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THE ACQUISITION OF JAPANESE CASE PARTICLES AND THE THEORY OF CASE CHECKING

Kazumi Matsuoka, Ph.D.

University of Connecticut, 1998

This study was conducted to investigate whether children, regardless of adult input, show a similar pattern in their acquisition of Case particles. The children's data are from three sets of corpora, independently transcribed in the CHILDES format (MacWhinney and Snow 1990). The frequency of the three Case particles *ga* (the Nominative Case particle), *o* (the Accusative Case particle) and *ni* (the Dative Case particle) were analyzed and compared to the adult speech in the same corpora.

It was found that the Case particle development follows a universal acquisition sequence across the three children: *ga-ni/o*. Data from the adult speech show that this sequence is not a result of parental input. Also, it was found that the Tense morphemes appear significantly before the first use of

the Case-particles. The data are consistent with the assumption that the Case feature on an NP is licensed by functional heads (Chomsky 1995).

When two arguments appear with a stative predicate, the Nominative particle *ga* can be used for both the subject and the object in adult speech. The children used only one Nominative Case-particle *ga*. This is consistent with the argument, in Ura (1996), that the availability of multiple-checking is a parametric option. The majority of the children's errors in the usage of the Case particles overall is the overuse of *ga*. This observation suggests that young children assume that the Nominative particle *ga* is the default Case in Japanese.

Children's early use of the particle *ni* was also studied. It was observed that four types of *ni* emerged early and were frequently used throughout the corpora. These types of *ni* are argued to be proto-postpositions, which mark the physical location or the final physical location of the item as a result of the action described by the predicate. The fact that the *ni* in double object construction is acquired later than other types of the Case-particle *ni* is discussed as possible empirical support for the existence of a grammatical property which is relevant to the acquisition of small-clause constructions (Snyder and Stromswold 1997).

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AND THE THEORY OF CASE CHECKING

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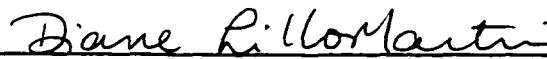
Doctor of Philosophy Dissertation

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Abbreviation Keys

NOM	Nominative Case
ACC	Accusative Case
GEN	Genitive Case
DAT	Dative Case
CL	Classifier
NPAST	the nonpast tense
PAST	the past tense
COP	copula verb

Chapter 1

Introduction

This study explores the acquisition of Japanese Case-particles and its implications for the Checking Theory of Case, proposed in the framework of generative grammar called the Minimalist program (Chomsky 1995). The children's data are from three sets of corpora, independently transcribed in the CHILDES format (MacWhinney and Snow 1990). A comparison of the data of three different children indicates that young children learning Japanese do not solely depend on the content of parental input for learning the Case¹ system of Japanese. Rather, they make use of innate principles of grammar during the acquisition of Case particles.

The first section illustrates why it is challenging for young Japanese learners to solely rely on observation to learn the Case system.

1.1. Brief description of the Japanese Case system: Why are Case particles hard to learn by observation?

1.1.1. No one-to-one correspondence between a Case-particle and argument structure

In Japanese, Case on a DP is indicated by Case-particle morphemes. Four particles belong to this category: the Nominative Case-particle *ga*, the

Accusative Case-particle *o*, the Genitive Case-particle *no*, and the dative Case-particle *ni*.² The following example contains all four of the Case-particles.

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

The Nominative Case particle *ga* is typically attached to the subject, while the Accusative Case particle, *o*, is attached to the object.

(1-2) Yumiko-ga biiru-o nom-u
 Yumiko-NOM beer-ACC drink-NPAST ³
 'Yumiko drinks beer.'

The Case particles are difficult to learn by mere observation, however, since a one-to-one correspondence between the Case particles and any particular item in the argument structure (such as subject/object) does not always hold. For example, the Nominative Case does not always imply subjecthood. Example (1-3) has a stative predicate (a predicate which describes a state, not an action). In such cases, the Nominative particle *ga* is used for the object.

(1-3) a. Yumiko-ga Furansugo-**ga** deki-ru
 Yumiko-NOM French -NOM capable-NPAST
 'Yumiko can handle French.'

b.* Yumiko-ga Furansugo-**o** deki-ru
 Yumiko-NOM French -ACC capable-PRES
 'Yumiko can handle French.'

When an intransitive verb appears with the potential verbal morpheme (*rar*)e, either *ga* or *o* can be used for the object. Still, the meanings of (1-4a) and (1-4b) are indistinguishable. (See Chapter 2 for detailed discussion of the Nominative object.)

(1-4) a. Yumiko-ga biiru-**ga** nom-e-ru
 Yumiko-NOM beer-NOM drink-can-NPAST
 'Yumiko can drink beer.'

b. Yumiko-ga biiru-**o** nom-e-ru
 Yumiko-NOM beer-ACC drink-can-NPAST
 'Yumiko can drink beer.'

These examples show that the object may appear with two different Case particles, *ga* or *o*, depending on the predicate type.

If a child assumes that the particle *o* is used for the object, there arises an overgeneration problem: associating the particle *o* with the internal

argument would result in a grammar which generates ungrammatical sentences such as (1-3b).

The Nominative particle *ga*, and the Dative particle *ni* present a reversed relationship between the particle and an argument: these particles can be associated with more than one type of argument. As in (1-5) below, *ni* is often attached to the indirect object; but it can also be attached to the subject of a stative predicate, as shown in (1-6).

(1-5) Yumiko-ga Maki-ni prezento-o age-ru
 Yumiko-NOM Maki-DAT gift-ACC give-NPAST
 'Yumiko gives a gift to Maki.'

(1-6) Yumiko-ni Furansugo-ga deki-ru
 Yumiko-DAT French -NOM capable-NPAST
 'Yumiko can handle French.'

The examples above show that more than one particle can be associated with the internal argument.

The particle *ni* is also used as a locative postposition. The following example illustrates the locative use of *ni*.

(1-7) omocha-ga isu-no ue-ni ar-u.
 toy -NOM chair-GEN on-LOC exist-NPAST
 '(A) toy is on the chair.'

It was shown that none of the three Case-particles establishes a one-to-one correspondence with a certain type of argument in the predicate: particles such as *ga* and *ni* may be associated with more than one type of argument. At the same time, the object (internal argument) can appear with the particle *ga* or *o*. This makes it difficult for young Japanese learners to comprehend the relationship between the verb and the argument that the particle can appear with.

1.1.2. Omitted Case-particles

The particles attached to the object provide another possible source of confusion for language learners. As Takezawa (1987) noted, the particles on the object are frequently dropped if the argument is c-commanded by the verb.⁴

(1-8) a. Yumiko-ga biiru(-o) nom-u

Yumiko-NOM beer(-ACC) drink-NPAST

'Yumiko drinks beer.'

b. Yumiko-ga Furansugo(-ga) deki-ru

Yumiko-NOM French(-NOM) capable-NPAST

'Yumiko can handle French.'

It is reported that nearly 80% of the object particles are dropped in speech directed to young children (Clancy 1986).

On the other hand, the particle on the subject cannot be omitted.

(1-9) a. *? Yumiko(-ga) biiru-o nom-u

Yumiko(-NOM) beer-ACC drink-NPAST

'Yumiko drinks beer.'

b. *?Yumiko(-ga/ni) Furansugo-ga deki-ru

Yumiko(-NOM/DAT) French-NOM capable-NPAST

'Yumiko can handle French.'

At the very early stages of the acquisition process, omitted particles may obscure the relationship between particles and argument structure.

1.1.3. Missing arguments and word-order

The young learners might try to benefit from word-order to learn the usage of the Case-particles.⁵ However, word-order only complicates matters, since Japanese grammar allows relatively free word order. In fact, the knowledge of Case particles is required to understand so-called scrambled sentences, such as (1-10a)(Saito 1985). Note that both sentences in (1-10) are grammatical and mean the same thing.

(1-10) a. Maki-o Yumiko-ga hippa-ru
 Maki-ACC Yumiko-NOM pull-NPAST
 'Yumiko pulls Maki.'

b. Yumiko-ga Maki-o hippa-ru
 Yumiko-NOM Maki-ACC pull-NPAST
 'Yumiko pulls Maki.'

Another problem for young learners is that Japanese grammar allows arguments to be dropped in a sentence, as long as the person/thing can be inferred from the context. This is fairly common in colloquial speech. In example (1-11), the subject and the direct object are both dropped.

(1-11) ____ Yumiko-ni ____ age-ru
 Yumiko-DAT give-NPAST
 '(someone) gives Yumiko (something).'

To correctly understand sentences such as (1-11), one needs to know that *ni* is attached to the indirect object in this type of predicate. Dropped particles, scrambled word order, and dropped arguments all may cause a problem for young children learning the Case system in Japanese.

1.1.4. Rapid, error-free acquisition of Case-particles

In spite of the confusing nature of the Case-particles usage, Japanese-speaking children seem to acquire a basic knowledge of Case-particles by the age of three (Clancy 1986). They also produce few errors in Case-particles usage (see the review of previous research in Chapter 2). These facts suggest that the children take advantage of an innate knowledge of an abstract system which specifies how Case is licensed, before they learn the language-specific morphological properties to express the Case system. This innate knowledge is the major argument in the Principles and Parameters Model of language acquisition (Chomsky 1981), which is introduced in the following section.

1.2. Principles and Parameters Model of language acquisition

According to the Parameter-setting model of language acquisition (Chomsky 1981), children have access to innate grammatical principles, which guide the course of language acquisition by helping the children sort out the inputs that they receive. This knowledge, which they use to acquire their native language, is considered to consist of principles which are universal among all human languages.

The Principles and Parameters approach was proposed to explicitly formulate the observation that languages have a certain limited range of grammatical options. Linguistic principles come with parameters, which

constrain the range of possible language variation. They are assumed to be wide-ranging so that setting the value of a parameter could affect apparently unrelated constructions in a language. For example, setting the value of the head parameter determines the placement of the head of a maximal projection and its complement(s). This is going to affect the acquisition of the word order of a simple clause, embedded clause and the complementizer which precedes or follows it, relative clause and its head noun, among other constructions.

Universal Grammar (UG) consists of the grammatical principles and parametric variations. The Strong Continuity (Pinker 1984) Hypothesis assumes that this grammatical knowledge is available from the earliest stages of the language acquisition process.⁶

A number of studies have explored the implications of the Principles and Parameter Approach for the acquisition of English. For example, Hyams (1986) discussed the theoretical implication of the observation that English-speaking children tend to drop subjects in early speech. She proposed a version of the Pro-drop parameter, the AG/PRO parameter. Setting the value of this parameter determines properties of auxiliary systems of pro-drop (e.g. Italian, Spanish) and non-pro-drop languages (e.g. English, German). Her theory of the AG/PRO parameter relates apparently unrelated phenomena; the consistent use of null subject and the absence of modals and auxiliaries.

However, previous research to investigate the Principles and Parameters Approach with Japanese data is limited in number. Murasugi

(1991) argued for the Principles and Parameters Approach, in her unified analysis of children's non-adult production of two apparently unrelated noun-phrase constructions in Japanese.

