest), it yields the A-reading. On the other hand, when the comparison set consists of mountains climbed by each relevant climber, it yields the C-reading. For example, when John climbed a mountain that is the highest among all

<sup>2</sup> The superlative markers *itiban* and *mottomo* have the same meaning. However, compared to *itiban*, *mottomo* is a formal expression, and it is generally not used by young Japanese-speaking children. This note focuses on children’s interpretation of superlatives with *itiban*.

<sup>3</sup> *Mottomo* actually has another use. Besides ‘most,’ it has a meaning that something is sensible as illustrated in (i). However, *mottomo* ‘most’ and *mottomo* ‘sensible’ have different Chinese characters. It is supposed that *mottomo* ‘sensible’ is a different word from the superlative marker *mottomo*.

- (i) Kare-no iu koto-wa mottomo-da.  
 he-Gen say thing-Top sensible-Cop  
 ‘What he says is sensible.’

<sup>4</sup> In Japanese comparative constructions, a comparative marker *motto* ‘more’ is used, modifying gradable adjectives as shown in (i).

- (i) Kono yama-wa ano yama yori motto takai.  
 this mountain-Top that mountain than more high  
 ‘This mountain is higher than that mountain.’

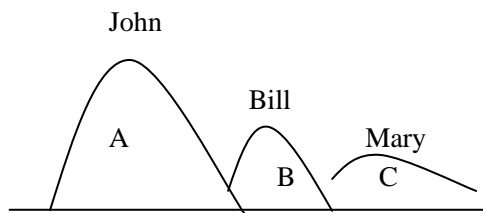
It appears that *motto* is a root from which the superlative marker *mottomo* is derived. This observation supports the *Comparative-Superlative Generalization (CSG)* in Bobaljik (2007). The generalization says that if the comparative of an adjective is suppletive with respect to the basic (positive) form, then the superlative is also suppletive. For example, the comparative of *bad* is *worse*, a canonical example of suppletion. In conformity with CSG, the superlative form is derived from the same root as the comparative: *worst*. If we consider *motto* as the suppletive form of an adjective *ooi* ‘many’ ‘much,’ this case is considered to be another piece of evidence supporting CSG: *ooi – motto – mottomo*.

<sup>5</sup> Aihara (2009) argues that while (7) has the A- and C-readings, (8) has only the C-reading. Considering the results of a survey of Japanese adults’ interpretation of (8) which I conducted, his argument that (8) does not have the A-reading seems too strong. Following Aihara (2009), in the survey I used a scenario which Heim (1999) introduces: Mt. A is higher than both Mt. B and Mt. C. Mt. B is higher than Mt. C. Both John and Bill climbed Mt. A, Bill and Mary climbed Mt. B, and Mary climbed Mt. C. In this scenario, if (8) has only the A-reading, “John climbed a higher mountain than any other mountains,” one should accept it because the comparison set consists of contextually relevant mountains (Mt. A, Mt. B and Mt. C) and John climbed Mt. A, which is higher than the other mountains. If one interprets (8) as a C-reading such that John climbed a higher mountain than any other climbers, s/he should reject it because the comparison set consists of mountains climbed by the contextually relevant climbers (Mt. A, Mt. B and Mt. C) and the mountain which John climbed is not higher than the mountains which Bill climbed. In this situation, although Aihara (2009) does not point out, another C-reading is possible: John and Bill tied for the best climber. If one interprets (8) as such a C-reading, s/he should accept it. Lastly, if (8) has both the A- and C-readings, thanks to the Principle of Charity, one should choose an interpretation which makes (8) true and accept it. A survey conducted in Aihara (2009) shows that (8) is judged unacceptable in this scenario, and he argues that (8) has only the C-reading, “John climbed a higher mountain than any other climber.” However, the survey which I conducted shows that the acceptance rates are 66.7% and the rejection rates are 25% (remaining rates indicate subject’s failure to judge whether (8) is true or false). Only with this judgment test is it impossible to determine whether their acceptance is caused by their A- or C-reading such that John and Bill tied for the best climber. I assume here that (8) has both the A- and C-readings but that Japanese adults prefer to interpret (8) as the C-reading.

mountains climbed by relevant climbers (e.g. John climbed a 6000 ft mountain, Bill climbed a 5000 ft mountain and Mary climbed a 4000 ft mountain), it yields the C-reading. In this case, the mountain which John climbed is not necessarily the highest one among the relevant mountains; John does not have to climb Mt. Everest.

