

Negative Concord vs. Negative Polarity and the Acquisition of Japanese

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1. Introduction

In human language, there are at least two types of neg(ation)-sensitive items: negative polarity items (NPIs) and negative concord items (NCIs). Examples of these neg-sensitive items are given in (1) and (2) below.^{1,2}

(1) John didn't eat **anything**. (NPI)
cf. *John ate **anything**.

(2) John-wa **nani-mo** tabe-**nak**-atta. (NCI)
John-Top what-MO eat-Neg-Past
'John ate nothing.'
cf. *John-wa **nani-mo** tabe-ta.
John-Top what-MO eat-Past

The goal of this paper is to argue that negative concord is the “default value” for the two types of neg-sensitivity by investigating how Japanese children acquire NCIs in their language.

The rest of this paper is organized as follows. In section 2, we review several syntactic differences between NPIs and NCIs and a morphosyntactic analysis of those items proposed by Kuno (2007). It is pointed out that the question of how Japanese NCIs are acquired arises from Kuno's analysis. In section 3, based on the analysis of CHILDES, we show that Japanese children do not hear decisive input to distinguish NCIs from NPIs. In section 4, we experimentally show that young children (around 4-years-old) have already acquired the knowledge of an NCI. Finally, in section 5, we conclude that children at first assume negation-sensitive items (i.e., NPIs or NCIs) to be NCIs by default.

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¹ In what follows, unless otherwise stated, examples with NPIs are from English and examples with NCIs are from Japanese. Japanese NCIs have traditionally been regarded as NPIs, but Watanabe (2004) convincingly demonstrates that they are actually NCIs. See below for diagnostic tests to distinguish NPIs and NCIs and relevant data.

² In some languages, NCIs do not require sentential negation, as shown by the following Italian example:

(i) **Nessuno** telefona a Gianni. (NCI, Italian)
NCI_{person} telephones to Gianni
'Nobody calls Gianni.'

Kuno (2007) refers to Japanese-type NCIs as strong NCIs and Italian-type NCIs as weak NCIs. In this paper, we will focus on the former and use the term “NCI” to refer to this type of NCIs.

2. Syntactic Backgrounds

2.1. Differences between NPIs and NCIs

There are several syntactic differences between NPIs and NCIs (cf. Vallduvi 1994 and Giannakidou 2000). First, NCIs can be modified by expressions like *almost*, whereas NPIs cannot (examples (3)-(10) below are taken from Watanabe 2004):

(3) *John didn't eat **almost** anything. (NPI)

(4) John-wa **hotondo** nani-mo tabe-nak-atta. (NCI)
 John-Top almost what-MO eat-Neg-Past
 'John ate almost nothing.'

Second, NCIs can appear as an elliptical answer, but NPIs cannot:

(5) Q: What did you see?
 A: ***Anything**. (NPI)

(6) Q: Nani-o mita no?
 what-Acc saw Q
 'What did you see?'
 A: **Nani-mo**. (NCI)
 what-MO
 'Nothing'

Third, NPIs, but not NCIs, can appear in non-negative contexts. Thus, for example, NPIs can be licensed in a yes-no question ((7a)) or in a conditional clause ((7b)), but in these contexts, NCIs fail to be licensed ((8)):

(7) a. Have you seen **anything**? (NPI)
 b. If John steals **anything**, he'll be arrested. (NPI)

(8) a. ***Nani-mo** mi-mashi-ta ka? (NCI)
 what-MO see-Polite-Past Q
 b. *John-ga (moshi) **nani-mo** nusun-dara, taihos-areru daroo. (NCI)
 John-Nom if what-MO steal-Cond arrest-Pass be-will

Finally, NPIs can be licensed by a higher clause negation, whereas NCIs cannot:

(9) I didn't say that John admired **anyone**. (NPI)

(10) ?*Boku-wa [John-ga **dare-mo** sonkeisiteiru to] iwa-**nak**-atta. (NCI)
 I-Top John-Nom who-MO admire C say-Neg-Past

The following is a summary of the differences between the two types of neg-sensitive items:³