1.3. Organization of the thesis

The structure of the thesis is as follows. In Chapter 2, the Checking Theory of Case, which is assumed to be a part of UG, is outlined. A summary of some of the previous studies of Japanese Case particles will follow. Four research questions, based on the previous syntactic analyses of the Japanese Case system, are presented. Previous research concerning the acquisition of Japanese Case-particles is reviewed in relation to the issues raised by the research questions.

Chapter 3 is a discussion of the methods used in this study to address the research questions. It includes discussions about the nature of spontaneous speech data, which is the primary data source for this thesis project.

Data related to the children's production of the Nominative particle *ga* are discussed in Chapter 4. First, I will show that Case particle development follows a universal acquisition sequence across the three children. Data from the adult speech show that this sequence is not a result of parental input. Second, I will report that the Tense morphemes appear significantly before the first use of the Nominative Case-particle *ga*. This finding is consistent with the claim that the Tense head is responsible for licensing the

Nominative Case. Third, the children used only one Nominative Case-particle *ga*, even when double Nominative constructions are available in adult Japanese. This finding is discussed in relation to the basic assumptions made in the Checking Theory of Case, including the theory of multiple checking (Ura 1996). Some non-adult usage of the Nominative particle *ga* is discussed in the remainder of chapter, which provides insight into the issue of the default Case in Japanese.

In Chapter 5, the acquisition of the Japanese particle *ni* is discussed. An analysis of early use of the particle *ni* revealed that young children do not distinguish between the Case-particle *ni* and the postposition *ni* in their acquisition of the particle. Rather, it seems to be the case that young children assume that *ni* is a proto-postposition. A re-learning process for the acquisition of *ni*, with possible positive evidence, is discussed. Finally, the fact that the *ni* in the double object construction is acquired later than other types of the Case-particle *ni* is discussed as possible empirical support for the existence of a grammatical property which is relevant to the acquisition of small-clause/complex predicates (Snyder and Stromswold 1997).

Notes for Chapter 1

¹The capitalized 'Case' is used in a more abstract sense than 'case', which has a clear morphological realization. For example, case and Case are almost equivalent in German. The Case of a German noun *Auto* ('car') is visible on the determiner as in *das Auto*, *dem Auto*, etc. On the other hand, nouns in English (except pronouns such as *she* or *her*) do not carry morphological case other than the Genitive Case (e.g. *John's camera*), but they must receive Case. (Chomsky 1981, Lasnik and Uriagereka 1988).

²The Genitive particle *no* is not considered in this study, since this Case is assumed to be licensed inside DP in a different fashion from the other types of Case. For discussion of the syntactic properties of *no* and its acquisition, see Murasugi (1991).

³The Japanese tense is basically classified into past (*-ta*) and nonpast (*-ru*). The nonpast tense is used as the tense marker in both present or future contexts. The tense morphemes can be attached to an aspectual marker, such as '(verbal stem)-te *i-ru*' (which indicates ongoing event or current state). For a detailed description of the Japanese predicate system, refer to Chapter 3.

⁴ Hiroko Miyata (1992) reported that young children distinguish the particles on the subject and the object in terms of deletability. Namely, children seem to leave out the particles on the object more often than the particles on the subject. For discussion of her work, see footnote 1 in Chapter 4.

⁵ See section 2.4.1. for a brief summary of previous studies of word-order and the acquisition of Case-particles.

⁶An alternative view is the Maturation Hypothesis (Borer and Wexler 1987, 1991), which states that certain parts of the innate knowledge are not accessible at the earlier stages of language acquisition. The Continuity Hypothesis is assumed in this research as a working hypothesis.

Chapter 2

Outline of the Checking Theory of Case and Research Questions

The Checking Theory of Case is proposed as a part of the Minimalist Program (Chomsky 1995). One of its most significant theoretical contributions is the assumption that all structural Cases are licensed by functional heads in a uniform fashion.

This contrasts with a previous theory of Case-assignment under Government, in which Cases were licensed by either a functional head or a lexical head. For example, the Nominative Case was licensed by a functional head (INFL), while the Accusative Case by a lexical head (verb, pre/post-position). The first Case assignment was based on the relationship between the head and the Spec position, while the second relies on the relationship between the head and its complement.

On the other hand, under the Minimalist Program, both the Nominative and the Accusative Case are licensed when the DPs are placed in the Spec position of the functional head, AgrS and AgrO. The Case-checking procedure is summarized in the following section. The Checking Theory of Case provides specific predictions on the acquisition process of Case. Four research questions based on the theory will follow.

2.1. The Case-licensing Procedure

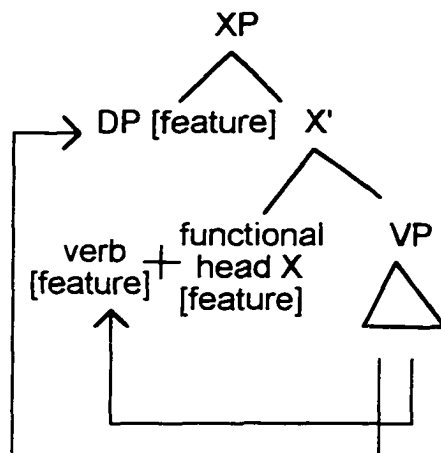
According to the Minimalist Program in Chomsky (1993), a language consists of a lexicon and a computational system. The computational system chooses items from the lexicon and forms a derivation, following X-bar theory (X'-theory, henceforth). Each derivation determines a linguistic expression, which contains a pair of interface representations (Articulatory-Perceptual interface and Conceptual-Intentional interface).

The Split-INFL hypothesis, proposed in Pollock (1989), is assumed in this study. What once was treated as the single category, INFL, is assumed to be made of at least three separate functional heads: AgrS (responsible for subject agreement), T(ense), AgrO (responsible for object agreement).

One of the important roles played by those functional heads is checking the V-features and Case-features. Case is assumed to be a part of the formal features, which will be carried by three items: DPs, Verbs, and functional heads. The choice of the formal features is random; but, the Case features of the DPs and the V or the functional head must be matched to be deleted before the linguistic expression reaches the interface levels. Through this procedure, the INFL ensures that the DPs and the verb are properly paired.

In the diagram below, the DP and the verb are both raised to inside the maximal projection of the functional head (X): the DP is moved to the Spec position of XP, while the verb is adjoined to the functional head.

(2-1)



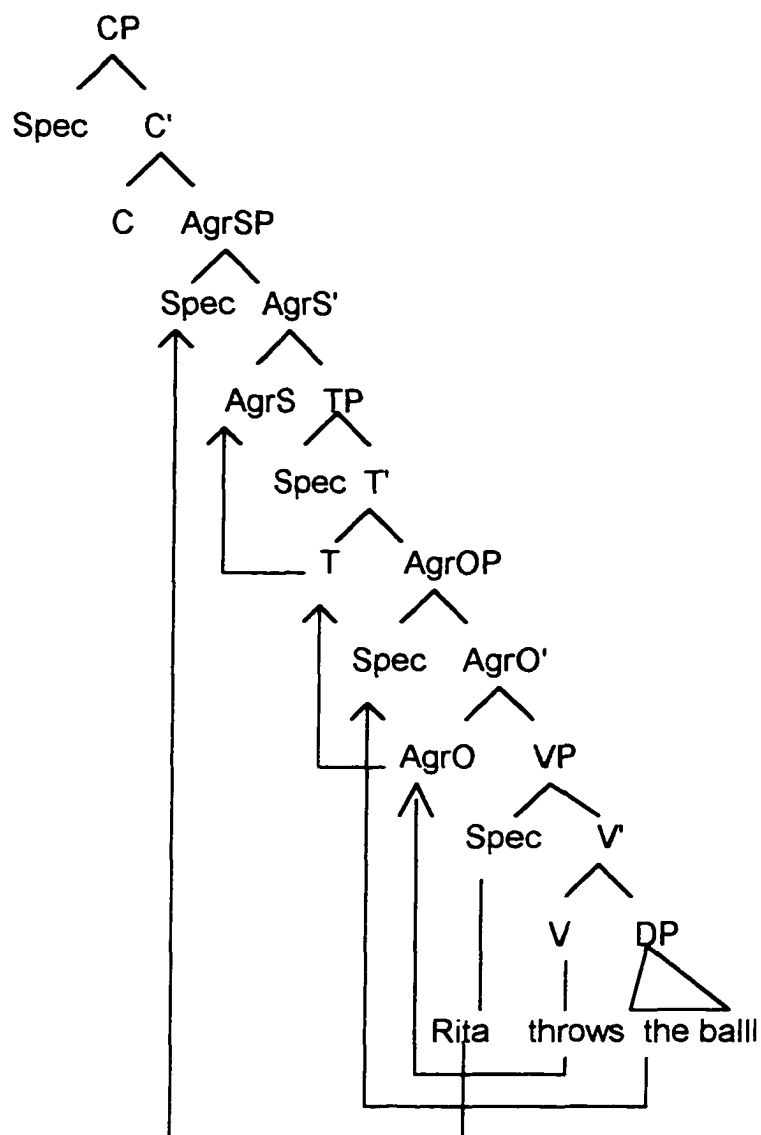
In this way, the functional head mediates the feature-checking between the DP and the verb. After the feature-checking, the feature on the functional head will disappear. If the features do not match, they will not be checked off, and as a result, the derivation is rejected at an interface. This is because the remaining formal features are not interpretable in the C-I levels.

There are three functional heads which mediate the Case-checking: AgrO, T, and AgrS. For example, a DP with the Nominative Case-feature is raised to the Spec of AgrS, while a DP with the Accusative Case is raised to the Spec of AgrO. Meanwhile, the verb is raised and associated with the AgrO head. At this point, the V+AgrO head checks off the Accusative Case, by matching the Case-feature of the DP in its Spec and the Case-feature of the verb. The V+AgrO continues to be raised to the Tense head. The complex head of V+AgrO+T is raised to the AgrS head, resulting in the V+T+Agr (the AgrO and the AgrS head constitute the Agreement system). This complex head checks the Nominative Case-feature.

The structural representation of the sentence (2-2) is shown in (2-3). The final sites of the movements of the DPs and the verb are indicated in the representation. Verb movement in English is assumed to occur at the covert level. A covert movement is assumed to be less costly than an overt movement. This observes the Economy Principle, which states that a less costly derivation is preferred.

(2-2) Rita throws the ball.

(2-3)



The verb (*throws*) needs to check its formal features by adjoining to the functional heads which carry the relevant V-features. Thus, the verb raises and adjoins to the inflectional category, AgrO, at LF. The object DP (*the ball*) raises to Spec of AgrOP, where its Case is checked by AgrO+V.

The AgrO+V continues to be moved and adjoins to the Tense head. The complex head is adjoined to the AgrS head. The subject DP (*Rita*) raises to Spec of AgrSP. This combined head (Agr+T+V) checks the Case of the subject DP. That is, the same inflectional categories check both the verb (checking of V-features via adjunction) and NPs (checking of N-features via Spec-Head agreement).

