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The Acquisition of the Japanese Particle *ni**

Kazumi Matsuoka

0. Introduction

In this study, the acquisition process of the Japanese grammatical particle *ni* was investigated. Unlike other Japanese particles, *ni* is phonetically ambiguous: it can be interpreted as a dative-particle or as a postposition.¹ As Sadakane & Koizumi (1995) discussed, the phonetic ambiguity of *ni* may make it challenging for young children to acquire the particle. Results from my analysis of the naturalistic data of three Japanese-speaking young children are reported to address this potential learnability problem of the acquisition of *ni*.

1. The Dual Property of the Particle *ni*

1.1. Case Particles and Postpositions in Japanese

The Case of Japanese DP is indicated by the use of Case-particles. Phonetically, all Case-particles are one-mora-long: most of them consist of one consonant followed by one vowel: *ga* for the Nominative Case, *o* for the Accusative Case, *no* for the Genitive Case, and *ni* for the dative Case. The following example contains all four Case-particles.

- (1) Karen-ga John-ni ootoo-no shatsu-o age-ta.
 Karen-NOM John-DAT younger brother-GEN shirt-ACC give-PAST²
 'Karen gave John her younger brother's shirt.'

On the other hand, postpositions vary in terms of phonetic properties; for example, the postposition *de* (instrumental, locative for active predicates) is one-mora long, while the postposition *kara* consists of two morae. (2) and (3) below are examples of postpositions.

- (2) Mana-wa basu-de dekake-ta.
 Mana-TOP bus-by leave-PAST
 'Mana left by bus.'
- (3) Tomodachi-ga Osaka-kara ki-ta.
 friend-NOM Osaka-from come-PAST
 'Friend(s) came from Osaka.'

1.2. Two Types of the Particle *ni*

Ni is the only particle that is phonetically ambiguous: it may be the dative Case-particle, or a postposition. An example of *ni* as a postposition is shown below.

- (4) Gakkoo-ni ii konpyuutaa-ga ar-u.
 school-loc good computer-NOM exist-NPAST
 'There is a good computer at school.'

At a glance, it seems difficult to tease apart the two different types of the particle *ni*. However, Sadakane & Koizumi (1995) demonstrated that numeral quantifiers can be used to reliably distinguish between the two different types of *ni*. The Japanese numeral quantifiers can modify DP only when there exists a mutual c-command relationship between the numeral quantifiers and the DP or its trace (Miyagawa, 1989). See the examples in (5) and (6) below. (5) is a sentence with no numeral quantifier.

- (5) Tomodachi-ga [PP basu-de] ki-ta.
 friend-NOM bus by come-PAST
 'Friend(s) came by bus.'

The following two examples include the numeral quantifiers *futari* 'two people' or *ni-dai* 'two machine-like objects'.

- (6) a. Tomodachi-ga futari [PP basu-de] ki-ta.
 friend-NOM 2-CL bus by come-PAST
 'Two friends came by bus.'
- b. *Tomodachi-ga [PP basu-de] ni-dai ki-ta.
 friend-NOM bus by 2-CL come-PAST
 'Friend(s) came by two buses.'

In (6a), the numeral quantifier (*futari*) and the DP (*tomodachi*) are in the mutual c-commanding relationship: there is no maximal projection node intervening between the two. However, the numeral quantifier *nidai* cannot modify the DP *basu* in (6b), since the DP is inside a maximal projection (Postposition Phrase), preventing the DP from establishing the mutual c-command relation to the numeral quantifier.

Now let's turn to the examples with the particle *ni*. The grammatical sentence (7a) does not contain any numeral quantifier. The ungrammaticality of (7b) shows that the numeral quantifier *futatsu* cannot modify the DP *ron*. This strongly implies that the particle *ni* is the head of the Postposition Phrase. The postposition *ni* in (7b) projects its own maximal projection (PP), in the same way in which the postposition in (6b) projects a PP, which prevents the numeral quantifier from modifying the DP inside the projection.

- (7) a. Kanta-no ronbun-wa ano riron-ni motozuitei-ru.
 Kanta-GEN thesis-TOP that theory on be based-NPAST
 'Kanta's theory is based on that theory.'
- b. *Kanta-no ronbun-wa riron-ni futa-tsu motozuitei-ru.
 Kanta-GEN thesis-TOP theory-on two-CL be based-NPAST
 'Kanta's paper is based on two theories.'

