The Syntactic Hierarchy and (Anti-) Reconstruction in Child Japanese Cleft Constructions

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1. Introduction

As is well-known, Japanese is an SOV language, as shown in (1), and Japanese Cleft constructions (hereafter JCs) contain a presuppositional clause and a focused element as in (2).\(^1\) As shown in (2) and (3), the focused elements follow the presuppositional clauses in the JCs.\(^2\)

(1) Taro-ga ringo-o tabe-ta.
   Taro-NOM apple-ACC eat-PAST
   ‘Taro ate apple(s).’

(2) [Taro-ga \(t/\text{pro}_1\) tabe-ta-no-wa] [ringo-(o)] da.
   Taro-NOM eat-PAST-C-TOP apple-(ACC) COP.
   ‘It is the apple(s) that Taro ate.’ (Object Cleft)

\(^1\) In the literature, Japanese Cleft constructions have been classified into two types; (Standard) Cleft constructions and Pseudo-cleft constructions (Hoji 1987, Kizu 2005, Mihara and Hiraiwa 2006 and Hiraiwa and Ishihara 2012, a.o.). The former involves a focused NP with Case-marker/postpositions, and the latter involves a focused NP without them. In this paper, we use the term JC in order to refer to Pseudo-cleft constructions. In the literature, it is still controversial whether JCs involve the movement of an NP from a presuppositional clause to a focus position. If the movement is involved, we assume that there should be a trace of the focused NP in the presuppositional clause. On the other hand, without the movement, there should a \(\text{pro}\) in a presuppositional clause. In this paper, we do not make a commitment to a particular analysis.

\(^2\) As pointed out by Mihara and Hiraiwa (2006) and Hiraiwa and Ishihara (2012), if the nominative case appears with a subject in Subject Cleft, the sentence sounds deviant/ unacceptable to many speakers.
(3) [t/pro; Ringo-o tabe-ta-no-wa] [Taro-(ga);] da.
    apple-ACC eat-PAST-C-TOP Taro-(NOM) COP.
    ‘It is Taro that ate the apple(s).’ (Subject Cleft)

In the literature, the syntactic structures/derivations of JCs have received much
attention, and it has been widely assumed that sentential negation in a
presuppositional clause does not c-command the focus position. First, let us see
the following examples that include the Japanese NPI sika.

(4) [TP Taro-ga ringo-sika tabe-nak-atta.]
    Taro-NOM apple-only eat-NEG-PAST
    ‘Taro ate only the apples.’

(5) [TP Ringo-sika [TP Taro-ga ti tabe-nak-atta.]]
    apple-only Taro-NOM eat-NEG-PAST
    ‘Only the apples, John ate.’

The object with Japanese NPI sika is within the c-command domain of the
sentential negation and is licensed in the sentence with the canonical word order
given in (4). In (5), the object is scrambled to the initial position of the sentence,
namely, out of the c-command domain of the sentential negation, but this
sentence is also grammatical. We assume here that the scrambled object can be
reconstructed into the object position and sika is licensed.

In contrast to the behavior of sika in (4) and (5), an NP with sika cannot
appear in the focus position.

(6) *[Taro-ga ti/pro; tabe-nakat-ta-no-wa] [ringo-sika-da.]
    Taro-NOM eat-NEG-PAST-C-TOP apple-only-COP
    ‘It is only the apple(s) that John didn’t eat.’

The behavior of sika in (6) suggests that the sentential negation does not
c-command the focused position, that is, the position of ringo-sika ‘apple-only.’
Furthermore, it is not licensed by the reconstruction like (5) or by the
c-command relation between sika and pro in the presuppositional clause. In this
paper, we call this property the ‘anti-reconstruction property’ of JCs. In
addition, this ‘anti-reconstruction property’ of JCs is confirmed by (7), which
contains negation in the presuppositional clause and the universal quantifier
zenbu in the focus position. First, let us consider the following sentence
containing negation and a universally quantified object.