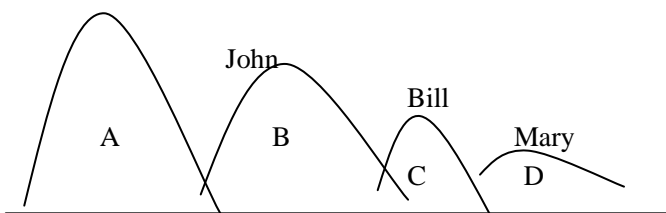
The comparison set of the A- and C-readings can be the same under a situation like (9). In the Situation A, the comparison set consists of Mt. A, Mt. B and Mt. C. In this case, the A- and C-readings happen to be the same and (7) is unambiguously interpreted as “John climbed a higher mountain than the other mountains climbed by Bill and Mary. The truth value of (7) is true.

- (9) Situation A: Mt. A is higher than both Mt. B and Mt. C. John climbed Mt. A, Bill climbed Mt. B, and Mary climbed Mt. C.



By contrast, under a situation like (10), the comparison set of the A- and C-readings is different, and the interpretation of (7) is ambiguous. When the comparison set consists of the contextually relevant mountains (Mt. A, Mt. B, Mt. C and Mt. D), (7) yields the A-reading such that John climbed the highest mountain among all the mountains. In this case, the truth value of (7) is false because John did not climb Mt. A. On the other hand, when the comparison set consists of the mountains climbed by the three climbers (Mt. B, Mt. C and Mt. D), (7) yields the C-reading such that John climbed a mountain that is the highest among the mountains climbed. In this case, the truth value of (7) is true because John climbed a higher mountain than the mountains climbed by Bill and Mary. Whether the comparison set consists of all the mountains or of the mountains climbed is determined on the basis of context. If the context focuses on all the mountains, the comparison set consists of the four mountains. If it focuses on the mountains climbed, the comparison set consists of the mountains climbed.

- (10) Situation B: Mt. A is higher than Mt. B, Mt. C and Mt. D. Mt. B is higher than Mt. C and Mt. D. Mt. C is higher than Mt. D. John climbed Mt. B, Bill climbed Mt. C, and Mary climbed Mt. D.



Thus, in order to interpret superlatives whose comparison set is ambiguous, we have to define the comparison set on the basis of context. The next section investigates whether children can appropriately define the comparison set using contextual information and interpret the ambiguous superlatives.

### 3. Experiment

This section investigates whether Japanese-speaking children can use contextual information to define a comparison set when they interpret ambiguous superlatives.

#### 3.1. Subjects

15 Japanese-speaking children (5;5-6;10, mean age: 6;6) took part in the experiment. Five Japanese-speaking adults were also examined as controls.

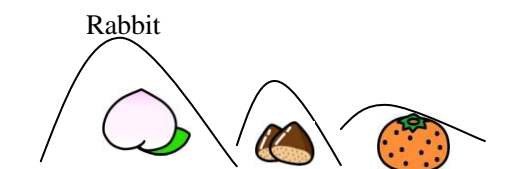
### 3.2. Design

I adopted the Truth Value Judgment Task (TVJT) (Crain and Thornton (1998)). The TVJT consists of two parts. First, an experimenter tells a story, using slides made with Power Point presented on a computer screen. At that time, a puppet (in this case Pikachu) watches the slides alongside child subjects. Next, at the end of the story, the puppet makes a statement (a stimulus sentence) about what he thinks has happened in the story. The subjects are asked to judge whether the puppet's statement is 'right,' in which case the puppet gets a strawberry as a reward, or the puppet is 'wrong,' in which case he gets a green pepper as a punishment. When the subjects reject the puppet's statement, they are asked for the reason for their rejection.

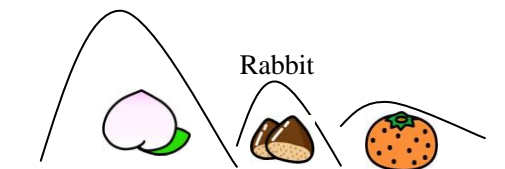
A pretest examines whether child subjects can interpret (11) under situations where a comparison set is unambiguous as illustrated in (12) and (13).<sup>6</sup>

- (11) Usagi-ga itiban takai yama-ni nobot-ta.  
 rabbit-Nom most high mountain-to climb-Past  
 'A rabbit climbed the highest mountain.' (the A-/C-reading)

- (12) Situation I: There are three mountains. Mt. Peach is higher than both Mt. Chestnut and Mt. Orange. A rabbit climbs Mt. Peach.