(8), below, is the closest grammatical counterpart to (7b). Note that the numeral quantifier *futa-tsu* appears inside the DP in the grammatical sentence (8).

- (8) Kanta-no ronbun-wa [DP futa-tsu-no riron]-ni motozuitei-ru.
 Kanta-GEN thesis-TOP two-CL-GEN theory-on be based-NPAST
 'Kanta's paper is based on two theories.'

In contrast, the fact that the numeral quantifier (*santoo*) can modify the DP (*uma*) in (9) shows that this particle *ni* is not a postposition, but the Dative Case marker.

- (9) Karen-wa uma-ni san-too ninjin-o age-ta.
 Karen-TOP horse-DAT three-CL carrot-ACC give-PAST
 'Karen gave carrots to three horses.'

To summarize, two types of the particle *ni* can be distinguished by including a numeral quantifier in the sentence, which modifies the DP marked with *ni*. The sentence would be grammatical only when the particle *ni* is used as the Dative Case marker.

Following Sadakane & Koizumi (1995), *ni*, when used as the Dative Case particle, can be subdivided into the following five categories:

(10) Dative particles

- D-A Goal indirect object
ni ageru (to give), *ni shiraseru* (to notify)
- D-O1 Change of position with an intransitive verb
ni noru (to ride)
- D-D pseudo-reciprocal use of dative confrontation
ni au (to meet), *ni butsukaru* (to bump into)
- D-N1 Dative of direction with an intransitive verb
ni iku (to go), *ni todoku* (to reach)
- D-N2 Dative of direction with transitive verb
ni okuru (to send), *ni watasu* (to hand)

The postpositional types of *ni* can be classified into eighteen categories. See Appendix 1 for the complete list of postpositional *ni* with examples. (11) is a list of the major types of postpositional *ni* that appeared in the databases used in this study.

(11) Postpositions

- B Benefactive
- C Dative of confrontation
- E Objective stimulus
- F Dependent on
- G From/by
- H The underlying agent
- I The instigator of a passivised causative
- K Pseudo-agent 'by/at'
- L Indirect subject - possessor
- M Specific time
- O2 Change of position with a transitive verb
- R Purpose
- T Manner
- V Reference

The two types of *ni* exhibit different syntactic properties, which cannot be explicitly taught without negative evidence. The Case licensing system is assumed to be a part of innate grammatical principles (UG, Chomsky, 1995), while the acquisition of postpositions is not necessarily governed by any syntactic principle. Hence, it is predicted that the acquisition of a Case particle and of a postposition will be accomplished through different paths. Children's process to acquire Case-particles is guided by the innate grammatical knowledge and hence should exhibit a uniform pattern. On the other hand, the pattern of the acquisition of individual postpositions would not be any different from acquiring individual lexical items; i.e., the pattern of acquisition would vary among children, potentially influenced by nature of inputs. The current study was conducted to test these predictions.

2. Method

The data were taken from three sets of databases, independently transcribed in the CHILDES format (MacWhinney & Snow, 1990; Oshima-Takane & MacWhinney, 1995): the AKI Corpus (Miyata, 1995), the Noji Corpus (computerized for Morikawa, 1997), and the KAN Corpus (currently in construction at the University of Connecticut). The age ranges of the children, during the time that their utterances were collected, are as follows: 1;5.7-3;0.0 (AKI), 1;11-3;3 (Noji), and 2;2.3 - 3;0.12 (KAN). The CLAN program was used to identify 1746 spontaneous utterances which included the particle *ni*. Those sentences were hand-coded according to predicate type. Each occurrence of *ni* was also hand-coded, according to the classifications presented in Sadakane & Koizumi (1995).

3. Results

The hypothesis that young children's acquisition process would distinguish the dative *ni* from the postposition *ni* was not empirically supported. Even though the children used the two types of *ni* in an adultlike fashion, their early use did not in any way reflect the dative/postposition distinction of the adult language. As seen in the Table 1, below, for Sumihare there is no clear ordering among the first occurrences of the various uses of *ni*, suggesting that all uses had been acquired prior to the onset of data collection. In the two remaining

corpora (AKI and KAN), the four categories of *ni* that appeared earliest include both dative (D-O1, D-N1), and postpositional types (L, O2).