It has been argued that Tense is responsible for Nominative Case licensing. As seen in (2-4a), the pronoun *he* cannot appear inside a non-tensed clause.

- (2-4)a. *It is dangerous [he to park there].
 b. It is dangerous [that he parks there].
 c. It is dangerous [for him to park there].

Takezawa (1987:72-76) presented Japanese data which indicate that the Nominative Case particle can appear only in a tensed clause. The (b) sentences in the following examples (2-5, 2-6) contain a small clause without complementizer or Tense. Note that *da* is a copula with nonpast Tense, while *ni* is the copula with no Tense.

- (2-5)a. Shinji-ga [tomodachi-ga taisetsu da] to omot-ta.
 Shinji-NOM friend-NOM important COP-NPAST COMP think-PAST
 'Shinji thought friends were important.'

- b. *Shinji-ga tomodachi-ga taisetsu ni omot-ta.
 Shinji-NOM friend-NOM important COP think-PAST
 'Shinji thought friends were important.'

The Accusative Case particle *o* can appear in either tensed or infinitival clauses.

- (2-6) a. Shinji-wa [tomodachi-o taisetsu da] to omot-ta.
 Shinji-TOP friend-ACC important COP-NPAST COMP think-PAST
 'Shinji thought friends were important.'

- b. Shinji-wa tomodachi-o taisetsu ni omot-ta.
 Shinji-TOP friend-ACC important COP think-PAST
 Shinji thought friends were important.'

This observation suggests that the Nominative Case is checked in the domain of the Tense head. The Tense head is raised and adjoined to the AgrS head. The subject DP can have its Nominative Case checked when it is raised to the Spec of AgrSP. Since Accusative Case is checked in AgrOP, the presence of Tense in the embedded clauses in (2-6) does not affect the grammaticality of the sentences.

The following section outlines recent analyses of the checking of the Nominative Case on the object in Japanese.

2.2. Some Issues regarding Japanese Case-particles

2.2.1. Checking Nominative Case on the object

As illustrated in Chapter 1, the Nominative particle *ga* may be used for the object of stative predicates. The following examples in (2-7) and (2-8) show that with a stative predicate *tsumur-e-ru* 'to be able to close', the DP *migime* 'right eye' may be marked with either the Nominative or the Accusative Case-particles.

(2-7) John-ga migime-o tsumur-e-ru
 John-NOM right eye-ACC close-can-NPAST
 'John can close his right eye.'

(2-8) John-ga migime-ga tsumur-e-ru
 John-NOM right eye-NOM close-can-NPAST
 'John can close his right eye.'

Tada (1992) argued that the Case-features of these two types of objects are checked by different functional heads. He noted that the Nominative and the Accusative Objects exhibit different scope relations with the potential verb, as shown in the following examples.

- (2-9) John-ga migime-dake-o tsumur-e-ru
 John-NOM right eye-only-ACC close-can-NPAST
 'John can close only his right eye.'
 (i) can>only (John can wink his right eye.)
 (ii) ?*only>can (It is only his right eye that he can close.)

- (2-10) John-ga migime-dake-ga tsumur-e-ru
 John-NOM right eye-only-NOM close-can-NPAST
 'John can close only his right eye.'
 (i) *can>only
 (ii) only>can
 (Tada 1992 with a modified gloss)

As seen in the examples above, when it appears with the Accusative Case particle, *migime-dake* (right eyes-only) is interpreted within the scope of the potential verbal-morpheme *-(rar)e-* (can). On the other hand, when the same phrase appears with the Nominative marker, *migime-dake* has scope over the potential verbal morpheme.

Based on this observation, Tada (1992) argued that the Nominative Object is raised to a position higher than VP during the derivation. Specifically, he argued that it is raised to the Spec of AgrO. The stative verb is raised to adjoin to the AgrO head: since the verb has the stative property, it makes the complex head, AgrO+V, which is able to license the Nominative Case. As a result, the Nominative Case on the object is checked inside

AgrOP. The Nominative Case of the subject is licensed by the complex head, Agr+T+V, in the Spec of AgrSP. According to this analysis, the Nominative Cases on the subject and the object, are checked by different functional heads.¹

Tada's examples in (2-9) and (2-10) showed that the Nominative Object is raised above VP. However, Koizumi (1994) demonstrated that the Nominative object should be located in a position higher than the AgrOP.

Consider the following examples:

(2-11) John-ga migime-dake-o tsumur-e-na-i (koto)

John-NOM right eye-only-ACC close-can-Neg-NPAST (fact)

'(the fact that) John cannot close only his right eye.'

Neg>can>only (John cannot wink his right eye)

(2-12) John-ga migime-dake-ga tsumur-e-na-i (koto)

John-NOM right eye-only-NOM close-can-Neg-NPAST (fact)

'(the fact that) John cannot close only his right eye.'

only>Neg>can (It is only the right eye that he cannot close)

Koizumi (1994:221-222 with a modified gloss)

The examples above indicate that a DP marked with the Nominative Case-particle can have scope over Negation. Assuming that the Neg head

is located higher than AgrO, it must be the case that the Nominative object is raised at least as high as the T head.

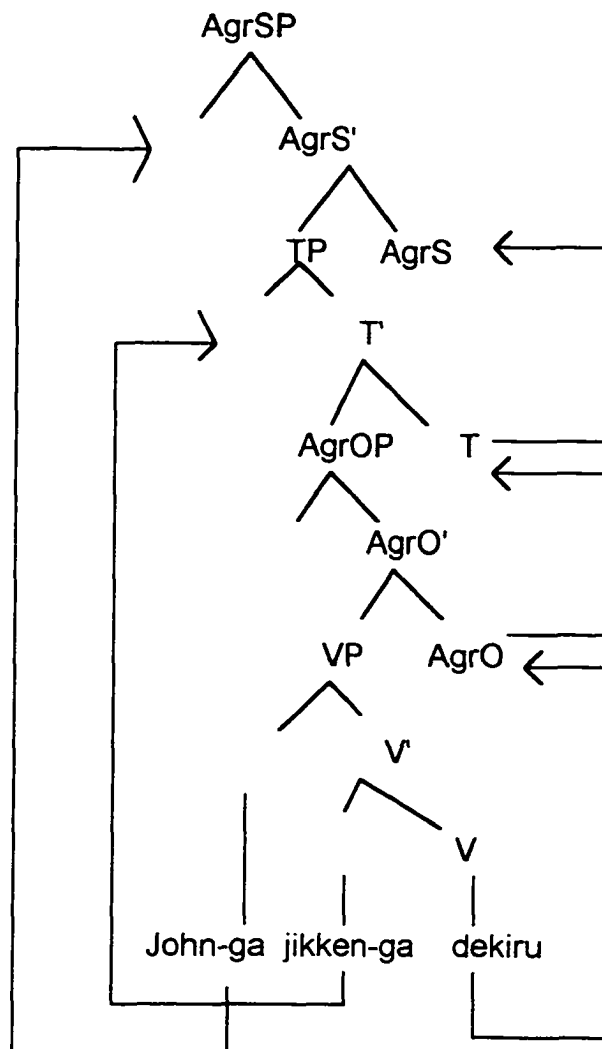
Koizumi argued that the Nominative object checks off its Case in the Spec of T, while the subject checks off its Nominative Case in the Spec of AgrSP. This is indicated in the structural description of (2-13), demonstrated in (2-14).

(2-13) John-ga jikken-ga deki-ru (koto)²

John-NOM experiment-NOM can-NPAST (fact)

‘(The fact that) John can do an experiment.’

(2-14)



Koizumi's argument is based on the assumption that the Tense head can check the Nominative Case for multiple DPs. In his extensive investigation of multiple feature-checking, Ura (1996) argued that 'the Nominative Case-feature of T in Japanese and Korean may enter into multiple feature-checking relations...' (1996: 336). He assumed that multiple

feature-checking is subject to parameter-setting. Tense in Japanese and Korean, for example, has multiple sets of the Nominative Case-feature, while that is not the case in languages such as English. Hence, the nominative object is not possible in English.

(2-15)a. (sono purojekuto ni) boku-ga kare-ga hoshii (koto)

that project for I-NOM he-NOM want (fact)

'(The fact that) I want him (for that project)'

b. * (The fact that) I want he (for the project)

More evidence that the Nominative object has its Case checked by T comes from consideration of constructions with Dative subjects. When a Nominative object appears in the stative predicate, such as a verb with the potential morpheme (*rar*)e, the subject can appear either with the Nominative Case-particle *ga*, as seen in examples such as (2-16a), or the Dative Case-marker *ni* (2-17b).

(2-16)a. John-ga chiizupan-ga yak-e-ru (koto)

John-NOM cheese bread-NOM bake-can-NPAST (fact)

'(The fact that) John can bake cheese bread.'

- b. John-ni chiizupan-ga yak-e-ru (koto)
 John-DAT cheese bread-NOM bake-can-NPAST (fact)
 '(The fact that) John can bake cheese bread.'

However, when the subject appears with the Dative particle, the object must appear with the Nominative Case-marker.

- (2-17)a. John-ga chiizupan-o yak-e-ru (koto)
 John-NOM cheese bread-ACC bake-can-NPAST (fact)
 '(The fact that) John can bake cheese bread.'

- b. *John-ni chiizupan-o yak-e-ru (koto)
 John-DAT cheese bread-ACC bake-can-NPAST (fact)
 '(The fact that) John can bake cheese bread.'

Ura (1996) argued that the dative subject is a result of inherent Case assignment by the stative verbal morpheme. This dative subject does not check off the Nominative Case feature of the Tense head. Hence, if the object is not selected with the Nominative Case, there is no DP which checks off the Nominative Case feature of the T head. On the other hand, the Nominative object, which is raised to the Spec of TP, can check its Case against the Case feature of the T. Hence, the derivation in (2-16b) converges.

2.2.2. Dual property of the Japanese particle *ni*

In addition to being an Inherent Case particle, *ni* seems to have multiple functions in Japanese grammar. It functions as a dative Case-particle, or as a postposition with many different interpretations. In the following section, I discuss different usage of the particle *ni*, and how each usage can be distinguished by the syntactic test proposed in Sadakane and Koizumi (1995).

Ni is the only particle that has ambiguous syntactic properties: it may be the dative Case-particle, or a postposition, which is associated with numerous semantic functions (discussed below). Examples of postposition *ni* are as shown below:

(2-18) Gakkoo-ni ii konpyuutaa-ga ar-u.
 school-loc good computer-NOM exist-NPAST
 'There is a good computer at school.'

(2-19) John-wa Basuke-no shiai-ni it-ta.
 John-TOP basketball-GEN game-to go-PAST
 'John went to a basketball game.'

Sadakane and Koizumi (1995) demonstrated that numeral quantifiers can be used to reliably distinguish between the two different types of *ni*. Japanese numeral quantifiers can modify nouns only when there exists a mutual c-command relationship between the numeral quantifier and the noun

or its trace (Miyagawa 1989). The numeral quantifier *nidai* (*-dai* is the counter for machine-like objects) cannot modify the noun *basu* in (2-20c), since it is inside a maximal projection (Postposition Phrase), preventing the noun from establishing a mutual c-command relation with the numeral quantifier.