(7) [Taro-ga ti/pro; tabe-nakat-ta-no-wa] [ringo-zenbu-da.]
    Taro-NOM eat-NEG-PAST-C-TOP apple-all-COP
    ‘It is all the apple(s) that John didn’t eat.’ (all > neg, *neg > all)
If the focused element shows the anti-reconstruction property observed in (6), it is expected that the universal quantifier *zenbu* must take scope over negation. This prediction is borne out. The sentence given in (7) allows only the ‘all > neg’ reading and disallows the ‘neg > all’ reading. Thus, the universally quantified NP in the focus position also behaves as if it cannot be interpreted within the c-command domain of the negation in the presuppositional clause. Interestingly, however, it is not the case that focused elements always take wider scope. Let us see the following example.

(8) Hutari-no syoonen-ga utaw-ta no wa samba-o 3-kyoku desu.
2-CL-GEN boy-NOM sing-PAST C TOP samba-ACC 3-Cl COP
‘It is three sambas that (the) two boys sang.’ (2 > 3 = Distributive reading)
(Nishigauchi and Fujii 2006)

As observed in Nishigauchi and Fujii (2006), the following example shows that the quantified subject takes scope over the focused object and allows the ‘2 > 3’ reading, namely, the distributive reading.

To sum up, JCs show the anti-reconstruction property (at least when a presuppositional clause contains negation), although it is not the case that focused elements always take wider scope. Then, an intriguing question arises here. Do Japanese children know that negation does not c-command a focus element and the anti-reconstruction property of JCs? If children acquire the grammatical knowledge concerning JCs based on input data from adults, children should be insensitive to the anti-reconstruction property of the JCs, since negative evidence is unavailable in the input data from adults, namely, ‘No (direct) negative evidence’ in language acquisition (Chomsky 1981).

In order to address this issue, we conducted experiments on Japanese children and adults. Before introducing our experiments, let us briefly review some relevant acquisition studies in the next section.

2. Previous acquisition studies

2.1. JCs in child Japanese

First, let us review some acquisition studies of JCs in child Japanese. Dansako and Mizumoto (2007) examined Japanese children’s interpretations of Subject Clefts (SCs) and Object Clefts (OCs) using the Picture Selection Task. They

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3 Nishigauchi and Fujii (2006) claim that the focused quantified object is reconstructed into the presuppositional clause and is within the c-command domain at LF. This operation yields the distributive reading. However, it is still unclear why focused element(s) cannot be reconstructed into the presuppositional clause when it contains negation as in (6) and (7). We would like to leave this issue for future research.
reported that children aged 3-6 show quite good performance (correct response rates around 90%) with SCs, but children aged 3-4 show quite poor performance with OCs (less than 50%). Based on the results of this experiment, SCs seem to be much easier than OCs.

However, Ohba and Yamakoshi (2018) examined Japanese children’s interpretations of SCs and OCs using the Truth Value Judgment Task (hereafter TVJT) (Crain and Thornton 1998). Let us see some examples. Sample pictures and sentences are given in Pictures 1 and 2 and (9).

   ‘Look! Someone-NOM pig-ACC chase-PROG SFP’
   ‘Look! Someone is chasing a pig.’

   b. SC: Butasan-o oikake-teiru no wa raionsan da yo.
      pig-ACC chase-PROG C TOP lion COP SFP
      ‘It is the lion that is chasing the pig.’

In order to make the target sentence sound natural, the black square hides the lion, following the method used in Aravind et al. (2016, 2018), and the context establishes the presupposition ‘someone is chasing the pig.’ Under this situation, this sentence is true.

Next, let us see the sample sentences (10) and Pictures 3 and 4 for OCs.

    ‘Look! Bear-NOM someone-ACC poke-PROG SFP’
    ‘Look! A bear is poking someone.’
b. OC: Kumasan-ga tutui-teiru no wa pandasan da yo  
bear-NOM poke-PROG C TOP panda COP SFP  
‘It is the panda that the bear is poking.’

As with the SCs, the black square hides the character that the bear is poking, which makes the test sentence sound natural because the presupposition is established by the context. This sentence is true under the situation in (10).

According to Ohba and Yamakoshi (2018), the children aged 4-6 correctly accepted the target sentences of the SCs and OCs with correct acceptance rates of more than 90%. In addition, they tested the SCs and OCs in the false conditions where the subject and the object are inverted. For instance, the sentence ‘It is the pig that is chasing the lion.’ is given for Picture 2. This sentence is false under the given situation. The correct rejection rates in such false conditions are above 85%. In other words, the children did assign the theta role ‘agent’ and ‘patient’ correctly in contrast to Dansako and Mizumoto (2007).

