[Forum]

Children’s ‘Configurational’ Interpretation of Negative Sentences with Dake

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Abstract: Whether or not child Japanese is configurational is still an important issue in acquisition research. This is a preliminary study to address the question by investigating how children interpret negative sentences with dake ‘only’ attached to a subject or an object. Data from 16 Japanese monolingual children (mean age: 5;11) and 20 adult controls showed a subject-object asymmetry in their interpretation, which suggests that children, essentially like adults, can assign different interpretations depending on whether the focus particle attaches to a subject or an object. The asymmetry thus concurs with the view that not only adults’ grammar but also children’s grammar builds hierarchical structures.*

Keywords: language acquisition, Japanese, dake, negative sentences, configurationality

1. Introduction
The scope of the focus particle dake interacts with that of negation. According to Koizumi (1994, 2008), the scope relation between them is predominantly determined in terms of their surface positions. Thus dake takes scope over negation when it appears with a subject as in (1a), while it falls within the scope of negation when it is with an object as in (1b):¹

(1)  a. Kazuko-dake-ga pro tabe-na-i.
     Kazuko-only-NOM pro eat-not-PRES
     ‘Only Kazuko does not eat (something in the discourse)’

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¹ In this article, the following abbreviations will be adopted. ACC: accusative, ASP: aspect, DAT: dative, GEN: genitive, NEG: negation, NOM: nominative, PRES: present, TOP: topic.
b.  pro  banana-only-ACC  eat-not-PRES
  ‘(Someone in the discourse) does not eat only bananas’

The meaning of (1a) is that it is only Kazuko that does not eat something; not
that it is not only Kazuko that eats something. (1b), on the other hand, allows the
narrow-scope reading of dake; that is, it is not only bananas that someone eats.
Therefore, the presence or absence of the narrow-scope reading depends on the
surface-syntactic relation between the dake phrase and negation, and the narrow
reading is possible when negation, which is considered to be the head of NegP
between TP and vP as in (2), c-commands the dake phrase.²

(2)  [TP DP [NegP [vP [vP V ] NEG ] T ] ]

It is crucial for present purposes that in (2), the surface subject occupies a structur-
ally different position from the object.

In this study, we examine these questions: (i) what interpretations young
children give to negative sentences with dake; (ii) whether they can distinguish
between subject-dake and object-dake negative sentences as adults do.

2. Previous Studies
Japanese allows relatively free word order due to the operation of scrambling. This
led Hale (1980) to suggest the possibility that Japanese, unlike English, is a non-
configurational language, and posit a flat clause structure such as (3):

(3)        VP
          Subject  Object  V

Here Subject and Object are interchangeable although V, the head of VP, occupies
the sentence-final position. Thus (3) does not distinguish between subjects and
objects. A lot of research has been carried out since then, and there now seems to
be a consensus that every language is configurational and Japanese is no exception
(see Miyagawa and Saito 2008: Chapter 1). The clause structure built by adults’
Japanese grammar has a hierarchical structure like that indicated in (2).

However, whether the same is true of child grammar is still an issue. Let us
review two previous acquisition studies that report subject-object asymmetries
as supporting evidence for the configurationality of child Japanese. Otsu (1994)

² With regard to Korean focus particles, Lee (2004) assumes two focus phrases in a clause,
each providing a head that a focus particle can agree with: one is above TP, and the other is
below TP. Hoshi (2006) presents a similar analysis for Japanese focus particles. Under Lee’s
analysis, the position of the focus head, not the position of focus particles, determines the
scope relation with another scopal element. The difference in the analysis does not affect the
following discussion. We will, then, adopt Koizumi’s simpler analysis in this paper. However,
(1b) actually allows the wide scope reading of dake as well, which would be properly
explained under the analysis which postulates two abstract focus phrases in a clause.
conducted an experiment with a sentence-completion task, and reports that threeyear-olds often dropped the object Case-marker -o (50%) but not the subject Case-marker -ga (0%). In colloquial Japanese, the Case-marker of a noun phrase adjacent to V can drop. Takezawa (1987: 126) tries to explain this fact by positing a PF rule that deletes Case-makers of noun phrases c-commanded by V. Otsu (1994) suggests, based on his experimental results, that children of at least the age of three obey the same structural constraint as adults with respect to the Case-marker drop phenomena, and that clause structures generated by child grammar are also hierarchical.