- (2-20) a. tomodachi-ga [pp basu-de] ki-ta.
 friend-NOM bus by come-PAST
 'Friend(s) came by bus.'
- b. tomodachi-ga futari [pp basu-de] ki-ta.
 friend-NOM 2-CL bus by come-PAST
 'Two friends came by bus.'
- c. *tomodachi-ga [pp basu-de] ni-dai ki-ta. ³
 friend-NOM bus by 2-CL come-PAST
 'Friend(s) came by two buses.'

Nouns marked with the dative-particle *ni* can be modified by a numeral quantifier, as shown in the following.

- (2-21) 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.'

On the other hand, the postposition *ni* in (2-22) projects its own maximal projection, which prevents the numeral quantifier from modifying the noun inside the projection.

(2-22) *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.'

In the grammatical counterpart of (2-22), presented below, the numeral quantifier *futatsu* appears inside the DP.

(2-23) 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.'

The sentence in (2-23) is grammatical, since the numeral quantifier *futatsu* 'two' and the noun *riron* 'theory' c-command each other inside the DP. There is no maximal projection intervening between them. In other words, numeral quantifiers can be used to confirm which DPs are arguments of the main verb. These DPs occur with Dative *ni*; and the *ni* which appears with a non-argument is a postposition. The dative particle *ni* is classified into the following five types. (Sadakane and Koizumi 1995)

(2-24) 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 postposition *ni* can be classified into the following eighteen categories.⁴

(2-25) Postpositions

- B benefactive
ni yaku (to bake for), *ni kau* (to buy for)
- C1 Dative of confrontation with adjective
ni yoi (good for), *ni yowai* (not good at)
- C2 Dative of confrontation with a adjective nominal predicate
ni shinsetsu (to be kind to), *ni ijiwaru* (to be mean to)
- C3 Dative of confrontation with a verb predicate
ni amaeru (to coax), *ni kiku* (to be effective for)
- E objective stimulus
ni komaru (to be troubled by), *ni kurushimu* (to suffer from)
- F dependent on
ni motozuku (to be based on), *ni shitagau* (to obey to)

- G from/by
ni kariru (to borrow from), *ni narau* (to learn from)
- H1 The underlying agent in a direct passive
ni shikarareru (to be scolded by)
- H2 The underlying agent in an indirect passive conversion with an intransitive verb
ame-ni furareru (to be adversely affected by the rain)
- H3 The underlying agent in an indirect passive conversion with a transitive verb *sensei-ni musuko-o homerareru* (to be affected by the teacher's compliment to her son)
- I The instigator of a passivised causative
sensei-ni tsuishi-o ukesaserareta (to be made to take a make-up test by teacher)
- K Pseudo-agent 'by/at'
ni tsutomeru (to work for), *ni tsukaeru* (to serve for)
- L Indirect subject - possessor
ni aru/iru (to exist at, to have)
- M Specific time
hachi-ji ni okiru (to get up at eight o'clock)
- O2 Change of position with a transitive verb
ni kaku (to write onto), *ni naraberu* (to arrange on)
- R purpose
soodan ni iku (to go for consultation)
- T Manner
giniro ni hikaru (to shine silver)
- V Reference
otoshiyori-ni fuben da (inconvenient for the elderly)

2.2.3. Summary

In this section, the theoretical framework of the Checking theory of Case was outlined with discussions of the checking of Nominative and Accusative Case proposed by Koizumi (1994,1995) and Ura (1996). The multiple functions of the particle *ni* were also described: it can be used as an inherent Case-particle, the Dative Case-marker, and a postposition. Those theoretical considerations, as well as the Principles and Parameters-Model, discussed in Chapter 1, have implications for the study of the acquisition of Japanese Case-particles. Such implications are discussed in the following section, with the specific research questions that are investigated in this thesis.

2.3. Research questions

2.3.1. UG-driven language acquisition

Following the Strong Continuity Hypothesis (Pinker 1984), I assume that all innate knowledge of language is available from the beginning of the language acquisition process. This assumption seems to be supported by previous studies of the influence of parental input on English language development such as Newport, et. al. (1977). That is, children's acquisition of grammatical properties, except the learning of lexical items, proceeds with minimum influence from parental input (e.g. frequency of the occurrence of particular sentential constructions in adult speech). I follow the assumption that the knowledge of the fundamental aspects of human language is innate

and hence commonly observable in the language development of children who receive different types of input from caregivers. Young children are assumed to use many different information sources to determine language-specific constraints on Case assignment in Japanese. This leads to the research question given below.

Research question 1: Do different children who are learning the Japanese Case system follow a similar developmental pattern, regardless of the amount of parental input concerning the use of Case particles? In particular, do they distinguish between certain grammatical items or patterns (predicate types, word order, etc.) in their initial use of Case particles?

To address this research question, the acquisition processes of three children are compared in this study. The usage of the same particles in adult speech to these children is also considered.

2.3.2. Functional categories and Case-licensing

According to the Checking Theory of Case, DPs are chosen from the lexicon with morphological features, including Case features. Those formal features are checked against the features carried by the verb and functional categories. These Case features are licensed by functional heads in the later part of the derivation.

One prediction based on the theory described above is that a Case-particle, assumed as a phonetic realization of Case, will not be used productively until the Case-checking system is fully operational. Hence, the Tense system, which is assumed to be one of the functional categories responsible for checking the Nominative Case, is predicted to be fully developed before the Nominative Case-particle *ga* is productively used.

Research question 2: Does the Nominative Case-particle *ga* appear in child speech only after the tense system is fully operational?

Research Question 2 is addressed by comparing the age of the first productive usage of Case-particles and that of the Tense morphemes.

2.3.3. Checking of Multiple Nominative Case

In recent studies of the checking of Nominative Case by Koizumi (1995) and Ura (1996), it is argued that the Tense head in Japanese has multiple sets of Nominative Case. As argued in Ura (1996), this property of multi-checking is subject to parametric variation. This implies that children need to process primary linguistic data to determine if their language allows multiple Case-checking.

Suppose that UG contains a parameter for the availability of multiple Case-checking. The negative value of the parameter rules out the (2-26b,d) in the examples below.

- (2-26) a. John-ga chiizupan-o yak-e-ru (koto)
 John-NOM cheese bread-ACC bake-can-NPAST (fact)
 '(The fact that) John can bake cheese bread.'
- b. John-ga chiizupan-ga yak-e-ru (koto)
 John-NOM cheese bread-NOM bake-can-NPAST (fact)
 '(The fact that) John can bake cheese bread.'
- c. I want him (for the project).
- d. * I want he (for the project).

However, the (b) sentence is perfectly grammatical in adult Japanese, and hence Japanese children have opportunities to hear similar constructions as positive evidence. This positive evidence can guide the children as they re-set the value of the parameter. This learnability consideration leads to the prediction that the value of this parameter is set to be negative as a default.

On the other hand, if the default value of the parameter is set to be positive, the grammar would rule in all sentences in (2-26). In this situation, children who are acquiring English will face the dilemma of the absence of negative data. One possible source of the negative evidence is a direct correction from adult speakers.⁵ However, it is commonly observed that young children do not rely on grammatical corrections from parents (Morgan and Travis 1989, Marcus 1993).

Assuming that the default setting of the parameter is negative, it is predicted that at an early age, Japanese young children would not produce the multiple Nominative construction, in which both the subject and the object appear with the Nominative Case-particle.

Research question 3 : Will the multiple Nominative construction be observed in early child speech?

2.3.4. Acquisition of the particle *ni*

As discussed before, the multiple properties of the particle *ni* can cause learnability difficulty among young Japanese learners. The Case-particle *ni* and the postposition *ni* have different syntactic properties, as illustrated in Sadakane and Koizumi (1995): unlike the Case-particle *ni*, the postposition *ni* projects a maximal projection. Since negative evidence, which would tell children that sentences such as (2-27) are ungrammatical, is not readily available to children, it is not clear how children learn that the particle *ni* has an ambiguous grammatical status.

(2-27) *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.'

The usage of the particle *ni* in early speech was studied to investigate what the children assume about the syntactic properties of *ni*. In particular, the analysis of the data focused on whether the children distinguish the two types of the particle *ni* from an early stage of language acquisition.

Research Question 4: Do Japanese young children distinguish the Case-particle *ni* from the postposition *ni* during the course of language development?

2.3.5. Summary

In this section, theoretical implications of recent linguistic studies were discussed. Some of the predictions which followed from the assumptions made in the previous studies were presented as the four research questions. Previous research on the acquisition of Japanese Case-particles does not provide answers to those questions, due to methodological limitations, which are discussed in the next section.

2. 4. Literature Review: the acquisition of Japanese Case particles

2.4.1. Word-order and Acquisition of Case-particles

One of the major topics in previous studies of the acquisition of Japanese Case-particles is the relationship between word order and the

acquisition of Case particles. As pointed out in Chapter 1, the acquisition of Case-particles can be a challenging task for young learners because of the availability of dropped arguments and missing particles in adult speech. Word order has been investigated as a possible clue for young children to learn the use of Japanese Case particles (Hayashibe 1975, Hakuta 1982, Morikawa 1997). That is, children assume that the sequence of 'Noun-Noun-Verb' stands for 'Subject-Object-Verb', which is often the case. Using this canonical word order strategy, children could learn that *ga* is attached to the subject, *o* is attached to the object, and so on.

However, researchers found that young children do not solely rely on this word order strategy to understand a sentence. Hakuta (1982) studied comprehension, production, and imitation of simple sentences by Japanese young children (2-6 years old). Discussing the results of the comprehension experiment with an act-out task, he concluded that 'the fact that children did not find the OSV passive particularly easy suggests that Bever's (1970) noun-verb-noun (NVN) strategy for English cannot be extended to Japanese in the most straightforward translation possible...' (1982: 67). Iwatate (1994) analyzed naturalistic speech of five Japanese children (age 2:5 -3:9) and observed that there is no relationship between the use of Case particles and any particular word order in an early stage of language development.

Studies are not conclusive, though, regarding the lack of a relationship between the canonical word-order and the acquisition of Case-particles in some sentence constructions. For example, Hakuta (1982) suggested that children may rely on word-order, at least to comprehend

certain sentence constructions. He conjectured that children assume that 'there is a requirement that -ga appear on the first noun of the sentence. Otherwise children do not pay attention to the particle' (1982:68), which resulted in poor performance on the OSV actives.⁶ Hayashibe (1975) also reported that young Japanese children seemed to be sensitive to word-order during their acquisition of Case-particles.

Otsu (1994a) gave an alternative account for children's poor performance on the OSV sentences, though. He argued that a potential source of children's poor performance on the OSV actives (i.e. scrambled sentences) is the lack of the informational regularity (1994a: 261). The informational regularity is based on the given-new information pattern, which is required for the use of scrambled sentences. Note that in the comprehension experiments in Hayashibe (1975) and Hakuta (1982), each sentence was presented to children, totally out of context. Otsu (1994a) demonstrated that children as young as three-year-old can correctly produce and comprehend scrambled sentences when the informational regularity requirement is satisfied. That is, the children's poor performance in comprehending the OSV sentences does not necessarily indicate that they relate Case-particles to the canonical word-order.