Table 1. Ages of First *ni* Usage by Type

	AKI	KAN	Sumihare
Dative			
D-A	2;7.19	2;8.18	2;1
D-O1	2;5.6	2;2.3*	2;1
D-D	2;8.3	3;0.12	N/A
D-N1	2;4.4	N/A	2;2
Postpositions			
B	2;8.11	N/A	2;4
G	N/A	N/A	2;2
H	2;10.12	N/A	2;2
L	2;5.6	2;2.14	2;2
O2	2;4.19	2;2.14	2;1
R	N/A	2;10.27	N/A

(Categories were not included when there was no recorded instance of the relevant usage of *ni*.)

(* : The first file of the database)

(N/A: Not observed in the corpus)

The four categories which emerged early, D-O1, D-N1, L, and O2, are also among the most frequently used types of *ni* in the whole corpus. As shown in Table 2, those categories encompass more than 80% of the total usage of *ni* in each of the three databases. See Appendix 2 for the number of *ni* in each of the four categories.

Table 2. Percentage of D-O1, D-N1, L, and O2 in the Total Number of Dative/Postposition

	AKI	KAN	Sumihare
Total: dative/postposition	167	87	797
D-O1, D-N1, L, and O2	147(88%)	83 (95.4%)	642 (80.5%)

To summarize, young Japanese-speaking children in these corpora did not distinguish between the dative and postpositional types of *ni* during an early stage of their acquisition process. Four types of *ni* appeared early and were used frequently throughout each corpus. The dative/postposition dichotomy does not provide an explanation for the observation that the four types of *ni* constitute a group in the language acquisition process.

4. Discussion

The following is the list of functions of the four types of *ni* that AKI and KAN seem to classify as one group in their early speech:

(12) Dative

D-O1 Change of position with an intransitive verb
ni noru (to ride)

D-N1 Dative of direction with an intransitive verb
ni iku (to go), *ni todoku* (to reach)

Postpositions

L Indirect subject - possessor
ni aru/iru (to exist at, to have)

O2 Change of position with a transitive verb
ni kaku (to write onto), *ni naraberu* (to arrange on)

One common property among those four types of *ni* in (12) is that they indicate the physical location of an item or the final physical location as a result of the action. For example, the type L in (12), commonly called Locative, indicates the physical location of an item. The predicate types D-O1, D-N1, and O2 all indicate the destination of an action (of going, of placing, etc.) That is, those types of *ni* mark the final location of the item as a result of the action. In that sense, they can be considered to be an extension of the function of Locative. The

observation that children treat those four types of *ni* as a group indicates that there is a stage in the acquisition of *ni* in which children assume that it is a particle used to mark Locative, or 'physical location'.⁴ In other words, children rely on types of semantic function to learn the usage of the lexical item. The children's reliance on the semantic function in the acquisition of morphological item, observed in this study, can be interpreted as an example of the Semantic Boot-Strapping (Pinker, 1984, 1989).⁵

Note that Case-morphemes are not always associated with a particular semantic function. For example, the Nominative Case-particle *ga*, which is usually attached to the subject of the sentence, may be attached to the object of a stative predicate (Kuno, 1973). Nevertheless, the use of the Nominative Object does not significantly change the argument structure of the sentence. The two sentences in (13) mean virtually the same thing:

- (13) a. Hitoshi-ga piano-ga hik-e-ru (koto)
Hitoshi-NOM piano-NOM play-able-NPAST fact
'(The fact that) Hitoshi can play the piano'
b. Hitoshi-ga piano-o hik-e-ru (koto)
Hitoshi-NOM piano-ACC play-able-NPAST fact
'(The fact that) Hitoshi can play the piano'

The correlation between a semantic function and a particle, which young children seem to assume, is commonly seen in the postpositional use of *ni* in adult grammar. The data from these Japanese children indicate that there is an early stage in which they assume that *ni* is a proto-postposition used to mark a function related to "physical location".

5. Re-learning *ni*

I have argued that these young children first assume that *ni* is a proto-postposition. The four types of *ni* which match the semantic criterion of (final) physical location appear at an early stage in the acquisition of *ni*, and continue to be used frequently. However, some types of *ni* are Case-particles in adult grammar, as Sadakane & Koizumi (1995) demonstrated. Hence, it is necessarily to assume that children re-classify different types of *ni* into dative-particles and postpositions at some later point in the acquisition process.