Sugisaki (2009, cited in Sugisaki and Otsu 2010) also reports a subject-object asymmetry that suggests children have configurational phrase structure. He made use of koto, which can be attached only to object DPs, and conducted an experiment to examine how young children interpret sentences with or without koto as in (4):

(4) a. Hiyoko-chan-ga ichiban sukina-no-wa dare kana?
   baby chick-NOM the first like-C-TOP who Q
   ‘Who is it that the baby chick likes the most?’ or
   ‘Who is it that likes the baby chick the most?’
   b. Hiyokochan-no -koto-ga ichiban sukina-no-wa dare kana?
   baby chick-GEN -fact-Nom the first like-C-TOP who Q
   ‘Who is it that likes the baby chick the most?’

(Sugisaki and Otsu 2010: 18)

(4a) does not involve koto, and the nominative DP can be interpreted as either the subject or the object. On the other hand, (4b), where the nominative DP is accompanied by koto, is not ambiguous, and the DP can be interpreted only as the object. The results of the experiment were that the 18 child participants (age range: 4;02 to 6;08) construed the nominative DP with koto as the subject 11.1% of the time, and the object 88.9% of the time, although they preferred to interpret the nominative DP without koto as the subject (83.3%). This subject-object asymmetry suggests that children know that the DP with koto is in the sister position of V, which constitutes another piece of evidence that children's grammar also generates hierarchical clause structures.

As for the interpretation of dake, Endo (2004) reports that 32 Japanese-speaking children aged 3 to 6 showed non-adult behavior. They interpreted subject-dake sentences such as (5) as if the focus particle were attached to an object.

(5) Buta-san-dake-ga ringo-o tot-ta.
   pig -only-NOM apple-ACC get-PAST
   ‘Only the pig got an apple.’

It is reported, however, that they did not have difficulties with object-dake sentences.

The question of whether children can distinguish between the subject and the object as adults do in interpreting the focus particle still remains open.
Furthermore, no research has been conducted so far to examine Japanese-speaking children's comprehension of negative sentences with *dake* from the viewpoint of configurationality. The present study used such negative sentences as a test case to assess what kind of structural relation the subject and the object have with respect to negation in children's clause structure.

3. Experiment

An experiment was designed to investigate whether young children can give ‘configurational’ interpretations to negative sentences with *dake* as in (1).³ The present study attempts to give an answer by comparing two possibilities. One possibility is that young children, unlike adults, construct a flat structure as in (3), and cannot distinguish between subject-*dake* and object-*dake* sentences structurally. The other possibility is that not only adults but also young children construct a hierarchical clause structure as Otsu (1994) and Sugisaki (2009) argue, and can distinguish the two types of negative sentences, making use of the c-command relation between negation and a phrase containing *dake*.

3.1. Participants

Two groups participated in the experiment. The first group consisted of 19 monolingual Japanese-speaking children (mean age: 6;2, range: 4;5-6;6), who were tested individually in a quiet room in a nursery school in Niigata, Japan. The second group consisted of 20 adult native speakers of Japanese (mean age: 23;10, range: 18-40). They were undergraduate and graduate students at Joetsu University of Education whose major was not linguistics, and were tested in small groups, from 2 to 6 participants at a time.

3.2. Task

The Truth Value Judgment task (Crain and Thornton 1998) was used. One experimenter acted out animal stories with toy props, and at the end of each story, another experimenter who acted as a puppet named Shimajiro gave a test sentence. Each participant was asked to judge whether what Shimajiro had said concerning the story was right (true) or wrong (false), and to give a reason if the judgment was ‘wrong’.⁴ Each session took approximately 20 minutes.

In the main session, each participant was given six semi-randomized test sentences, and three fillers (see the Appendix for all the sentences used in the experiment). Sample test items translated into English are presented in (6) and (7).

(6) Sample test item for a negative sentence with subject-*dake*:

³ One reviewer pointed out that the experiment presupposes that children can give adult-like interpretations to *pros*. In this regard, Nakayama (1996) reports that 3 year-old children could correctly judge sentences containing an empty subject or object in two different contexts 82% of the time. I am grateful to the reviewer for providing me with this reference.

⁴ The adult participants gave their judgments and reasons on a score sheet.
Experiment 1: A rabbit, a cat, and an elephant went shopping. The rabbit, who loved shopping, had a lot of things that she wanted to buy. On this day too, she quickly found a cute notebook and bought it. She also bought a pencil, saying “This is cute, too.” Again, after that, she said “I don’t have one of these, either” and bought an eraser. The cat at last found a bag of her favorite type, but decided not to buy it saying “This is too big.” Usually, the rabbit alone bought a great many things. After a while, the elephant, who had been dithering about what to buy, said “I’ve found something good! I’ll take this!” and bought a Pikachu eraser.