Morikawa (1997) analyzed longitudinal data of a Japanese child in the Noji Corpus. When she converted the data, originally published in a written form, into computer files, the following information was included: basic (nonpast) form of predicates uttered by the child, semantic/grammatical categories of the sentence constituents, verb suffixes,

omitted items, comments on conversational contexts or word meanings (when useful for disambiguation).⁷ She produced utterance lists by the child and adults, according to the child's age, predicate types, and verbal inflectional forms. Using those lists, she counted the number of correct and inappropriate uses of Case particles.

Morikawa's study indicated that young children do not rely on word-order in their acquisition of Case-particles. She concluded that 'Sumihare's data shows that he did not have any particular problems with the flexible word order of Japanese.' (1997: 90). She found that Sumihare was a 'conservative' learner. Overextension of Case-particles were infrequent and nonsystematic. She argued that adult input was influential for Sumihare's acquisition of Case particles with individual predicate types. Sumihare acquired the usage of the Nominative Case particle *ga* early for the subjects of nonstative transitive verbs, intransitive verbs, and predicate adjectives, the object of stative predicates (the Nominative Objects). Besides, he began to use the dative particle *ni* for marking oblique agents in passive sentences. She observed that these arguments were consistently marked (i.e. Case-particles were seldom dropped) with Case particles in adult speech. She concluded that whenever parents' use of Case-particles is consistent, Sumihare acquired the corresponding construction earlier.⁸

Those previous studies contributed the important observation of the virtually error-free acquisition of Case-particles. Young children could be highly conservative at the beginning of language acquisition, i.e., using Case-particles only in constructions that their caregivers actually used. To

be able to process or produce sentence constructions that they have never heard before, though, language learners must rely on an abstract Case-licensing system at some point in the course of language development.

Children make few mistakes in their production of Case-particles. Clancy (1986) noted, 'In general, Japanese children acquire case particles early and without much apparent difficulty.... Errors are not usually reported. The typical course of acquisition is from failure to use a particle where appropriate to a gradually increasing rate of production until the child's frequency approximates adult usage.' (1986:387) This makes it very difficult to see what systematic procedure they are using as they acquire Case-particles. Hence, hypothesis-testing, based on the onset of productive use would be an effective methodology to address the research questions raised earlier. The current study is an attempt to determine if the Case-checking system, which is considered to be a part of UG, contributes to the acquisition of Case-particles.

2.4.2. Timing of the acquisition of particles and methodological limitation

Another methodological limitation comes from the timing of the acquisition of Case-particles. Japanese children seem to acquire almost adult-like competency in the use of Case particles by their third birthday. Otsu (1994a, b) showed that three and four-year old Japanese children can

use Case particles to understand sentences with a scrambled word order.

However, children younger than three-and half-years old usually cannot follow the typical procedures used in experimental data-collection. This forces researchers to rely on the recording of their naturalistic speech as the primary data source, which inevitably includes the accidental omission of grammatical items. To address the issue of accidental omission of grammatical items in naturalistic data, it is important to compare the speech data of a group of children.

The previous extensive studies of Japanese Case particles using naturalistic data, such as Morikawa's (1997), relied on longitudinal data of one child, mainly because time and monetary resource were too limited for a researcher to collect data from more than one child for one to three years. This thesis project is an attempt to compare naturalistic data from three different children, all created in the CHILDES format (MacWhinney and Snow 1995). The data were collected by different researchers at different places and times, for different research purposes. Hence, there is little chance that the data, when analyzed collectively, are biased toward any specific research goal.

2.4.3. Summary

In this section, previous studies of the acquisition of Japanese Case-particles were reviewed. Earlier experimental research done by Hayashibe (1975) seemed to show that young children rely on word-order in

their acquisition of Case-particles. However, more recent research in Otsu (1994a) indicated the possibility that their conclusions are based on an experimental artifact, resulting from the lack of contextual requirement for the usage of scrambled sentences. An analysis of longitudinal data by Morikawa (1997) confirmed that children do not rely on word-order in their early use of Case-particles. She suggested that consistent usage of Case-particles in adult speech enhances early acquisition of Case-particles in specific constructions. The current project is conducted to provide an additional piece of research on Case-particle acquisition by (1) comparing longitudinal data of three children and (2) testing hypothesis based on the generative approach to Case licensing.

Notes for Chapter 2

¹ As Koizumi (1994) pointed out, it is not clear how the Accusative Case is checked in Tada's framework. Koizumi assumes that the potential verbal morpheme projects its own maximal projection, taking another AgrOP as its complement. He speculates that the Accusative Case on the object is checked in the Spec of the AgrO between the lower VP and the potential VP.

² In the example here, a [+stative] verb *dekiru* (to be able to handle) is used for the simplicity of the presentation. Verbs of this type take only the Nominative object. On the other hand, transitive verbs with the potential suffix (*rar*)e allow either the Nominative or Accusative object. The internal structure of the verb with the potential suffix is not considered in this thesis. For detailed discussion of the potential suffix, see section 1.4.4. in Ura (1996).

³ The grammatical counterpart of (2-20c), below, contains the numeral quantifier inside the DP *ni-dai-no basu* 'two buses'. Note that the numeral quantifier appears with the Genitive particle *no*.

(i) tomodachi-ga [[ni-dai-no basu]-de] ki-ta.
 friend-NOM two-CL-GEN bus-by come-PAST
 'Friends came, by means of the two buses.'

⁴ The classifications of the Dative and postpositional *ni*, listed here, is from Sadakane and Koizumi (1995). They noted that this list was adopted from Martin's (1975) work of a reference grammar of Japanese.

⁵ But see Lasnik (1989) for discussions about indirect negative evidence.

⁶ In the discussions of the production task, Hakuta reported that children acquire *ga* before *o*. This is in conformity with the observation made in this study, which is reported in Chapter 4.

⁷ This computerized version of the Noji corpus was included in the current study. See Chapter 3 for detailed information of the corpus.

⁸ Her findings are consistent with the results of the current study. See Chapter 4 for discussions about the role of adult input in children's acquisition of Case-particles, though.

Chapter 3

Method

As discussed in Chapter 2, the acquisition of the basic usage of Japanese Case particles seems to occur before children grow mature enough for experimental tasks that involve giving instructions. Hence, naturalistic (spontaneous) speech data would be the most appropriate data to address the research questions raised for this study. However, since naturalistic speech is the primary data source for this research project, it is important to understand the disadvantages, as well as the advantages, which are inherent to studies using this type of data. The nature of spontaneous speech data is discussed in the first section of this chapter. The second section is a description of the three sets of databases that were used in this study to address the research questions presented in Chapter 2. Finally, a detailed description is given concerning how the data were handcoded and processed.

3.1. Nature of longitudinal spontaneous speech data in language acquisition studies

For this thesis project, computerized databases of Japanese young children's speech were used as the primary source of data. The raw data for those databases were collected by either videotaping conversations

between caregivers and the children or from a diary made by parents. The data were transcribed by native speakers (who may or may not be the person who recorded the utterances) and stored in the form of computer files. Since the files are compatible with the CHILDES format (MacWhinney and Snow 1995), the CLAN program (Computerized Language Analysis), was used to search for particular words or phrases, count the frequency of their occurrence, and list utterances which include the target words/phrase with utterances which preceded and followed the target utterance.

The results of the search or frequency counts were examined by the researcher to identify and exclude obvious repetition and unclear utterances. After that, each utterance was handcoded and stored in computer files using the Excel spreadsheet program. A detailed description of the coding system is presented in Section 3.3. in this chapter.

Using spontaneous speech data provides some advantages that are not available with data collected in experimental settings. Some major advantages for this study of using naturalistic data are summarized below.¹

Advantages:

- Since it is collected in a natural setting (i.e. in the setting that is closest to children's daily life), it is highly likely that the child has acquired a particular construction if it is used productively.
- Caretakers' utterances recorded with children's speech provide important data concerning the nature of typical adult input to the young children.

- The data collection requires few or no tasks for children to perform. This makes it easy for researchers to share the data for different projects.

However, since the data were collected in a relatively uncontrolled situation, this type of data always shows some limitations. Disadvantages of using data from naturalistic observation are summarized in the following:

Disadvantages of using spontaneous speech data:

- It does not provide insights into the lack of certain grammatical constructions. For example, constructions which are relatively infrequent in natural contexts are very difficult to observe in the child's speech. This may result in an underestimation of the actual grammatical competence of the child.
- Transcription errors, particularly when the child's utterances do not clearly relate to the context, often occur. This problem can be minimized when the transcription was made or examined by the researcher who made the actual recording.
- It is not always possible to determine if a certain observed construction is productively used, or appearing as a memorized, or 'frozen' form. A careful analysis of the context and the survey of the variety of the lexical items used in the same construction often provide an educated guess, though.

Many studies using naturalistic data are also longitudinal, though that does not necessarily have to be the case. One of the advantages of using longitudinal data is being able to obtain information about the individual child's development over the course of time. However, this requires recording and transcribing the speech data for one to five years. The actual completion of database construction often requires an extensive amount of time and resources. For the same reason, it is practically difficult to obtain data from more than one child. ²

3.2. Using naturalistic data

Understanding the nature of the naturalistic data, as discussed above, is crucial as one considers the use of the data to investigate specific issues in research. When the particular research question is related to the use of common sentence constructions in natural child speech, the advantage of the naturalistic data is enormous. For example, since Case-particles are frequently used in Japanese speech, collection of the early use of Case-particles does not require any controlled contextual setup. As a result, more than four thousand utterances from the three children could be obtained for analysis in this thesis project.

On the other hand, if a research project requires less commonly used constructions, naturalistic data might not be particularly helpful to address the issue. The other consideration related to this topic is the timing of the acquisition of the construction which is relevant to the research project. As

observed in earlier research, Japanese-speaking children demonstrate an adult-like usage of Case particles by the age of three (Clancy 1986, Otsu 1994a,b). This situation poses a limit to the range of data-collection methods. Many of the modern and popular experimental methods such as the Truth-Value judgment task (Crain and MaKee 1985) or Elicited Production (Thornton 1996) are difficult to use effectively with children younger than three. Hence, naturalistic data is the most ideal source of data as one investigates the development of the Case system in Japanese.³

In the next section, the three sets of databases used in this project are described. Two of them, the AKI and Noji corpora, were collected by previous researchers. The data for the KAN corpus were collected by the author.

3.3. Description of the Data

Most of the previous studies of Japanese Case particles relied on longitudinal data of one child, mainly because time and monetary resources were too limited for a researcher to collect data from more than one child for one to three years.

This research project was aided by Susanne Miyata and Hiromi Morikawa, who generously allowed me to use the corpora that they used in their previous research projects. An additional child speech corpus, which is under construction at the University of Connecticut Linguistics Department, enabled me to compare the developmental patterns of three children. This

makes it easier to see if there is a common pattern among different children in the course of acquiring the Case system.