Ohba et al. (to appear) conducted a follow-up experiment on JCs in order to investigate whether the children’s behavior reported in Ohba and Yamakoshi (2018) is based on a strategy. According to Ohba et al., children aged 4-6 showed no difficulty comprehending the OCs; their correct response rates exceeded 90% overall. However, children aged 4-5 seemed to show difficulty comprehending SCs (correct acceptance rate = around 60%), whereas 6-year-old children did not (correct response rate = around 81%). They stipulate that the difficulty for the younger children in comprehending JCs comes from processing difficulty or a strategy. As shown above, the word order of the SC is not canonical, namely, it involves OVS order as in scrambled sentences. In fact, Hayashibe (1975) and Otsu (1994) reported that young children also show difficulty interpreting OSV scrambled sentences when appropriate previous contexts are not given; young children tend to assign the thematic role ‘agent’ to the first NP of a sentence. Thus, there is a possibility that some younger children adopted the same strategy for SCs. However, note that even young Japanese children do not show difficulties comprehending OCs, which we use in our experiment as discussed in Section 3. Thus, we assume in this paper that Japanese children have the basic syntactic knowledge of OCs.

### 2.2. Universal quantifiers and negation in child Japanese

The acquisition of scope interactions has received much attention from cross-linguistic perspectives. In this section, we briefly review some relevant acquisition studies concerning scope interactions of sentential negation and a quantified subject/object in Japanese.

It has been observed that, when a sentence contains a universally quantified subject and sentential negation, the subject must take scope over the negation (Miyagawa 2001).
   everyone-NOM  exam-ACC  take-NEG-PAST
   ‘Everyone didn’t take the exam.’ (ok  all > neg, *neg > all)

(Miyagawa 2001)

However, it has been well-known that the sentential negation can take scope over a universally quantified object.

(12) Taro-ga  yasai  zenbu-o  tabe-nak-atta
    Taro-NOM  vegetable  all-ACC  eat-NEG-PAST
    ‘Taro didn’t eat all of the vegetables.’ (ok all > neg, neg > all).

The sentence (12) shows that the negation can take scope over a universal quantifier, which yields the ‘neg > all’ (partial negation) reading. We assume in (11) that the universally quantified subject c-commands the sentential negation at LF, and thus, the ‘all > neg’ reading is obtained. Also, in (12), the universally quantified object is within the c-command domain of the negation. Thus, the ‘neg > all’ reading is obtained.

Keeping these data in mind, let us review previous acquisition studies. Sugawara and Wexler (2014) examined Japanese children’s interpretations of universally quantified subjects and negation such as (13) using a kind of picture selection tasks.

(13) Risusan  minna-ga  donguri-o  hirow-anak-atta-yo.
    squirrel  everyone-NOM  chestnuts-ACC  pick.up-NEG-PAST-DECL
    ‘Every squirrel didn’t pick up chestnuts.’ (ok all > neg, *neg > all)

(Sugawara and Wexler 2014)

As in (11), this sentence does not allow the ‘neg > all’ reading. According to Sugawara and Wexler (2014), the participants aged 4 to 6 correctly rejected the partial negation reading as adults did (more than 95% of the time). In this respect, children showed adult-like behavior. However, one might claim that the participants rejected the partial negation reading because wide scope interpretations of the universal quantifiers are always strongly preferred. In other words, even when a universal quantifier appears with an object, Japanese children strongly preferred the wide scope interpretations of the object (see Footnote 4).

In order to pursue this possibility, let us review Sugisaki (2017), who examined Japanese children’s interpretations of the focus particle *dake* ‘only’ and a universal quantifier in negative sentences. See the following examples.