Experiment 2 (Shimajiro):

kyo-wa usagi-san-dake-ga pro kat-te-na-i yo.5
today-COM rabbit -only-NOM pro buy-ASP-NEG-PRES YO
‘Today, only the rabbit hasn’t bought (anything).’

(7) Sample test item for a negative sentence with object-dake:

Experiment 1: It was time for drawing! The elephant was about to start drawing with his coloring pencils. He took out three pencils: red, pink, and green. He loves the red pencil the most. He started drawing the sun with it today, too. After that, he also used red to draw a house. Then he said “A red car also looks cool,” and drew one. Next he had another thought of drawing something with the pink pencil, but then thought “Actually, I still prefer red,” and didn’t draw what he had thought of. Because the elephant always used just red, the pencil had gotten so small that it was about to run out. Looking at it, he said “It’s no use. I don’t want red to run out, so I’ll use this one as well,” and drew a tree with the green pencil.

Experiment 2 (Shimajiro):

kyo-wa pro aka-enpitsu-dake-o tukat-te-na-i yo.
today pro red-pencile -only-ACC use-ASP-NEG-PRES YO
‘Today, (he) hasn’t used only the red pencil.’

(6) contains a negative sentence with dake attached to the subject. The scenario consists of the usual situation and the particular situation on that occasion, which correspond to the possible and actual outcomes respectively. The possible outcome is that only the rabbit out of the three animals buys things. The actual outcome shown at the end of the story is that not only the rabbit but also another animal bought things. Therefore, the narrow scope reading for dake is given in the context. The test sentence is expected to be judged as false, since the wide scope reading it gives does not match the context.

(7) illustrates a negative sentence with dake attached to the object. The scenario describes the usual situation, where the elephant uses only the red pencil, and the exceptional situation on this occasion, where he used not only red but also another color; these correspond to the possible and actual outcomes respectively. Hence,
the narrow reading for *dake* is given here too. The test sentence, which allows this reading, should be judged as true.

In these test items, care was taken to ensure that *dake* did not appear in the same form in the scenario. Furthermore, each test sentence was uniformly provided with the prosodic information that corresponds to the narrow scope reading.

In addition to the two types of target sentences (two subject- *dake* and two object- *dake* sentences), two control sentences containing subject- *dake* as in (8) were included to test whether children understood the meaning of the exclusive particle when attached to a subject.

\[(8) \text{ usagi-san-dake-ga } \text{ oyo-da } \text{ yo.}^6 \]

Rabbit - only- NOM swim-PAST YO

‘Only the rabbit swam.’

Each control sentence was paired with two contexts: a context where the sentence is true, and a context where it is false. In the former, one of the three animals does the action expressed by the verb, and each of the remaining two tries to do the same but does not do the action. In the latter, one out of the three animals does the action expressed by the verb, while another animal tries to do the same but fails, and the third animal slowly starts doing it.

3.3. Predictions

As for children’s interpretation of *dake* in negative sentences, the following two things were predicted: (i) Japanese-speaking children would accept the two kinds of test sentences exemplified in (6) and (7) to the same degree if they could not distinguish structurally between subjects and objects (see (3)). On the other hand, (ii) they would accept the test sentences to a different degree if they could make such a distinction as adults do (see (2)).

3.4. Results

This section reports the results from the 16 children (mean age: 5;11, range: 4;5-6;6) and 20 adults who correctly judged the *dake* control sentences. Responses were coded as accepted if sentences were judged as true, and the acceptance rate of each sentence type was calculated.

The children’s mean degree of acceptance (and standard deviation) of the narrow scope reading under the subject- *dake* and object- *dake* conditions was 0.31(0.34) and 0.63(0.41) respectively, while for adults it was 0.20(0.33) and

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6 One reviewer suggested that transitive verbs, not intransitive verbs, should have been used in the *dake* control sentences so that we could also check whether the particle was wrongly interpreted as if it were attached to an object *pro*. The verbs that I used were unergative verbs, and could also be interpreted as taking a *pro* object (‘a pool’ in (6)). This is, however, just one possible interpretation. As for the subject- *dake* sentences, which should also be false under the misinterpretation of *dake* described above, section 3.4 reports whether there were children who could be considered as having given them such a misinterpretation.
A 2(age: children and adults)×2(sentence type: subject-\textit{dake} and object-\textit{dake}) analysis of variance (ANOVA) showed that the interaction between age and sentence type was almost significant, $F(1, 34)=3.52, p<.10$. Subsequent post hoc comparisons revealed that children and adults accepted subject-\textit{dake} sentences significantly less than object-\textit{dake} sentences: $F(1, 34)=7.05, p<.05$ for children; $F(1, 34)=28.19, p<.01$ for adults. Also, there were no significant differences between the child and adult groups in the acceptance of subject-\textit{dake} and object-\textit{dake} sentences: $F(1, 34)=0.82, ns$, and $F(1, 34)=2.76, ns$, respectively. The results were consistent with prediction (ii).