Detailed information on the three corpora is given in this section. The longitudinal samples of Japanese data were drawn from three Japanese corpora, transcribed in the CHILDES format (MacWhinney and Snow 1995). The CLAN program, which was developed to perform analysis on transcript data in CHILDES, was used. The following is a description of the three children whose early speech was recorded and transcribed in the CHILDES format (MacWhinnry and Snow 1990). All names of the children, except Sumihare in the Noji Corpus, are pseudonyms.

3.3.1. AKI Corpus (Miyata 1995)

The AKI Corpus was compiled by Susanne Miyata for her research on the acquisition of question sentences (Miyata 1995). AKI was born and raised in Nagoya, Japan, as the firstborn child. He has a younger brother, who occasionally participated in the conversations transcribed in the corpus. The data were collected by Miyata at her visit to AKI's home once a week. She videotaped AKI, while he played with his mother for about an hour. The videotaping continued from March 1989 to September 1990 (AKI's age: 1;5;7 - 3;0;0). The transcription was later reformatted to be compatible with the use of the CLAN program. The corpus includes 56 files, summarized in the table below.

File name	Age	Number of Utterances by child	File name	Age	Number of Utterances by child
AKI01	1;5;7	9	AKI29	2;5;6	567
AKI02	1;6;10	12	AKI30	2;5;13	607
AKI03	1;7;4	27	AKI31	2;5;20	246
AKI04	1;8;23	121	AKI32	2;6;15	488
AKI05	1;9;20	140	AKI33	2;6;22	399
AKI06	1;10;0	210	AKI34	2;6;30	459
AKI07	1;11;29	100	AKI35	2;7;5	447
AKI08	2;0;5	192	AKI36	2;7;12	583
AKI09	2;0;12	190	AKI37	2;7;19	596
AKI10	2;0;19	182	AKI38	2;7;26	397
AKI11	2;0;26	118	AKI39	2;8;3	499
AKI12	2;1;3	175	AKI40	2;8;11	514
AKI13	2;1;10	139	AKI41	2;8;17	330
AKI14	2;1;17	237	AKI42	2;8;24	462
AKI15	2;1;24	275	AKI43	2;9;0	487
AKI16	2;2;0	205	AKI44	2;9;7	378
AKI17	2;2;11	323	AKI45	2;9;14	451
AKI18	2;2;14	362	AKI46	2;9;24	465
AKI19	2;2;22	362	AKI47	2;9;29	461
AKI20	2;3;0	203	AKI48	2;10;7	461
AKI21	2;3;4	534	AKI49	2;10;12	499
AKI22	2;3;12	516	AKI50	2;10;20	494
AKI23	2;3;18	590	AKI51	2;10;28	509
AKI24	2;3;26	455	AKI52	2;11;0	499
AKI25	2;4;4	530	AKI53	2;11;9	447
AKI26	2;4;9	418	AKI54	2;11;16	548
AKI27	2;4;18	418	AKI55	2;11;25	273
AKI28	2;4;29	557	AKI56	3;0;0	477

The AKI Corpus is currently available as a part of the JCHAT project (Oshima-Takane and MacWhinney 1995), the research group created to facilitate the addition of Japanese data to the CHILDES database. The utterances of AKI were coded completely by Miyata, while his mother's repetitions and longer narrations were not included in the transcription.

3.3.2. Noji Corpus (Morikawa 1997)

The Noji corpus is based on a diary study, which was originally published in print form (Noji 1974-77). Morikawa (1997) re-transcribed the data into a computerized form, which is compatible with the CHILDES format. The Noji corpus is based on the speech of a boy, Sumihare, who was raised in Hiroshima, Japan. Utterances were recorded inside and outside the house, which made the topics of the conversation more varied than the other two sets of data.

The following table lists the files in the Noji Corpus.

File name	Age	Number of Uttrances by child	File name	Age	Number of Uttrances by child	File name	Age	Number of Uttrances by child
sumi111	1;11	628	sumi25	2;5	1208	sumi211	2;11	638
sumi20	2;0	399	sumi26	2;6	674	sumi30	3;0	682
sumi21	2;1	1048	sumi27	2;7	921	sumi31	3;1	793
sumi22	2;2	2025	sumi28	2;8	1062	sumi32	3;2	872
sumi23	2;3	927	sumi29	2;9	1038	sumi33	3;3	1020
sumi24	2;4	914	sumi210	2;10	818			

The original corpus included adult utterances and contextual information for Sumihare's utterances. They are partially included in Morikawa's computerized version.

3.3.3. KAN Corpus (University of Connecticut, 1997-current)

The KAN Corpus has been under construction as a part of the CLESS Project (The Cross-Linguistic Early Syntax Study Project) at the

Department of Linguistics, University of Connecticut. One of the purposes of the project is to compare the process of early language development among speakers of different languages in the same age group. To attain this goal, the frequency and the length of the videotaping sessions were controlled in all videotaping. Children were visited at their homes in the Storrs-Mansfield area of Connecticut. Currently, data in English, Japanese, Russian, American Sign Language, and Spanish have been collected by native speakers of each language.

Tapes are being transcribed using the CHILDES format by research assistants, who are native speakers of the target language. Videotaping began when the children were young (1;6-2;6). The children were in a mostly mono-lingual situation (i.e., all adults in the household use only the target language to interact with the child and the child's exposure to English was minimal). The Japanese data have been transcribed following the format illustrated in the CHILDES manual and the CHILDES manual for Japanese (Oshima-Takane and MacWhinney 1995).

KAN was born and lived in Sapporo, Japan, until he moved to Storrs, Connecticut, when he was 14-months old. When he came to the United States, he was speaking about 50 Japanese words. He had no hearing or speech problems reported by either physician or speech therapist. Both of his parents are native speakers of Japanese, who spent most of their lives in the Sapporo area. Even though both parents speak Japanese and English, they exclusively used Japanese to interact with KAN.

Videotaping KAN began in October, 1995 and lasted until May, 1997. For most of this period, his exposure to English was kept to a minimum, except for a weekly play group in the local area (about an hour), and while watching videotapes. KAN spoke Japanese with his parents, Japanese houseguests, and his grandparents who visited from Sapporo in the Summer of 1996. He also watched videotapes of Japanese TV programs and his parents read Japanese books to him frequently. He had other opportunities to hear and speak Japanese; he played with another Japanese child in the neighborhood for about six months (January -July 1996). He went to Sapporo to visit his parents' families twice (March 1996 and July 1996) during the time when the videotaping was done. Each visit lasted about a month. There was no significant use of English observed in KAN's speech throughout the period in which the videotaping was done.

He began to attend a local (English-speaking) nursery school in January, 1997, at the age of 3;1. He was the only child of the parents when the videotaping was done.

KAN played with an adult during 35-minute sessions twice a week; one with the author, and the other with one of the parents. Each session was videotaped with a high-quality Hi-8 video camera, attached to the wall of the living room. A wireless microphone was attached to his backpack, which he wore during the videotaping sessions. The author often visited the family between the videotaping sessions, and KAN was comfortable, in fact, enthusiastic, about seeing and playing with the author. 24 sessions have

been transcribed for the KAN corpus. See the table for the list of the files used in this analysis.

File name	Age	played with	Number of Utterances by child
KAN3-1	2;2;3	Matsuoka	121
KAN3-2	2;2;7	Matsuoka	84
KAN3-3	2;2;9	Matsuoka	86
KAN4-1	2;2;14	Matsuoka	118
KAN4-2	2;2;16	Matsuoka	131
KAN4-3	2;2;20	Matsuoka	115
KAN5-1	2;2;22	Matsuoka	343
KAN5-2	2;2;27	Matsuoka	242
KAN5-3	2;3;0	Matsuoka	168
KAN6-1	2;3;6	Matsuoka	99
KAN6-2	2;3;14	Mother	132
KAN7	2;3;22	Matsuoka	147
KAN10-1	2;4;25	Matsuoka	155
KAN12-3	2;5;23	Matsuoka	205
KAN16-1	2;7;7	Mother	193
KAN16-2	2;7;11	Matsuoka	136
KAN16-3	2;7;15	Mother	133
KAN17-1	2;8;14	Matsuoka	289
KAN17-2	2;8;18	Mother	167
KAN20-2	2;9;27	Mother	187
KAN21-3	2;10;13	Mother	130
KAN23-2	2;10;30	Matsuoka	280
KAN25-1	2;11;19	Matsuoka	271
KAN26-3	3;0;12	Father	246

Most adult utterances were transcribed and introduced into the corpus. Utterances which were obviously not directed to the child (phone conversation, parents talking to each other) were omitted from the transcription. The KAN corpus is currently under construction and not yet publicly available.

3.3.4. Analyzing multiple sets of speech data: Implication for the study of UG

As described above, the three databases were constructed by different researchers at different times, for unrelated research projects. Hence, they are useful to search for the emergence of Case-particles, since Case-particles frequently occur in child speech. According to the Principles and Parameters Model, interpreted with the spirit of the Strong Continuity Hypothesis, it is assumed that children are guided by the universally innate grammatical principles from the earliest stages of their language acquisition.

Specifically, the universal pattern is assumed be observable in the acquisition of the Case-particles, *ga*, *o*, and *ni*. To consider the hypothesis of UG-driven language acquisition, the children's usage of the three particles was compared to the amount of the Case-particles used by adult speech in the same database. It is predicted that parameter-setting is not overly sensitive to different adult input (the amount of Case-particles used in child-directed speech, for example). The next section describes the procedure used to process the utterances searched with the CLAN program.

3.4. Processing the result of the search

3.4.1. Handcoding utterances

A CLAN program, KWAL, was used to search for all utterances of the children which included separated morphemes, *ga*, *o*, and *ni*. All utterances

were printed with the three preceding utterances, uttered by the child or anyone else who was interacting with the child. Three utterances following the target utterance were also included in the printouts. Those printouts were examined by the researcher to exclude homophones. For example, the utterances including *o* used as a noun 'the string on the wooden clog' (e.g. *geta no o*, which was used in the Noji corpus) were excluded from the analysis. Obvious imitations and repetitions were excluded, as well.

Each utterance was handcoded with filename, age of the child at the time of the utterance, location of the utterance in the corpus, the number of words in the sentence (nouns connected by *no* were counted as one), and the serial position of the noun which was marked with Case-particles, predicate type (v, n, adj, null), the actual predicate in the utterance, preceding utterances (often by an adult) and other comments, as necessary. The following is an example of the coding system used in this study. A total of 4610 utterances were coded (587 from AKI Corpus, 249 from KAN Corpus, and 3774 from Noji Corpus).

P	Dbase	Age	line	sentence	order	words	2 word	pred	pred word
ga	KAN4-3	2;2;20	238	kukkii ga tabeteru.	1	2		v	tabeteru
ga	KAN4-3	2;2;20	316	ushi ga haitteta.	1	2		v	haitteta
precedeing utterances					Comment				
KAZ: nani o tabeteru no?					ga-> o				
KAZ: a nani ga haitteta?									