- (13) Situation II: There are three mountains. Mt. Peach is higher than both Mt. Chestnut and Mt. Orange. A rabbit climbs Mt. Chestnut.



Under the Situations I and II, there is only one climber, and the C-reading is impossible. The comparison set here consists of all the mountains. Thus, under these situations (11) has an unambiguous interpretation: the rabbit climbed a higher mountain than any other mountains (the A-reading). In the Situation I, Japanese-speaking adults are considered to accept (11) because the rabbit climbed the highest mountain among the three mountains. On the

<sup>6</sup> In the experiment, I did not put any phonological pause in superlative sentences. Aihara (2009) claims that superlatives vary their interpretation according to the way the sentence is phrased prosodically. When an explicit phonological pause is put between *John-ga* and *itiban* as (i), the superlative construction has both the A- and C- readings. On the other hand, when an explicit pause is put between *itiban* and *takai* as (ii), it has only the C-reading.

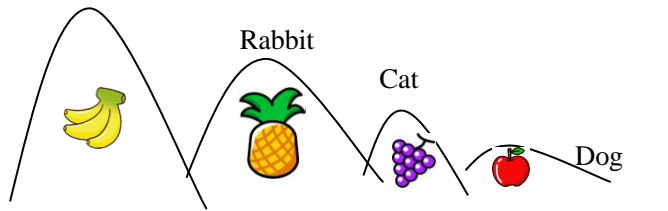
- (i) John-ga // itiban takai yama-ni nobot-ta.  
 John-Nom most high mountain-to climb-PAST  
 'John climbed the highest mountain.' (the A-/C-reading)
- (ii) John-ga itiban // takai yama-ni nobot-ta.  
 John-NOM most high mountain-to climb-PAST  
 'John climbed the highest mountain.' (#the A-/C-reading)

In a pilot experiment, I examined whether children are sensitive to the prosodical difference between (i) and (ii), and found that children cannot distinguish them at all.

other hand, in the Situation II, they are considered to reject (11) because the mountain that the rabbit climbed is not the highest one.

In the main session, I examined whether Japanese-speaking children can appropriately interpret (11) on the basis of context under a situation where a comparison is ambiguous as illustrated in (14).

- (14) Situation III: There are four mountains. Mt. Banana is higher than the other mountains. Mt. Pineapple is higher than Mt. Grape and Mt. Apple. A rabbit, a dog and a cat compete to climb a higher mountain than the other animals. The rabbit climbs Mt. Pineapple. The cat climbs Mt. Grape. The dog climbs Mt. Apple.



Under the Situation III, the comparison set can be either a set of all the mountains or a set of the mountains climbed by the animals. However, in this situation the animals compete for the best climber, and the comparison set is defined as the set of mountains climbed by the animals. Thus, considering the contextual information, Japanese-speaking adults are considered to interpret (11) as the C-reading and accept it under this situation.

In addition to (11), I also investigated the subjects' interpretation of the superlative sentence in (15) where the superlative marker *itiban* is scrambled to the first position within its clause. As we have seen in the previous section, Japanese adults prefer to interpret it as the C-reading. Because of the prominence of the C-reading, compared to their interpretation of (11), it would be easier for Japanese-speaking children to interpret (15) as the C-reading in the Situation III.

- (15) Itiban usagi-ga takai yama-ni nobot-ta.  
 most rabbit-Nom high mountain-to climb-Past  
 'The rabbit climbed the highest mountain.'  
 (the A-/C-reading (the C-reading more prominent than the A-reading))

### 3.3. Procedure

In the pretest, the subjects were given two trials where (16) was given under the Situations I and II. Only subjects who appropriately reacted to the trials had the main session, which consists of seven trials: two trials accompanying the stimulus sentence in (16), another two trials accompanying the stimulus sentence in (17) and three filler trials. The target trials accompanying (16) and (17) were presented under the Situation III, where the comparison set is ambiguous.