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4 As shown above, (12) also allows the ‘all > neg’ reading, and some speakers prefer this reading to the partial negation reading. For more detailed information, see Han et al. (2008).
As shown in (14) and (15), the negation can take scope over a universally quantified object, but it cannot take scope over an object with the focus particle dake. According to Sugisaki (2017), Japanese children aged 4-6 correctly accepted the ‘neg > all’ reading in (14) 68.8% of the time. In addition, they correctly rejected the ‘neg > only’ reading in (15) with an incorrect acceptance rate of only 4.2%. Furthermore, the adult Japanese control group also accepted the ‘neg > all’ reading 70% of the time, and rejected the ‘neg > only’ reading 100% of the time. Therefore, the children showed adult-like behavior concerning the scope interactions between the universal quantifier / focus particle and negation.

To sum up, the previous studies we have seen thus far indicate that Japanese children aged 4-6 seem to have syntactic knowledge of JCs. In particular, they have no difficulty comprehending OCs. Furthermore, Japanese children’s interpretations of the scope interactions between a universal quantifier and negation obey the c-command relation. Negation can take scope over a universally quantified object in child Japanese as well as in adult Japanese.

3. Experiment

On the one hand, considering the findings of the previous acquisition studies that we have seen so far, it is expected that Japanese children should be sensitive to the anti-reconstruction property of JCs discussed in Section 1. On the other hand, if children acquire the syntactic knowledge based on input data from adults, it is expected that children should be insensitive to it since such direct negative evidence must be unavailable in the course of children’s language development.
In order to address this issue, we conducted an experiment. We examined 27 children (4;3 – 6;6) and 23 adults using TVJT. We divided the participants into two groups, a target group and a control group, based on the test items.

First, let us introduce the target group. The target group consisted of 14 children (4;3 – 6;6, Mean=5;5) and 11 adults. They were tested with the JCAs as in the following examples.

(16) Neko-san-ga tora-nak-atta no wa nasu zenbu da yo.
    cat-NOM take-NEG-PAST C TOP eggplant all COP PRT
    ‘It is all the eggplants that the cat didn’t take.’ (*neg > all, all > neg)

(17) Risu-san san-biki-ga kat-ta no wa ichigo ni-ko da yo.
    squirrel 3-CL-NOM buy-PAST C TOP strawberry 2-CL COP PRT
    ‘It is two strawberries that three squirrels bought.’ (OK 3 > 2 = distributive)

As shown above, (16), which is the target item for the target group, shows the anti-reconstruction property; it disallows the ‘neg > all’ reading. In other words, the focused universally quantified object zenbu must take wider scope. (17) is a control item for the target group. This sentence allows the wide scope interpretation of the quantified subject in the presuppositional clause. (16) is given for Picture 5, and (17) was given for Picture 6.

In Picture 5, there are three eggplants. The cat took two of the three eggplants. Thus, it is not the case that the cat took all the eggplants. However, the test item in (16) disallows the ‘neg > all’ reading. Hence, the correct response is rejection.

In Picture 6, there are three squirrels and six strawberries. Each of the squirrels bought two strawberries. In contrast to (16), as mentioned above, the sentence given in (17) allows the ‘3 > 2’ reading. In other words, this allows the interpretation that, for each squirrel, there are two strawberries that it bought. Therefore, (17) is true for Picture 6. There were two trials for each item.

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5 The reason why the other character(s) appears in the same picture (a cow in Picture 5 and three elephants in Picture 6) is that the presence of the other character(s) makes the cleft sentence sound natural.
Table 1 shows the results for the target group in our experiment:

Table 1: Correct response rates of the target group

<table>
<thead>
<tr>
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<th>(16): Rejection (neg &gt; all)</th>
<th>(17): Acceptance (3 &gt; 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children (N = 14)</td>
<td>71.4% (20/28)</td>
<td>85.7% (24/28)</td>
</tr>
<tr>
<td>Adults (N = 11)</td>
<td>91.0% (20/22)</td>
<td>45.5% (10/22)</td>
</tr>
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</table>

The results in Table 1 show that most of the Japanese children correctly rejected the ‘neg > all’ interpretation for (16), as adults did (71.4% (20/28)). In addition, the children correctly accepted the ‘3 > 2’ reading for (17) (85.7% (24/28)). This indicates that it is not the case that the focused elements always take the wide scope in child Japanese as well as adult Japanese. If the focused elements always took wider scope, children would reject (17) as well because there are six strawberries in total. The adult Japanese group correctly rejected the ‘neg > all’ reading for (16) (91.0% (20/22)). However, they also rejected (17), in contrast to the children’s behavior. One possible reason is that (17) is ambiguous and some adults strongly preferred the ‘2 > 3’ reading. Thus, they rejected the sentence because there are six strawberries in total.