³ The following contrast appears to suggest that NPIs and NCIs can be distinguished in terms of whether they can appear in preverbal (or subject) position or not (cf. Vallduvi 1994):

(i) ***Anybody** didn't criticize John. (NPI)

(ii) **Dare-mo** John-o hihansi-nak-atta. (NCI)
 who-MO John-Acc criticize-Neg-Past
 'Nobody criticized John.'

| | | |
|---|-----|-----|
| (11) <i>Differences between NPIs and NCIs</i> | NPI | NCI |
| a. Ability to be modified by expressions like <i>almost</i> | No | Yes |
| b. Ability to be used as an elliptical answer | No | Yes |
| c. Ability to appear in non-negative contexts | Yes | No |
| d. Ability to be licensed by a higher clause negation | Yes | No |

2.2. “Ingredients” of NPIs and NCIs

It is argued in Kuno 2007 that an NPI consists of an indefinite/indeterminate + [foc(us)] and an NCI consists of an indefinite/indeterminate + [foc] + [neg] (see also Lahiri 1998 and Watanabe 2004). Some examples of neg-sensitive items where all of the “ingredients” are morphologically realized are given in (12) and (13).

- (12) *koiī bhīī* (NPI, Hindi)
 someone even
- (13) a. *n-i-(t)ko*
 Neg-Foc-who (NCI, Serbo-Croatian)
 b. *s-en-ki*
 Foc-Neg-who (NCI, Hungarian)

The ingredients of neg-sensitive items are not always morphologically realized. What is interesting in this context is the fact that Japanese NCIs are composed of only an indeterminate and a focus particle (*mo*) at the surface, and [neg] is not overtly realized, as shown below:

- (14) a. *dare-mo* b. *nani-mo* c. *doko-mo*
 who-Foc what-Foc where-Foc

Thus, Kuno’s (2007) morphosyntactic analysis of neg-sensitive items predicts that the overt morphology of the items in (14) wrongly tells us that they are NPIs, not NCIs.⁴

From this, a question about language acquisition arises: How do Japanese children acquire their neg-sensitive items as NCIs, rather than NPIs? Two hypotheses come to mind. The first one is that their acquisition is input-based. Since there are several syntactic differences between NPIs and NCIs, as seen above, it might be the case that Japanese children make use of (some of) those differences as a clue to acquire their NCIs. The second hypothesis is that negative concord is the “default value” for the two types of neg-sensitivity, so that when children encounter a neg-sensitive item, they first assume it to be an NCI. In what follows, we will examine these two hypotheses, the input-based hypothesis and the default hypothesis, in turn.

3. Input-based Hypothesis

Let’s first consider the input-based hypothesis. Our question is whether children hear decisive input which enables them to distinguish NCIs from NPIs. If the input-based hypothesis is on the right track,

However, the fact that Hindi NPIs can appear preverbally casts doubt on this conclusion (cf. Lahiri 1998):

- (iii) *Koiī bhīī nahīīN aayaa.* (NPI, Hindi)
 someone even Neg come
 ‘No one came’

⁴ Based on the data in (12)-(14), one might wonder whether it is possible to distinguish NPIs and NCIs in terms of whether they make use of indefinites (non-*wh*-elements) or indeterminates (*wh*-elements). This seems impossible, however: in Chinese, NPIs can also be used as *wh*-phrases, and in Modern Greek, NCIs are not related to *wh*-phrases in any systematic way (see Kuno 2007: Ch. 2).

there should be decisive input because it seems unlikely that children rely on overt morphology to distinguish NCIs from NPIs (see fn. 4). We investigated two types of decisive input; one is the modification by *hotondo* (almost in English), and the other is the use as an elliptical answer. Let's see (3) and (4) again.

(3) *John didn't eat **almost** anything. (NPI)

(4) John-wa **hotondo** nani-mo tabe-nak-atta. (NCI)
John-Top almost what-MO eat-Neg-Past
'John ate almost nothing.'

As discussed in section 2, in English, *anything*, which is an NPI, cannot be modified by *almost*. In contrast, *nanimono*, which is an NCI, can be modified by *hotondo*. Therefore, if children hear the modification by *hotondo*, they should be able to distinguish NCIs from NPIs.