In addition to the information described above, all utterances which contained the particle *ni* were handcoded with additional information about

their function type, according to the classification in Sadakane and Koizumi (1992). See Chapter 5 for results and discussions.

In addition, information about the development of the Tense system was obtained. For this purpose, all verbs used in the corpora (used with or without the particles) were listed and classified, according to Tense, aspect, and verb types (transitive or intransitive). The following section outlines grammatical information used to search and classify the verbs.

3.4.2. Collecting the information about the verb types

To investigate early use of Case-particles in relation to their usage of tense morphemes, it was necessary to collect information about the verbs with the past and the non-past tense morphemes in child utterances. A CLAN program, *FREQ*, was used to search for the verbs. Those verbs were coded with information such as 'transitive/intransitive/stative'. Homophones which were ambiguous between transitive or intransitive (e.g. *i-ru*, which could be interpreted as 'to stay' or 'to need') were excluded from the analysis.⁴ It is easy to identify verbals and copulas in the past Tense or the negative form, since they are followed by particular morphemes. However, the nonpast form of the *Godan-katsuyoo* verbs (see the following section) required separate searches for each possible nonpast ending, which are determined by the final consonant of the stem.

The following is a summary of predicate conjugations in Japanese grammar, which was used for searching and processing the data.

3.4.2.1. Description of the verbal conjugations in Japanese

According to a reference grammar of Japanese (Endo 1981), verbal endings are listed as follows.

A. *Godan-katsuyoo* verbs (Stem ending with a consonant)

The nonpast form of the *Godan-katsuyoo* verbs varies according to the final consonant of the stem. The negative morpheme (-na-i) is added to derive the negative form. The past tense is derived by adding the past tense morpheme (-ta). The actual pronunciation of the past tense of the verb is influenced by phonological rules. The negative past is formed by adding 'na-kat-ta' to the stem of the verb.

Stem ending with:	NPAST	NPAST Negative	PAST	PAST Negative
/w/	aw-u 'to meet'	aw-a-na-i	at-ta	aw-a-na-kat-ta
/k/	sak-u 'to bloom'	sak-a-na-i	sai-ta	sak-a-na-kat-ta
/m/	yom-u 'to read'	yom-a-na-i	yon-da	yom-a-na-kat-ta
/ts/	mats-u 'to wait'	mat-a-na-i	mat-ta	mat-a-na-kat-ta
/b/	yob-u 'to summon'	yob-a-na-i	yon-da	yob-a-na-kat-ta
/n/	shin-u 'to die'	shin-a-na-i	shin-da	shin-a-na-kat-ta
/r/	kir-u 'to cut'	kir-a-na-i	kit-ta	kir-a-na-kat-ta

B. *Kami-ichidan, Shimo-ichidan* verbs (Stem ending with a vowel)

This class of verbs have stems which end with a vowel. The morpheme (-ru) is added to derive the nonpast form. The negative, past, and negative past forms are derived in the same way as the Godan-katsuyoo verbs.

NPAST	NPAST Negative	PAST	PAST Negative
mi-ru 'to see'	mi-na-i	mi-ta	mi-na-kat-ta
tebe-ru 'to eat'	tabe-na-i	tabe-ta	tabe-na-kat-ta
ne-ru 'to sleep'	ne-na-i	ne-ta	ne-na-kat-ta

C. *Henkaku-katsuyo* verbs (irregular conjugation)

These two verbs have an irregular stem form. The morphemes used to derive the nonpast negative, past, and negative past forms are the same as other types of verbs.

NPAST	NPAST Negative	PAST	PAST Negative
ku-ru 'to come'	ko-nai	ki-ta	ko-na-kat-ta
su-ru 'to do'	shi-nai	shi-ta	shi-na-kat-ta

D. Copula

The copula *da* is attached to the nominals or nominal adjectives.

(3-1) Tom-wa Amerikajin da.

Tom-TOP American COP

'Tom is an American.'

(3-2) Kono purintaa-wa benri da.

this printer-TOP convenient COP

'This printer is convenient.'

NPAST	NPAST Negative	PAST	PAST Negative
da	ja-na-i	dat-ta	ja-na-kat-ta

3.4.2.2. The aspectual marker in Japanese

The 'te-ir' form is considered to be the aspectual morpheme for describing ongoing actions and the continuous state as a result of the action denoted by the verb. This aspectual marker can be followed by regular Tense markers, such as *-ru* or *-ta*.

The following is a chart of possible inflected forms which contain the aspectual marker.

NPAST	NPAST Negative	PAST	PAST Negative
shi-te-iru 'be doing' 'have done'	tabe-te-i-na-i	tebe-te-i-ta	tabe-te-i-na-kat-ta
at-te-iru 'be meeting' 'have met'	at-te-i-na-i	at-te-i-ta	at-te-i-na-kat-ta

The *-te ir-* form was also searched in the study, since as its English equivalent '-ing', or 'has been -ing' indicates, the use of this morpheme requires understanding of the temporal concept. The *te-ir* form is not classified as a tense morpheme, though; it can be followed by the above tense morphemes (-ru and -ta).

3.4.2.3. Stative predicates

Stative predicates include certain nominal or adjectival endings. Since all of these predicates were not included in the search of the verbal forms described above, a CLAN program, KWAL, was used to search for the following words, which were used in stative predicates.

suki ('to like', grammatically defined as an adjectival nominal)

hoshii ('to want', grammatically behaves as a regular adjective)

Verb stem+*tai* ('to want to do X', grammatically behaves as a regular adjective)

Verb stem+*taku-nai* (the negative form of 'tai' in above)

Verb stem+*takatta* (the perfective form of 'tai' in above)

All utterances were printed with their three preceding utterances and three following utterances, whether made by the child or anyone else.

3.5. Summary of the chapter

This chapter presented the methods used to address the research questions raised in the previous chapter. Since naturalistic speech was used as the primary source of data, the nature of naturalistic data was extensively discussed. In the discussion, the choice of the naturalistic data for this thesis project was defended: (1) Since the acquisition of the basic properties of Japanese Case-particles seems to be completed before children grow mature enough to perform experimental tasks, naturalistic data are the only available option to address the research questions for this thesis. (2) Since Case-particles abound in daily Japanese speech, naturalistic data provide a large amount of samples to analyze.

Background information on the three sets of databases was described in the second section. As shown in the following summary, the data for the three corpora were collected by different people at different locations and times. Hence, results of an analysis of their speech will not be significantly influenced by any particular pattern of parental input, dialectal variation, and so on.

	Year(s) of data collection	Location of data collection	Recorder of the data	Format of data collection
The AKI Corpus	1989-90	Nagoya, Japan	Researcher (Miyata)	Videotaped sessions
The KAN Corpus	1996	Storrs, USA	Parents, researcher (Matsuoka)	Videotaped sessions
The Noji Corpus	1960-70's	Hiroshima, Japan	Parents	Diary

Finally, the procedures used for searching and handcoding the data were described.

Notes for Chapter 3

¹For an extensive discussion on this topic, see Stromswold (1996).

² Sharing of naturalistic data collected by different researchers can help to overcome the problems summarized above. The CHILDES project is one of the most successful examples of such an approach.

³ If possible, it would be ideal to examine both naturalistic and experimental data, since naturalistic data and experimental data can complement each other. For example, comparison between the data observed in the naturalistic and experimental data can provide an insight to the legitimacy of the experimental setup. At the same time, experimental data collection might be able to contribute sentence constructions which a child can produce, but are not attested in spontaneous speech for non-linguistic reasons.

⁴ In any corpus transcribed using the Japanese writing system, this would not be an issue, since the use of Chinese characters disambiguates the meaning of homophones.

Chapter 4

The Acquisition of the Nominative Case-particle *ga*

4.1. Particles in child and adult speech

4.1.1. Innate principles and adult input

Japanese-speaking children seem to accomplish the highly challenging task of acquiring the knowledge of the Japanese Case system quite early, despite the confusing data about the Case-particles in adult speech. This fact suggests the possibility that Japanese children's acquisition of Case proceeds with the aid of the innate principles of the Case licensing system. A prediction from this assumption is that the overall pattern of Japanese Case-particle acquisition will be similar among different children, no matter how their parental input may vary. My first research question, repeated below, was raised in relation to that prediction.

Research question 1: Do different children who are learning the Japanese Case system follow a similar developmental pattern, regardless of the amount of parental input concerning the use of Case particles? In particular, do they distinguish between certain grammatical items or patterns (predicate types, word order, etc.) in their initial use of Case particles?

The results of my analysis of Case-particles in adult and child speech are summarized in the following section.

4.1.2. Results: Frequency of particle usage

4.1.2.1. Overall frequency of occurrence

In this study, a striking similarity was found across the three different children in the frequency of their use of the particles, *ga*, *o* and *ni*. The actual counts of those three particles in the children's speech is shown in the following table.

Table 1
Particles in child utterances

	AKI	KAN	Sumihare	Total
<i>ga</i>	316	137	2246	2699
<i>o</i>	28	8	129	165
<i>ni</i>	243	104	1399	1746
Total	587	249	3774	4610

The frequency of the particles observed in the children's speech shows the same pattern across the three children. As can be seen in the following table, the Nominative case-particle *ga* and the Dative Case-particle/postposition *ni* were used frequently in each child's speech in all corpora. As summarized in Table 2 below, The occurrence of the Nominative Case-particles accounts for 54-60% of the use of the Case-particles, while the usage of the particle *ni* is 37-42%. On the other hand, the occurrence of the Accusative Case-marker *o* is notably less: 3-5% of the particles used in the three corpora.

Table 2

Percentage of the three particles calculated for individual children

	AKI	KAN	Sumihare	All three children
ga	54%	55%	60%	59%
o	5%	3%	3%	4%
ni	41%	42%	37%	38%

The overwhelming majority of the usages of particle *o* in the children's speech is adult-like, as indicated in the following table.¹

Table 3

Children's use of the particle *o*

	adult-like	non adult-like
AKI	27	1
KAN	7	1
Sumihare	127	2

See the Appendix for the actual utterances with non-adult use of *o*.

On the other hand, the frequency of the Nominative and Accusative particles in adult speech, directed to these three children, does not follow a uniform pattern. The following table shows the adult use of the particles.²

Table 4
Particles in adult utterances

	AKICorpus	KAN Corpus	Noji Corpus*	Total
ga	1358	450	279	2087
o	192	210	231	633
ni	1526	769	221	2516
Total	3076	1429	731	5236

(* adult utterances were included in the corpus only in the last four files: sumi30, sumi31, sumi32, and sumi 33.)