5.1. Omitted Particles

Possible positive evidence that could trigger this re-learning of *ni*, is adult use of sentences with dropped particles. In adult Japanese, Case-particles, except the Genitive marker *no*, frequently drop in casual speech. See the following examples (the dropped particles are indicated in the parentheses).

- (14) Moo gohan (-o) tabe-ta?
already meal (-ACC) eat-PAST
'Have you eaten yet?'
(15) Sakki Ma-chan (-ga) ki-te-ta yo.
a while ago Ma-chan (-NOM) come-state-PAST I-tell-you⁶
'Ma-chan was here a while ago, (I tell you).'

On the other hand, a similar construction is not available for postpositions. Unlike Case-particles, once a postposition such as *kara* is dropped as in (16b), below, it is not possible to recover the postposition as the hearer interprets the sentence. The only possible interpretation of the second sentence is indicated in the English translation, which causes a semantic anomaly.

- (16) a. Kinoo Kyoto-kara ki-ta yo
yesterday Kyoto-from come-PAST I-tell-you
'(She) came from Kyoto yesterday, (I tell you).'
- b. ??Kinoo Kyoto ki-ta yo.
yesterday Kyoto come-PAST I-tell-you
'Kyoto came yesterday.'

The same contrast applies to the dative/postposition *ni*, as long as it appears with most intransitive verbs. The dative-particle *ni* can be (and frequently is) dropped with the D-O1 predicate such as *noru* 'to ride' or the D-N1 predicates such as *kaeru* 'to return', while it is not possible to delete the locative postposition *ni*.

- (17) a. Yuenchi-de uma (-ni) not-ta yo.
amusement part-at horse(-DAT) ride-PAST I-tell-you.
'I rode a horse at the amusement part, (I tell you).'

- b. Uchi (-ni) kaer-u?
home (-DAT) return-NPAST
'Will you go home?'
- (18) Hiro-kun (-wa) kocu ??(-ni) i-ru yo.
Hiro-kun (-TOP) park (-loc) exist-NPAST I-tell-you
'Hiro-kun is at the park, (I tell you).'

Examples of dropped dative particles with the D-O1 or D-N1 types are very common in adult speech directed to young children. Observing the dropped *ni* is enough to sort out the four early proto-postpositions into dative particles or postpositions (D-N1, D-O1, L, O2).

5.2. Acquisition of the Double Object Datives

However, if children relied exclusively on omissions of the particle to identify the dative uses of *ni*, a serious empirical problem arises. The dative Case-particle cannot be dropped with double object predicates such as *ageru* (to give), as shown in (19). Hence, the particle *ni* in this construction would not be omitted in adult speech. Assuming that children make use of systematic omission of expected grammatical construction as indirect negative evidence (Lasnik, 1989), they would incorrectly conclude that the *ni* with the D-A predicate is a postposition.

- (19) Karen(-wa) John*(-ni) shatsu(-o) age-ta tte.
Karen(-TOP) John(-DAT) shirt(-ACC) give-PAST that-I-heard
'I heard Karen gave John a shirt.'

The particle *ni* with the D-A predicates does not appear until later stages of the acquisition process in the AKI (2;7.19) and KAN (2;8.18) corpora. At some later point in the course of acquisition, additional positive evidence is necessary to distinguish between the O2 postposition, such as the one in (20), and the D-A predicate.

- (20) Momoko-ga osushi-o sara*(-ni) narabe-ta
Momoko-NOM sushi-ACC plate-onto arrange-PAST
'Momoko put pieces of sushi on the plate.'

One difference between the D-A predicate and all other predicate types is that the D-A predicate shares the semantic property with the double-object construction in English; both imply that 'X causes Z to

have Y' (Gropen et al., 1989). For example, the particle *ni* in (19) indicates that John owns the shirt as a result of the action. This contrasts with the O2 predicate (as well as other predicates such as D-N1 and D-O1) in that it simply implies that 'X causes Z to go to Y'. This semantic property distinguishes the D-A type predicate from all other predicates investigated in this study. Hence, it is possible that the acquisition of *ni*, with the D-A type predicate, is accomplished through a different process from that required for the acquisition of other instances of dative *ni*.

There is a study of the acquisition of double object dative construction in English, which might shed light on the acquisition process of the D-A type predicate in Japanese. It was suggested by Snyder & Stromswold (1997) that the acquisition of double object datives requires the acquisition of a grammatical property, which "appears to be a general prerequisite for complex predicate or small clause constructions" (1997: 308). This property is argued to be relevant to the acquisition of double object datives, causative/perceptual constructions, V-NP-Particle constructions, and put-constructions in English.