Next, let's take a look at the example of the use of an NCI as an elliptical answer given in (5) and (6) again.

(5) Q: What did you see?
A: ***Anything**. (NPI)

(6) Q: Nani-o mita no?
what-Acc saw Q
'What did you see?'
A: **Nani-mo**. (NCI)
what-MO
'Nothing'

For a question like "Nani-o mita no (what did you see)?", one can answer by just saying "Nanimono.", which means *nothing*. However, as shown in (5), the use of an NPI as an elliptical answer is not allowed in NPI languages. Therefore, if children hear the use of an elliptical answer, they should be able to distinguish them.

To test the input-based hypothesis, we analyzed the corpora of Japanese children in CHILDES. The files are Hamasaki (2;02.03-3;7.10), Ishii (0;6.01-3;8.16), Aki (1;5.07-3;0), Ryo (1;4.03-3;00.30), and Tai (1;5.20-3;1.29).

Table 1.

| Types of tokens | The number of Tokens |
|---|----------------------|
| Total | 168,749 |
| Examples including <i>nan(n)imo</i> | 56 |
| Decisive Input: Elliptical Answer or Modification by <i>hotondo</i> (<i>almost</i>) | 0 |

As shown in Table 1, in the files, there are 56 productions by adults including *nanimono* or *nannimono*. Among the 56 productions by adults, we did not observe the modification by *hotondo* or the clear use of an NCI as an elliptical answer. This observation suggests that the input-based hypothesis is implausible.

4. Default Hypothesis

4.1. Experiment 1: R-expressions

Let's next consider the default hypothesis. Our question is whether or not children assume the negation-sensitive items to be NCIs by default. Given that the input hypothesis is implausible, if we observe the early acquisition of NCIs, we can argue that the default hypothesis is on the right track. Thus, to test the default hypothesis, we conducted an experiment with Japanese preschoolers regarding the use of an elliptical answer.

Let's see the information participants' information. We examined 28 Japanese preschoolers at age 4-5, and based on two types of stimulus sentences, we separated them into two groups. One is the group of *doremo* (everything), and the other is the group of *nan(n)imo* (NCI). We will describe these groupings more in detail later. The participants' information is shown in Table 2.

Table 2(a): Information of participants (The group of *doremo*)

| | N | Age |
|-------------|---|----------------------|
| 4-year-olds | 7 | 4;4-4;11 (Mean: 4;7) |
| 5-year-olds | 7 | 5;0-5;11 (Mean: 5;5) |

Table 2 (b): Information of participants (The group of *nan(n)imo*)

| | N | Age |
|-------------|---|----------------------|
| 4-year-olds | 7 | 4;3-4;11 (Mean: 4;7) |
| 5-year-olds | 7 | 5;0-5;11 (Mean: 5;6) |

The method is as follows; Mickey and Pikachu acted out by two adults play a shopping-game. In the game, Mickey is supposed to help Pikachu's shopping. There are a carrot, a strawberry, a tomato, an empty box, and a shopping basket for Pikachu. Mickey is going to put items to buy into the shopping basket, and put others, if any, into the box. Participants' task is to judge whether or not Mickey's reaction is compatible with Pikachu's answer. In every condition, Mickey asks Pikachu a question in (15).

- (15) Pikachu, nani kau no
 Pikachu what buy Q
 'Pikachu, what will you buy?'

Roughly speaking, Pikachu's answers can be divided into two groups; one is R-expressions like "*Tomato to ninjin* (a tomato and a carrot)." or "*Ichigo* (a strawberry).", and the other is "*Doremo* (everything)." and "*Nan(n)imo* (nothing).", which consist of an indeterminate + *mo*.