As for the object-\textit{dake} sentences, all the adult participants who did not accept the narrow scope reading referred to the elephant using the red pencil as their reason (see (7)). This means that the sentences were given the wide scope reading (\textit{dake}>\textit{NEG}). Since object-\textit{dake} negative sentences are ambiguous (see note 2), this interpretation can also be assigned. The main reason given by the children who rejected the narrow scope reading was the same, accounting for 75% (9 out of 12) of all rejections.

As for the subject-\textit{dake} sentences, the child and adult responses included 10 and 8 wrong acceptances (regarded as statistically non-significant), respectively. Since they were presented after the object-\textit{dake} sentences, this result may be due to an experimental effect caused by the order of presentation: it may be the case that some participants expected the narrow scope reading after the two object-\textit{dake} trials, and missed the discrepancy between the subject-\textit{dake} sentences and the scenario, paying more attention to the latter. Furthermore, although only 8 out of 12 children who rejected at least one of the two subject-\textit{dake} sentences were able to give the kind of reason expected under the wide scope reading for \textit{dake}, there were no children who gave a reason from which we could judge that \textit{dake} was misinterpreted as if it were attached not to the subject but to the object.

Table 1 shows the individual results. Participants were classified into three different categories based on their acceptance of subject-\textit{dake} and object-\textit{dake} sentences: two groups who accepted the former more, or less, than the latter, and a third group who accepted the two types to the same degree. A χ² test revealed no significant difference between children and adults: χ²(2)=3.87, ns. This suggests that children showed the same response patterns as adults in interpreting negative sentences with \textit{dake}, complementing the group results above.

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7 12 out of the 16 children were 6-year-olds. Their mean degree of acceptance (and standard deviation) of the subject-\textit{dake} and object-\textit{dake} sentences was 0.37(0.41) and 0.63(0.41) respectively. A 2×2 (age×sentence type) ANOVA showed that the interaction between age and sentence type was almost significant: $F(1, 30)=4.12, p<.10$. Subsequent post hoc comparisons revealed a significant difference between the two types of sentences, $F(1, 30)=3.66, p<.05$ for children; $F(1, 30)=22.87, p<.01$ for adults. Also, there were no significant differences between the child and adult groups: $F(1, 30)=1.62, ns$ for subject-\textit{dake}, $F(1, 30)=2.43, ns$ for object-\textit{dake}.
Table 1 Participants’ acceptance patterns

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Children (n=16)</th>
<th>Adults (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern A.</td>
<td>subject-dake&gt;object-dake</td>
<td>1</td>
</tr>
<tr>
<td>Pattern B.</td>
<td>subject-dake=object-dake</td>
<td>7</td>
</tr>
<tr>
<td>Pattern C.</td>
<td>subject-dake&lt;object-dake</td>
<td>8</td>
</tr>
</tbody>
</table>

Of the three patterns, Pattern A contradicts what the theory predicts, although it is a logical possibility. Table 1 shows that the number of children and adults who demonstrated this acceptance pattern is quite limited. Furthermore, the seven child participants with Pattern B did not successfully distinguish subject-\textit{dake} and object-\textit{dake} sentences: three children consistently accepted the narrow reading, and four children consistently rejected it. Three out of the four children were able to give reasons for their rejections, and their reasons indicate that they gave the wide scope reading to object-\textit{dake} sentences. Thus, the results shown in Pattern B can be attributed to the two independent factors described above, that is, the ambiguity of object-\textit{dake} sentences and the experimental ordering effect.

Table 1 also demonstrates that the eight children with Pattern C distinguished between subject-\textit{dake} and object-\textit{dake} sentences as expected. Thus, the data from these eight children seem to support the configurational nature of child phrase structures.

4. Discussion

Although the present study is still preliminary in that there were only two test items for each condition, the result that children accepted the narrow reading in object-\textit{dake} sentences significantly more than in subject-\textit{dake} sentences indicates that children show a subject-object asymmetry in the interpretation of negative sentences with \textit{dake}. Furthermore, no significant differences were found between the child and adult groups, although the acceptability difference between the two conditions in children is not as robust as in adults. This result is consistent with the possibility that the asymmetry is of the same type as adults.