One might argue that most Japanese children rejected the ‘neg > all’ reading because our experimental design is biased toward the ‘all > neg’ reading. In order to investigate this possibility, we examined 13 Japanese children (N = 13, 4;3 – 6;5, Mean = 5;2) and 12 adults as a control group. First, let us see the test items for the control group.

(18) Neko-san-ga nasu zenbu-o tora-nak-atta yo.
    cat-NOM eggplant all-ACC take-NEG-PAST PRT
    ‘The cat didn’t take all the eggplants.’ (OK neg > all, all > neg)

(19) Risu-san san-biki-ga ichigo ni-ko-o kat-ta yo.
    squirrel 3-CL-NOM strawberry 2-CL-ACC buy-PAST PRT
    ‘Three squirrels bought two strawberries.’ (OK 3 > 2 = distributive)

As in (18) and (19), the control group was tested with the SOV canonical word order. Note that (18) is ambiguous in contrast to (16), which is unambiguous. In addition, (19) allows the ‘3 > 2’ reading, as its cleft counterpart does in (17). (18) was given for Picture 5 and (19) for Picture 6. (18) allows the ‘neg > all’ reading, and thus this sentence is true for Picture 5, and (19) is also true for Picture 6.

Let us see Table 2, which shows the results for the control group.

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Table 2: Correct response (acceptance) rates of the control group

<table>
<thead>
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<th></th>
<th>(18): Acceptance (neg &gt; all)</th>
<th>(19): Acceptance (3 &gt; 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children (N=13)</strong></td>
<td>80.8% (21/26)</td>
<td>84.6% (22/26)</td>
</tr>
<tr>
<td><strong>Adults (N=12)</strong></td>
<td>54.2% (13/24)</td>
<td>58.3% (14/24)</td>
</tr>
</tbody>
</table>

As shown in Table 2, the Japanese children in the control group correctly accepted the test item (18) with an acceptance rate of 80.8% (21/26). This indicates that our experimental design is not biased toward the ‘all > neg’ reading. Rather, the Japanese children of the target group rejected the test item (16) due to syntactic knowledge of JCs, namely, the anti-reconstruction property. In addition, they correctly accepted (19). In contrast, some Japanese adults rejected (18) and (19). As mentioned in Footnote 4, some speakers strongly prefer the ‘all > neg’ interpretation to the ‘neg > all’ interpretation. Also, some speakers prefer the wider scope interpretations of the objects, and hence, they might have rejected (19) as they did (17).

4. Discussion

One of our findings is that the most Japanese children of the target group correctly rejected the ‘neg > all’ reading in JCs such as (16), but the children in the control group correctly accepted it in the canonical word order sentences such as (18).

Table 3: Children’s acceptance rate of (16) and (18)

<table>
<thead>
<tr>
<th></th>
<th>Target Group: (16) (*neg &gt; all)</th>
<th>Control Group: (18) (neg &gt; all)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>28.6% (8/28)</td>
<td>80.8% (21/26)</td>
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</table>

The difference in the acceptance rates between (16) and (18) is statistically significant ($F (1, 25) = 11.127, p = 0.003$). This result suggests that, first, most of the Japanese children know the syntactic hierarchy of JCs. In particular, they have already known that negation in the presuppositional clause does not c-command the focus position. Otherwise, they would accept the ‘neg > all’ interpretation in (16) as well as (18). Furthermore, they are sensitive to the anti-reconstruction property of JCs. Is it possible for children to acquire this knowledge based on experience-based learning? This is unlikely. As discussed above, if children learn this knowledge, they must receive direct negative evidence telling them of the ban on reconstruction. However, such direct negative evidence should be unavailable in the child language development. Thus, our finding suggests that some innate mechanism is involved in acquiring the anti-reconstruction properties of JCs. Furthermore, this result gives supporting evidence to Ohba and Yamakoshi (2018) and Ohba et al. (to appear), which claimed that Japanese children aged 4-6 seem to have acquired syntactic
knowledge of JCs, although some younger children showed difficulty with SCs but not OCs.