- (16) Usagi-ga itiban takai yama-ni nobot-ta.  
 rabbit-Nom most high mountain-to climb-Past  
 'A rabbit climbed the highest mountain.' (the A-/C-reading)
- (17) Itiban usagi-ga takai yama-ni nobot-ta.  
 most rabbit-Nom high mountain-to climb-Past  
 'The rabbit climbed the highest mountain.'  
 (the A-/C-reading (the C-reading more prominent than the A-reading))

The child and adult subjects were divided into two groups. Group A contains eight children and two adults and Group B contains seven children and three adults. I prepared two kinds of tests which had different order of the trials in order to avoid the biased view induced by the order. While the subjects in the Group A were first given a trial accompanying (16), the subjects in the Group B were first given a trial accompanying (17).

In the experiment on the adult controls, they were just asked whether what the experimenter said was true or false without an interaction with the puppet. When the child and adult subjects rejected the stimulus sentences, they were asked for the reason for their rejection.

### 3.4. Results

All of the subjects appropriately reacted to the trials in the pretest where the comparison set is unambiguous and had the main session. The percentages of correct responses to the filler items in the main session are as follows: the adult controls (100% (15/15)) and child subjects (95.6% (43/45)). Table 1 shows the acceptance rates of the target sentences in (18), which are the data of the two groups collapsed.

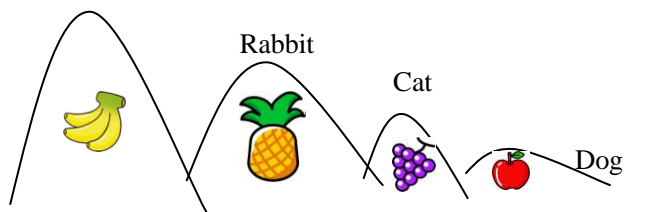
- (18) a. Usagi-ga itiban takai yama-ni nobot-ta.  
 rabbit-Nom most high mountain-to climb-Past  
 ‘A rabbit climbed the highest mountain.’ (the A-/C-reading)
- b. Itiban usagi-ga takai yama-ni nobot-ta.  
 most rabbit-Nom high mountain-to climb-Past  
 ‘The rabbit climbed the highest mountain.’  
 (the A-/C-reading (the C-reading more prominent than the A-reading))

	Children (n = 15, mean age: 6;6)	Adults (n = 5)
(18a)	33.3% (10/30)	100% (10/10)
(18b)	40 % (12/30)	100% (10/10)

Table 1. The Acceptance Rates of the Target Sentences

The adult subjects responded as I had expected. They accepted (18a) and (18b) in the Situation III, repeated in (19).

(19) Situation III: There are four mountains. Mt. Banana is higher than other mountains. Mt. Pineapple is higher than Mt. Grape and Mt. Apple. A rabbit, a dog and a cat compete to climb a higher mountain than the other animals. The rabbit climbs Mt. Pineapple. The cat climbs Mt. Grape. The dog climbs Mt. Apple.



On the other hand, the child subjects' acceptance rates of (18a) and (18b) is quite low. When the subjects rejected them, they were asked the reason for their rejection. All of them answered, "because the rabbit did not climb Mt. Banana." In the Situation III, Mt. Banana is actually the highest mountain among the four mountains. The children's answer suggests that they interpreted (18a) and (18b) as the A-reading disregarding the contextual information. They mistakenly chose a set of the four mountains as the comparison set, not a set of the three mountains climbed by the animals.

Let us see more closely child subjects' correct acceptance of (18a) and (18b). The number of child subjects who accepted at least one of the target sentences is six. Among them, the number of children who belong to the Group A is two: S.A (6;4) and T.M (6;0). The number of children who belonged to the Group B is four: S.N (6; 10), A.M (6; 10), S.O (6; 7) and T.M (6;0). Their responses to the each trial are shown in Table 2 and 3.

	1. (18a)	2. filler	3. (18b)	4. filler	5. (18a)	6. filler	7. (18b)
S.A (6;4)	reject	(correct)	accept	(correct)	accept	(correct)	accept
T.M (6;0)	reject	(correct)	accept	(correct)	accept	(correct)	accept

Table 2. Reactions to the Each Trial of the Two Child Subjects in the Group A.