Even though many of the constructions listed by Snyder & Stromswold are language-specific, it is possible to compare the acquisition pattern of the double object dative and the causative construction in Japanese. The Japanese particle *ni* can be used to mark a certain type of causative. Note that *ni* in this construction is argued to be a copula (Nakayama, 1996; Sadakane & Koizumi, 1995). This type of causative construction includes nouns or nominal adjectives as the result of the action. When the result is expressed with a nominal adjective, it is marked with the particle *ni*. The following is an example of this usage of *ni*.

- (21) Misato-ga boo-o massugu-ni shi-ta.
Misato-NOM stick-ACC straight-ni do-PAST
'Misato made the stick straight.'

It seems that the result *ni* began to appear at approximately the same time when the D-A (to give) *ni* is observed in the Japanese children's speech data.

Table 3: First Usage of Dative (D-A) and Result *ni*

	AKI	KAN	Sumihare
D-A	2;7.19	2;8.18	2;1
Result	2;7.5	2;8.15	2;2

This indicates that the observation made in Snyder & Stromswold (1997) can be applied to the Japanese data, as well. That is, the acquisition of *ni* in the double object construction involves the activation of a grammatical property (Property A in Snyder & Stromswold's term) and hence accomplished at a later stage.⁸

6. Summary

Spontaneous speech data of young Japanese children were analyzed to test the predication that two types of *ni* are acquired in different processes. The dichotomy between dative and postpositional *ni* is not sufficient to account for the observations made in this study. The results showed that the children did not distinguish between dative and postposition *ni* in the early stages of development. Particularly, four functions of *ni*, two dative and two postpositional, emerged early and were used frequently throughout the corpora. The four types of *ni* are argued to indicate proto-postposition in early child speech, which marks the physical location or final physical location of an item as a result of the action described by the predicate. This strongly indicates that children make use of the strategy of Semantic Boot-Strapping (Pinker, 1984, 1989) during early stages of morphological acquisition.

The phenomenon observed in this study is not specific to the Japanese language. According to an overview of studies of the acquisition of English (deVilliers & deVilliers, 1986), grammatical morphemes which are associated to the semantic function related to PLACE are among the items acquired at the earliest stage. The acquisition process of *ni*, reported here, present an additional piece of evidence which shows that the semantic function related to PLACE is one of the most salient concept to young children, no matter how it is morphologically represented.

In the later stage of acquisition process, though, children need to re-classify some types of *ni* as Case particles. Deletability of Case particles was discussed as possible syntactic positive evidence that enhances the re-learning. Morii (1993) reported that children tend to

omit Dative *ni*, while retaining Postposition *ni* in their speech. Her observation implies that young children are sensitive to the relationship between recoverability and the syntactic status of the particle *ni*.

The fact that the *ni* in the double object construction was acquired later than other types of the Case-particle *ni* was discussed as possible empirical support for the existence of the grammatical property which is relevant to the acquisition of small-clause construction (Snyder & Stromswold, 1997). Further research on the syntactic and semantic nature of the particle *ni* is required before the observations made in this study can be investigated further.

Notes

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- 1 *Ni* can be also used as a copula (Nakayama, 1996; Sadakane & Koizumi, 1995). The issue addressed in this paper relates to the distinction of Case particle *ni* and postposition *ni*, as they seem to occur in similar linguistic environments. Hence, the copula *ni* was excluded from the original analysis. However, refer to the Section 5.2. for the discussion of the acquisition of *ni* in the double object construction and a variation of the copula *ni* (causative/resultative).
- 2 NOM: Nominative, DAT: Dative, GEN: Genitive, ACC: Accusative, TOP: Topic, CL-Classifier, NPAST: Nonpast (may indicate the 'present' or 'future' tense) COP: copula
- 3 One might wonder if children begin by attending to a simpler argument structure (for example, attending intransitive predicates earlier than transitive predicate). Such a conjecture is not relevant here, though. Even though *ni* of the D-O1, D-N1, and L types appear with intransitive verbs, the *ni* of the O2 category is associated with transitive verbs. In fact, the O2 type appears quite early in all three corpora and it is one of the most frequently used types of *ni*. Hence, the complexity of argument structure cannot explain why children seem to group these four types of *ni*.