Table 3.

| | |
|-----------------------------------|---|
| Type 1: R-expressions | <i>Tomato to ninjin</i> (a tomato and a carrot) |
| | <i>Ichigo</i> (a strawberry) |
| Type 2: Indeterminate + <i>mo</i> | <i>Nan(n)imo</i> (NCI) |
| | <i>Doremo</i> (everything) |

For Type 1 (R-expressions), there are one correct condition and one wrong condition. Suppose Pikachu answered "*Tomato to ninjin* (a tomato and a carrot)". Then, if Mickey put the tomato and the carrot into Pikachu's basket, and the strawberry into the box, Mickey is right. This is an example of the correct condition. In contrast, suppose Pikachu answered "*Ichigo* (a strawberry)". Then, if Mickey put the tomato and the carrot into Pikachu's basket, and the strawberry into the box, Mickey is wrong this time. This is an example of the wrong condition. These are summarized in Table 4.

Table 4.

| | |
|---|---|
| | Putting a tomato and a carrot into Pikachu's basket, a strawberry into the box. |
| (a) Pikachu's answer: <i>Tomato to ninjin</i> (a tomato and a carrot) | Correct |
| (b) Pikachu's answer: <i>Ichigo</i> (a strawberry) | Wrong |

Let's see the result of R-expressions, which is shown in Table 5

Table 5.

| | 4-year-olds | 5-year-olds |
|-------------------------|--------------|--------------|
| Acceptance rate for (a) | 95.2%(40/42) | 100% (42/42) |
| Acceptance rate for (b) | 2.4% (1/42) | 0% (0/42) |

For R-expressions, as shown in Table 5, the participants' performance was nearly perfect. Almost all the time, they correctly accepted the correct conditions, and correctly rejected the wrong conditions. This result indicates that children did not interpret an elliptical answer of simple R-expressions as a negative statement. They did not interpret Pikachu's answer "*Ichigo*." as "Ichigo-o kawanai (I will not buy a strawberry)." but they interpreted it as "Ichigo-o kau (I will buy a strawberry)". If the participants interpreted Pikachu's answer "*Ichigo*." as "Ichigo-o kawanai (I will not buy a strawberry).", they would accept Mickey's reaction of putting a strawberry into the box, not into the shopping basket. On the contrary, as discussed below, almost all the time, the participants interpreted Pikachu's answer "*Nanimo*." as "*Nan(n)imo kawanai* (I will not buy anything)." In other words, they interpreted it as a negative statement.

4.2. Experiment 2: 'Indefinite + focus' items

Let's turn to the test items, *doremo* (everything) and *nan(n)imo* (nothing), which are given in (16). As mentioned above, both *doremo* and *nan(n)imo* consist of indeterminate/indefinite + focus. However, as discussed in section 2, *nan(n)imo* is an NCI and involves [Neg], which is not realized overtly. Given the overt morphological realization of *nan(n)imo*, there is a possibility that children at first do not know that *nan(n)imo* involves covert [Neg]. We assume that children interpret *nan(n)imo* as *doremo* if children do not know that *nan(n)imo* involves [Neg].

- (16) a. Dore-mo b. Nan(n)imo
 which-Foc what-Foc
 'everything' 'nothing'

Table 6.

| | | What Mickey put into Pikachu's basket | | |
|------------------|----------------------------|---------------------------------------|---------------|---------|
| | | All the items | Only one item | Nothing |
| Pikachu's answer | <i>Doremo</i> (everything) | Correct | Wrong | Wrong |
| | <i>Nan(n)imo</i> (NCI) | Wrong | Wrong | Correct |

As shown in Table 6, *doremo* (everything) and *nan(n)imo* (nothing) are given for three situations. When Pikachu answered "*Doremo*.", the situation where Mickey put all the items into Pikachu's basket is compatible with Pikachu's answer. However, the same situation is not compatible with Pikachu's answer "*Nan(n)imo*". The situation where Mickey put only one item into Pikachu's basket is not compatible with Pikachu's answer "*Doremo*." or "*Nan(n)imo*". When Pikachu answered "*Nan(n)imo*", the situation where Mickey put nothing into Pikachu's basket is compatible with Pikachu's answer. However, the same situation is not compatible with Pikachu's answer "*Doremo*".

First, let's see the result of *doremo* (everything). As shown in Table 8, roughly speaking, all the participants showed adultlike performance for every condition. They correctly accepted the situation (a) where Mickey put all the items into Pikachu's basket. However, they correctly rejected the situation (b) where Mickey put only one item into Pikachu's basket. In addition, they correctly rejected the situation (c) where Mickey put nothing into Pikachu's basket.