	1. (18b)	2. filler	3. (18a)	4. filler	5. (18b)	6. filler	7. (18a)
S.N (6;10)	accept	(correct)	accept	(correct)	accept	(correct)	accept
A.M (6;10)	accept	(correct)	accept	(correct)	accept	(correct)	accept
S.O (6;7)	accept	(correct)	accept	(correct)	accept	(correct)	accept
T.M (6;0)	accept	(correct)	accept	(correct)	accept	(correct)	accept

Table 3. Reactions to the Each Trial of the Four Child Subjects in the Group B

While the subjects in Group A were first given (18a) and after that given (18b), those in Group B were first given (18b) and after that given (18a). As illustrated in Table 3, the four children in Group B accepted both (18a) and (18b). In contrast, the two children in Group A first rejected (18a) and then accepted (18b). This suggests that at least the two children are sensitive to the prominence of the C-reading in (18b).<sup>7</sup>

## 4. Discussion

### 4.1. Children's Ability to Define Comparison Sets

The previous experiment shows that, when they interpret ambiguous superlatives, many Japanese-speaking children around six years old cannot define the comparison set on the basis of contextual information. They define a set of all objects presented to them as the comparison set, disregarding contextual information. Before discussing why they fail to define the comparison set appropriately, let us review previous studies on children's ability to define a comparison set.

Barner and Snedeker (2008) investigates whether English-speaking 4-year-olds are sensitive to kind information when they define a comparison class. In their experiment, 13 cylinders whose height was different were used. These cylinders were painted a face. Nine of them were called *pimwits* and four of them were called *tulvers*, both of which are novel nouns. Pimwits and Tulvers are of a different kind (i.e., different color, surface features, name). Child subjects were asked, "Can you look at all of the pimwits and find the tall pimwits?" or "Can you look at all of the pimwits and find the short pimwits?" Then, they chose objects that they considered tall or short. As a result, they correctly defined a set of the pimwits as the comparison set excluding the tulvers and chose tall/short pimwits among the set. The findings in Barner and Snedeker (2008) indicate that when they are presented with several objects, 4-year-olds can define an appropriate comparison set on the basis of kind information.

Moreover, Syrett (2007) and Syrett et al. (2009) show that English-speaking children as young as three years old can shift their judgment of what length counts as *long* in accordance with a comparison set. In a situation where there are two rods of unequal lengths, when they are asked, "Please give me the long rod," children can

<sup>7</sup> In the pretest, all the subjects were given (18a) under the Situations I and II and they interpreted (18a) as the A-reading. The A reading they made in the pretest might also cause many child subjects to interpret the target sentences in the main session as the A-reading.



correctly choose the longer one regardless of whether the two rods are both long, both not long or one long and the other not. To sum up, the previous studies we have reviewed indicate that 4-year-old children can define a subset of objects presented to them as a comparison set in accordance with kind information and that even 3-year-olds can shift their judgment of whether something has a certain property (e.g. *length*) in accordance with a comparison set.

The experiment presented in the previous section shows that Japanese-speaking children around six years old cannot appropriately define a comparison set on the basis of contextual information. Compared with the previous studies, the experiment requires more complex pragmatic knowledge. In order to make the C-reading, children have to define a set of mountains climbed by characters as the comparison set. It is supposed to be more difficult for children than just defining a comparison set in accordance with kind information. However, six-year-olds are considered to be old enough to use contextual information in defining a comparison set. The next subsection presents one possible explanation according which children’s inability to define a comparison set can be an experimental artifact.

#### 4.2. The Effects of Salience on Children’s Interpretation

Children’s difficulty in restricting a comparison set reminds me of their well known response in interpreting universal quantification, *the symmetrical response*. It has been observed that children frequently show a peculiar non-adult-like response in experiments that examine their knowledge of universal quantification (Phillip (1995)). When children of age 4-6 are asked a question like “Is every cat riding on a pony?” about a picture as depicted in Figure 1, they often (more than 50%) say “No, not that pony,” pointing to the extra object in the picture, the pony on which no cat is riding.