With these results in mind, let us consider whether Japanese-speaking children use a linear order strategy for scope resolution in interpreting a scopal element in negative sentences (see Terunuma 2001). Lidz and Musolino (2002) conducted an experiment targeting two groups of children with typologically different linguistic backgrounds (English and Kannada), and argue that children’s interpretation depends on the hierarchical relation, but not the linear order relation, between a scopal element and negation. If our child participants used the linear order relation between \textit{dake} and negation, they should have accepted the subject-\textit{dake} and object-\textit{dake} sentences to the same degree, because the focus particle precedes negation in both of them. Our results do not corroborate this prediction. Thus the present study supports Lidz and Musolino’s (2002) position, though it does not test their isomorphism analysis of children’s non-adult behavior (see also Gualmini 2005).
5. Conclusion
The experimental results can be interpreted as showing that children can distinguish between subject- \textit{dake} and object- \textit{dake} sentences in essentially the same way as adults. The results concur not with the flat structure in (3) but rather with the hierarchical structure in (2), where the subject is higher than negation, and the object is lower. Thus, the subject-object asymmetry found here adds another piece of evidence for the claim in Otsu (1994) and Sugisaki (2009) that child grammar builds hierarchical clause structures. Furthermore, it enables us to make a more specific claim about children's clause structure: the subject position is higher, and the object position is lower, than negation.

References
「だけ」を含む否定文に対して幼児が与える‘階層的’な解釈

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幼児の日本語が階層的かどうかは獲得研究において依然重要な問題の一つである。この問題に関する予備的研究としてここでは、「だけ」が主語もしくは目的語に付いている否定文に対して幼児がどのような解釈を与えるのかを調べている。16名の日本語児（平均：5歳11ヶ月）と20名の大人の統制群から得られた実験結果から主語・目的語非対称性が観察され、幼児も、基本的には大人と同様に、「だけ」が主語に付くか目的語に付くかによって異なった解釈を与え得ることが示唆された。したがって、この結果は幼児の文法も階層構造を作り出すという見解と合致する。
Appendix: Sentences used in the experiment

The subject-\textit{dake} sentences, the object-\textit{dake} sentences, the \textit{dake}-control sentences, and the filler sentences are (i), (ii), (iii), and (iv), respectively. The number in front of each sentence indicates the order of presentation, and expected judgments follow in parentheses.

(i)  
7. Kyo-wa usagi-san-\textit{dake}-ga \textit{pro} kat-te-na-i
   Today-CON rabbit -only-NOM \textit{pro} buy-ASP-NEG-PRES yo.
   (false)
   ‘Today, only the rabbit has not bought (anything).’

9. Kyo-wa usagi-san-\textit{dake}-ga \textit{pro} ton-de-na-i
   Today-CON rabbit -only-NOM \textit{pro} vault-ASP-NEG-PRES yo.
   (false)
   ‘Today, only the rabbit has not vaulted (a horse).’

(ii)  
2. Kyo-wa \textit{pro} aka-enpitsu-\textit{dake}-o tukat-te-na-i
   Today-CON \textit{pro} red-pencil -only-ACC use-ASP-NEG-PRES yo.
   (true)
   ‘Today, (he) has not used only the red pencil.’

4. Kyo-wa \textit{pro} batta-\textit{dake}-o tukamae-te-na-i
   Today-CON \textit{pro} grasshopper-only-ACC catch-ASP-NEG-PRES yo.
   (true)
   ‘Today, (he) has not caught only grasshoppers.’

(iii)  
   Rabbit -only-NOM run-PAST YO
   ‘Only the rabbit ran.’

   Rabbit -only-NOM swim-PAST YO
   ‘Only the rabbit swam.’

(iv)  
1. Are-are, \textit{pro} boushi-o kabut-te-na-i yo.
   Wow, \textit{pro} hat-ACC wear-ASP-NEG-PRES YO
   ‘Wow, (she) is not wearing a hat.’

   (false)
   squirrel-NOM self-GEN voice-ACC hear-PAST YO
   ‘The squirrel heard his own voice.’

5. Are-are, \textit{pro} oyatsu-o tabe-te-na-i yo.
   (true)
   Wow, \textit{pro} snack-ACC eat-ASP-NEG-PRES YO
   ‘Wow, (she) hasn’t eaten (her) snack.’