Table 7.

| | |
|-----|---|
| (a) | Putting all the items into Pikachu's basket |
| (b) | Putting only one item into Pikachu's basket |
| (c) | Putting nothing into Pikachu's basket |

Table 8.

| | 4-year-olds | 5-year-olds |
|-------------------------|---------------|---------------|
| Acceptance rate for (a) | 92.9% (13/14) | 92.9% (13/14) |
| Acceptance rate for (b) | 0% (0/14) | 0% (0/14) |
| Acceptance rate for (c) | 7.1% (1/14) | 0% (0/14) |

Next, let's see the result of *nan(n)imo* (NCI). As shown in table 9, roughly speaking, all the participants showed adultlike performance for every condition. They correctly rejected the situation (a) where Mickey put all the items into Pikachu's basket. In addition, they correctly rejected the situation (b) where Mickey put only one item into Pikachu's basket. However, they correctly accepted the situation (c) where Mickey put nothing into Pikachu's basket.

Table 9.

| | 4-year-olds | 5-year-olds |
|-------------------------|---------------|---------------|
| Acceptance rate for (a) | 0% (0/14) | 0% (0/14) |
| Acceptance rate for (b) | 0% (0/14) | 0% (0/14) |
| Acceptance rate for (c) | 92.9% (13/14) | 92.9% (13/14) |

Children at age 4-5 clearly distinguish *nan(n)imo* (nothing) from *doremo* (everything) although both items consist of indeterminate / indefinite + focus in overt realization. Moreover, they know that *nan(n)imo* can be used as an elliptical answer although decisive input is extremely rare. Consequently, our observation suggests that they regard *nan(n)imo* as an NCI. To be more concrete, they seem to know that *nan(n)imo* involves covert [Neg] as shown in (17).

(17) a. Nan(n)i-mo
what-Foc

(Overt morphological realization)

b. Nan(n)i-mo

what-Foc-Neg

(Children's knowledge)

5. Discussion and Conclusion

To summarize, it seems unlikely that children rely on morphology to distinguish NCIs from NPIs because [Neg] is not overtly realized in Japanese morphology for NCIs. In addition, the input-based hypothesis is not likely since children do not hear decisive input for the acquisition of NCIs, according to our investigation. Second, we have observed the early acquisition of NCI in our experiment. These observations suggest that the default hypothesis is plausible. Therefore, we propose that children at first assume negation-sensitive items (i.e., NPIs or NCIs) in their language to be NCIs by default. If the use of NPIs, for example, the use of *anything* in English, is initially limited to negative sentences, our proposal receives further support. This is a further issue of our research.

To conclude, children at age 4-5 already have the knowledge of NCIs although they do not hear decisive input. Consequently, we argue that children at first assume negation-sensitive items (i.e., NPIs or NCIs) to be NCIs by default.

Appendix

Sample pictures of the experiment 1, R-expressions



Mickey: “Pikachu, nani kau no (what will you buy)?”

Pikachu: “Tomato to ninjin (a tomato and a carrot).”

Mickey: “OK.”



Experimenter: “Mickey wa chanto dekita kana (Could Mickey successfully help Pikachu)?”

Correct Answer: Yes.

Sample pictures of the experiment 2: “Indefinite/indeterminate + focus” items



Mickey: “Pikachu, nani kau no (what will you buy)?”

Pikachu: “Doremo (everything).”/ “Nan(n)imo (NCI).”

Mickey: “OK.”



Experimenter: “Mickey wa chanto dekita kana (Could Mickey successfully help Pikachu)?”

Correct Answer: Yes (for Pikachu’s answer: “Doremo (everything).”)

No (for Pikachu’s answer: “Nan(n)imo (nothing).”)



Experimenter: “Mickey wa chanto dekita kana (Could Mickey successfully help Pikachu)?”

Correct Answer: No (Pikachu’s answer: “Doremo (everything).”)

Yes (Pikachu’s answer: “Nan(n)imo (NCI).”)

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