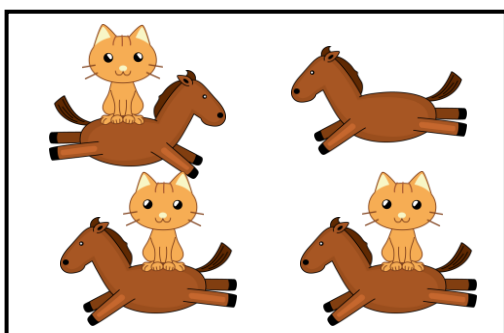


Figure 1. Symmetrical Response

In the experiments on children’s interpretation of ambiguous superlatives, many children rejected the target sentences, pointing to the extra mountain, Mt. Banana in Figure 2 repeated below. Then, such extra objects are considered to affect children’s interpretation of universal quantification and superlatives considerably.

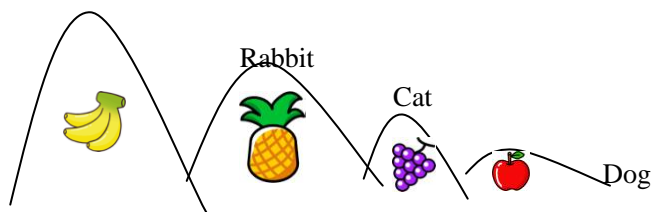


Figure 2. Situation III

As for the symmetrical response of universal quantification, Crain et al. (1996) argues that such response is not derived from children’s semantic representation, but from a flaw in experimental design. In Phillip’s (1995)

experiment, children were presented with a picture like Figure 1, and were asked Yes/No questions as “Is every cat riding on a pony?” According to Crain et al. (1996), children made non-adult-like “No” responses to these questions because the circumstances were not appropriate for a Yes/No question. They claim that it is necessary to explicitly mention a possibility corresponding to negative judgment in order to ask Yes/No questions felicitously: *the condition of plausible dissent*. In the situation above, a possibility that some cat rides on an animal other than a pony, say, an elephant, must be mentioned before the target questions. In their modified experiment that used TVJT satisfying the condition of plausible dissent, they elicited 88% correct responses from children who had shown the symmetrical response under an uncontrolled experiment.

However, Sugisaki and Isobe (2001) argues that the failure in satisfying the condition of plausible dissent in TVJT is not crucial in eliciting adult-like responses from children and that it is the large number of extra objects that elicit Yes responses from children. While in Crain et al.’s (1996) experiment, the number of extra objects is seven, the number of those in Phillip’s (1995) experiment is one or two. With relatively large number of extra objects in their experiment, Sugisaki and Isobe (2001) finds that Japanese-speaking children produced 87.5% correct responses when they were asked simple Yes/No questions without any preceding context for pictures.

On the basis of the previous studies, Gouro et al. (2001) argues that an outstanding extra object, for example, the extra pony in Figure 1, inevitably draws a person’s attention. Such an outstanding object is considered to have relatively high information value and one would think that it is necessary to mention the outstanding object when describing the situation. However, in Phillip’s (1995) experiment, the stimulus sentence, “Is every cat riding on a pony?” does not give any information about the outstanding extra pony. In such a case, where the stimulus sentence is not what a hearer has expected to hear as a description of the picture, adults would not have any difficulty in accepting the sentence because adult hearers can easily accommodate to the speaker’s perspective on the picture, and can infer what the speaker is trying to communicate with such a less information. On the other hand, it is quite possible that children have difficulty in accommodating to other person’s perspective or inferring pragmatic implicature. Therefore, children reject the stimulus sentence with an outstanding extra object. According to Gouro et al. (2001), in the experiment conducted in Sugisaki and Isobe (2001), the extra objects are no longer exceptional because of a large number of them, and the child subjects appropriately accepted the target sentence.

Similarly, children’s failure to define a comparison set in interpreting ambiguous superlatives can be caused by an extra outstanding object. The extra mountain climbed by no animal, Mt. Banana, being quite outstanding, children’s attention was drawn to it and they mistakenly defined a set of the four mountains as the comparison set. If the experiment is modified with a large number of extra mountains climbed by no animal, children are likely to define a set of the mountains climbed by the animals as the comparison set on the basis of contextual information and appropriately interpret the superlatives as the C-reading. In order to examine this possible explanation, further research is required.

## 5. Conclusion

This note has shown that when they interpret superlatives in a situation where the comparison set is ambiguous, many Japanese-speaking children around six years old cannot appropriately define the comparison set on the basis of contextual information. Similarly to the symmetrical response in children’s interpretation of universal quantification, their attention can be strongly attracted by an outstanding extra object, which causes their non-adult-like definition of the comparison set. In order to attest this possibility, further research is required.

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