In addition, in our experiments, the Japanese children correctly accepted the ‘3 > 2’ (i.e., ‘distributive’) reading in (17) and (19).

Table 4: Children’s correct acceptance rates of (17) and (19)

<table>
<thead>
<tr>
<th>Target Group: (17) (3 &gt; 2)</th>
<th>Control Group: (19) (3 &gt; 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>85.7% (24/28)</td>
<td>84.6% (22/26)</td>
</tr>
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</table>

The difference in the acceptance rates between (17) and (19) is NOT statistically significant ($F (1, 25) = 0.006, p = 0.939$). This result suggests that the focused element in (17) takes narrow scope. Thus, it is not the case that focused elements always take wider scope in Child JCs. In other words, the Japanese children correctly disallow the wide scope interpretation of the focused element in (16), but they allow the narrow scope interpretation of the focused element in (17).

As mentioned above, however, the acceptance rates of the distributive reading in (17) and (19) in the adult control group are lower. Concerning this point, we speculate that the children’s behavior is related to the observation of ‘Freedom of Scope’ (Goro 2007). It has been observed that Japanese children not only allow scope interpretations as in adult Japanese but also overgenerate scope interpretations that are not allowed in Japanese, particularly when a sentence contains a quantified subject and a quantified object (Sano 2004, Goro 2007). Let us see the following example.

(20) Dareka-ga dono neko mo tukamaeta.
    someone-NOM every cat caught

‘Someone caught every cat.’ (some > every, *every > some)

As is well-known, Japanese is a scope-rigidity language and scope interpretations are tightly connected to the surface c-command relation (Kuroda 1970 a.o.). Thus, as shown in (20), the existential quantifier must take scope over the universal quantifier, but the inverse scope interpretation is not allowed. According to Sano (2004) and Goro (2007), however, many Japanese children allow this kind of inverse scope interpretation, which is not allowed in adult Japanese. Goro (2007) calls this phenomenon ‘Freedom of Scope.’ In short, Japanese children often accept not only surface scope interpretations but also inverse scope interpretations. In this respect, we speculate that the high acceptance rates of (17) and (19) reflect a kind of ‘Freedom of Scope’ phenomenon.
Furthermore, the acceptance rate of (18) in the adult control group is also lower than that of the children.\(^6\) However, as we have seen in Section 2, Sugawara and Wexler (2014) showed that Japanese children strongly rejected the ‘neg > all’ interpretation when a sentence contains a universally quantified subject and negation. In other words, it is not the case that Japanese children freely allow scope interactions between negation and universally quantified NPs. In light of this, the high acceptance rate of (18) in the children’s group might not be related to the ‘Freedom of Scope.’ We would like to leave this issue for our future research.

5. Conclusion

In this paper, we demonstrated that most of the Japanese children aged 4-6 disallow the ‘neg > all’ interpretation in a sentence containing negation in the presuppositional clause and a universally quantified object in the focus position. This result suggests that they know the syntactic hierarchy of JCs: Negation in the presuppositional clause does not c-command the focus position. In addition, they are sensitive to the anti-reconstruction of JCs, contrary to the prediction under experience-based learning. Rather, our findings give supporting evidence to Ohba and Yamakoshi (2018) and Ohba et al. (to appear), which claim that Japanese children seem to have syntactic knowledge of JCs (although some younger children showed some difficulty with SCs but not OCs). However, it is not the case that focused elements must always take wider scope in adult Japanese. In our experiment, in fact, they allow the distributive reading in a sentence containing a numerically quantified subject and a numerically quantified object. Considering these findings and ‘no negative evidence’ in the children’s language development, our findings suggest that some innate mechanism is involved in the acquisition of JCs.

References


\(^6\) Han et al. (2008) also reported that the acceptance rate of the ‘neg > all’ interpretation in a sentence containing a universally quantified object and negation in adult Japanese was 54%.

Goro, Takuya. 2007. Language-Specific Constraints on Scope Interpretation in First Language Acquisition. Doctoral dissertation, University of Maryland.