4 Children, at this 'Locative' stage of the acquisition of *ni*, do not seem to use the dative of the D-A type (e.g., *ageru* 'to give'). One interpretation is that the action of giving implies the change of possession; but, not necessarily a change in its physical location (consider the situation of giving a house). On the other hand, the four types of *ni* discussed here do not indicate the possession of an item (more discussion in Section 5.2.) It is interesting that Sumihare began to use the D-A particle as early as the Locative types and continued to use it very frequently. It seems that Sumihare had acquired both postpositional and genuinely dative uses of *ni* by the age at which the corpus begins.

5 The Semantic Bootstrapping, cited here, is interpreted as a strategy discussed in Pinker (1994: Ch.2). It is used to label unknown lexical items with syntactic categories (e.g. noun, verb, postposition, etc.).

6 *Yo* in the example is one of the sentence particles (*shujoshi*), which act as discourse markers. The sentence particle *yo* indicates that the speaker assumes that she is providing new information for the hearer. Sentence particles are frequently used in Japanese, particularly in casual speech.

7 The dative *ni* cannot be dropped when it appears with ditransitive predicates (D-A, D-N2) such as *ageru* (to give), *okuru* (to send). Also, the 'pseudo-reciprocal' dative predicate (the D-D type), such as *au* (to meet), does not allow the dative *ni* to drop. In fact, the D-D type is described as 'ambiguous between a Case marker and a postposition' by Sadakane & Koizumi (1995: 14). The syntactic properties of *ni* with the D-D predicate are to be determined by future syntactic research. In the data analyzed in this study, both the type-frequency and the token-frequency were low for D-D predicates: a small number of the D-D predicate was observed (see Appendix), and very few verbs such as *au* or *butsukaru* (to bump into) appear in the children's speech.

8 The O2-type predicate (see (12) in the text) can be considered as an equivalent to the *put*-constructions in English. If that is the correct generalization, it is predicted that the *ni* with the O2-type predicate will appear about the same time as the double object construction is used productively by a child. This prediction does not seem to be supported at the first glance of the data: *ni* with O2 predicate appeared well before *ni* with the D-A (double object) predicate. A closer look at the data, though, revealed that the earlier *ni* with the O2 predicate is not the Japanese equivalent to the *put*-construction as defined in Snyder & Stromswold (1997). The *put*-construction which was studied in Snyder & Stromswold

included two internal arguments. A similar multiple-argument construction appears in the AKI and Noji corpora only after the D-A *ni* is used. This might suggest that those young children could not distinguish between the D-O1 predicate from the O2 predicate at an early stage of language development. KAN uttered three instances of the O2-*ni* with both internal arguments before his first use of the D-A *ni*: however, all three instances of the sentence types all include *koko-ni* 'to here'. After the D-A *ni* appears in the KAN corpus, the O2 sentences includes more variety of locations, as well as items which are affected by action. This indicates that the three early usage of O2 construction may be a "routine" form, which was not productively derived by syntactic principles.

9 Morii (1993) argued that her analysis of a Japanese child's speech indicated that the dative *ni* was acquired before postpositional *ni*. The apparent contradiction between her conclusion and the observation reported in this study is likely to have resulted from the difference in the number of sample utterances and different sets of functions of the particle *ni* included in the two studies. Data analyzed by Morii were taken from two database sets (Okubo, 1967; Iwabuchi et al., 1968). According to Morii's Tables 1 and 7 in the Chapter 3, the number of 'Case markers' and 'Postpositions' *ni* during the relevant age group (1:6 - 3:5) is significantly small compared to the number of utterances included in the present study. Within the two corpora, the total of the 'Case marker' and 'Postposition' form of *ni* is 61 (52 and 9 for each corpus). This number is considerably smaller than the number of utterances analyzed in the current study (1746.) This vast difference in sample size makes the comparison of the two studies difficult.

Also, among the functions of *ni* observed in child speech analyzed in this study (see the list in (10) and (11)), the functions of D-N2, B, G, O2, and R are not included in the list of different usage of *ni* studied in Morii (1993: Chapter 3.) Note that the O2 usage of *ni* is one of the earliest and most frequent function used by children in the three databases. It is reasonable to assume that the omission of this type of *ni* from Morii's analysis has significantly affected the result of the study.

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