Note that the percentage occurrence of the Accusative particle *o* differs more widely among the corpora, as seen below;

Table 5
The percentage of the three particles in adult speech

	AKI Corpus	KAN Corpus	Noji Corpus	All Corpora
ga	44%	31%	38%	40%
o	6%	15%	32%	12%
ni	50%	54%	30%	48%

4.1.2.2. Order of appearance of particles and adult input

The age of the first occurrence of the three particles *ga*, *o*, and *ni* is summarized below:

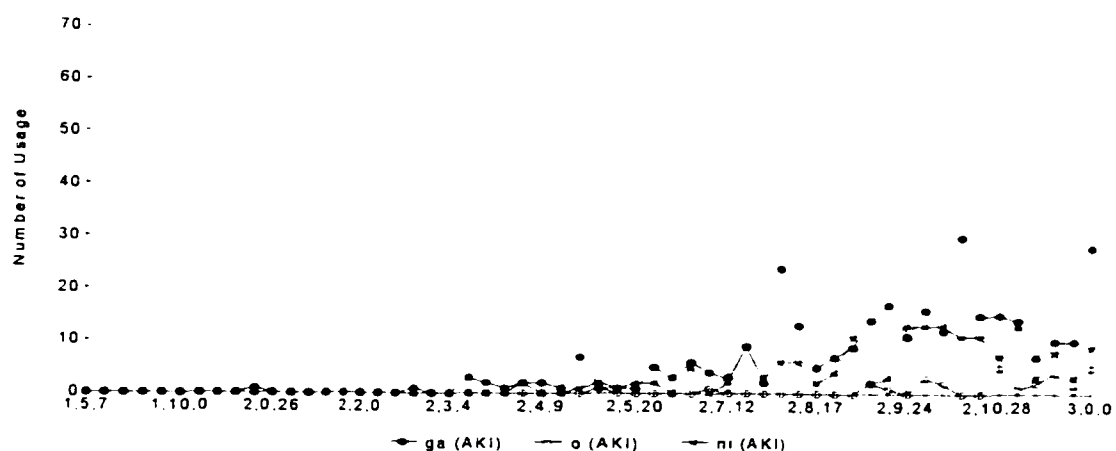
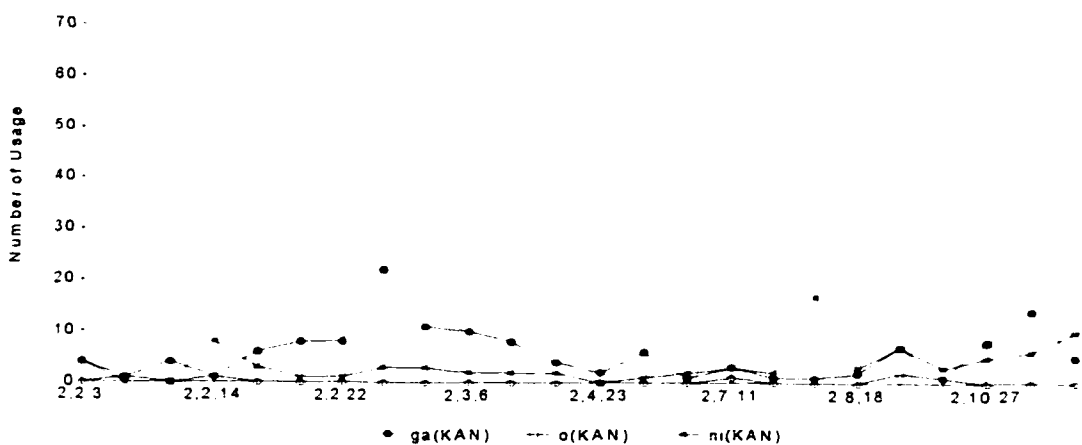
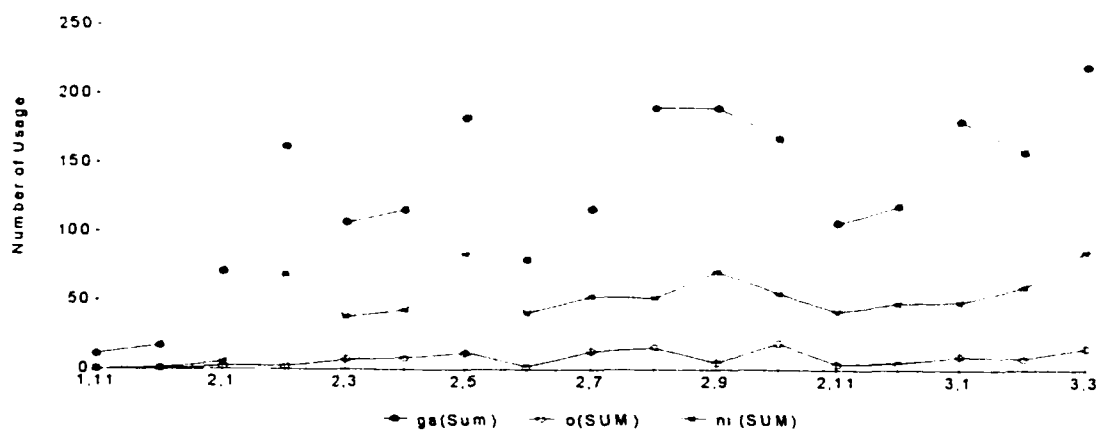
Table 6

Age of the first occurrence

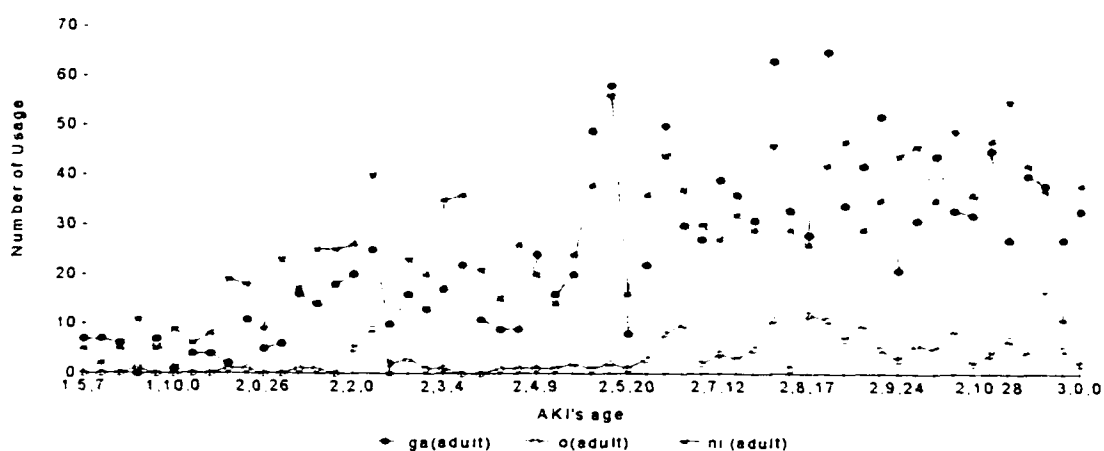
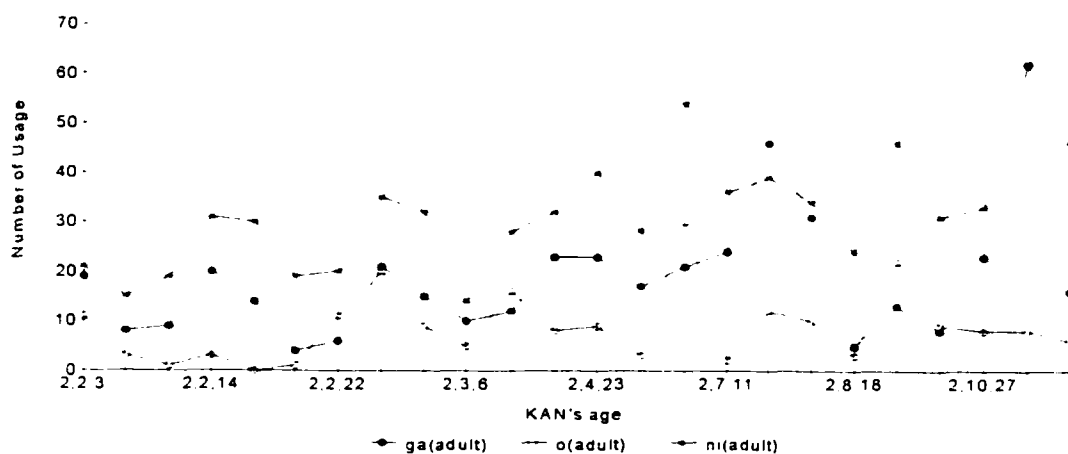
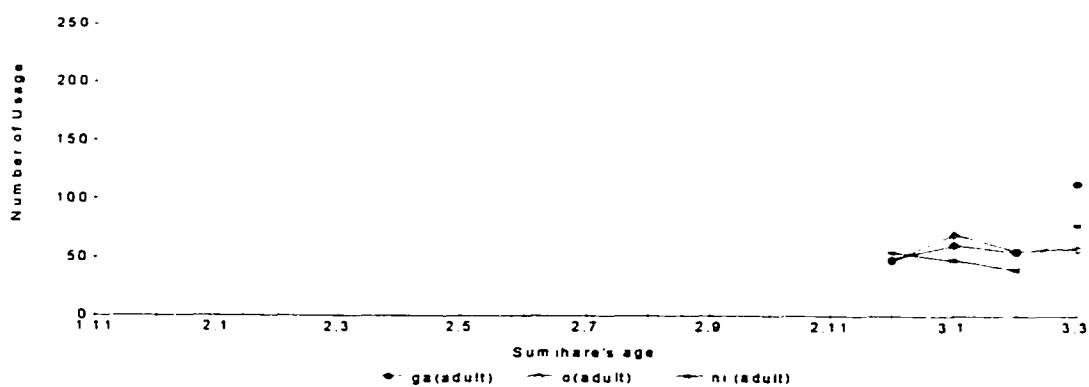
	AKI	KAN	Sumihare
<i>ga</i>	2;2;22	2;2;3+	1;11+
<i>o</i>	2;9;7	2;2;7	2;1
<i>ni</i>	2;4;29	2;2;14	2;0

(+ = the first file in the corpus)

The following graphs show the transition of the usage of the three particles used by children and adults. The first three summarize the number of occurrences of *ga*, *o*, and *ni*, in the children's utterances, beginning with the AKI corpus.

Figure 1: *ga*, *o*, and *ni* in AKI's speechFigure 2: *ga*, *o*, and *ni* in KAN's speechFigure 3: *ga*, *o*, and *ni* in Sumihare's speech

The following three graphs show the number of the particles used in adult utterances, beginning with the AKI corpus.

Figure 4: *ga*, *o*, and *ni* in adult speech: AKI CorpusFigure 5: *ga*, *o*, and *ni* in adult speech: KAN CorpusFigure 6: *ga*, *o*, and *ni* in adult speech: Noji Corpus

4.1.3. Interpretation of the data

All three children began to use the three particles in a fixed order, despite the different adult inputs. The Nominative particle *ga* appears before *ni* or *o* in all three corpora, and *ni* appeared earlier than *o* in all three corpora.

One might wonder if this sequence merely reflects the possibility that the particle *ga* might happen to appear earlier in the corpus simply because the child uses *ga* more frequently than *ni*, not because *ga* is acquired before *ni*. A sign test was performed to calculate the probability of obtaining the observed ordering simply by chance, taking frequency into consideration. For example, the Nominative Case-particle *ga* occurred 31 times before the first occurrence of *ni*. This number was compared to the occurrence of those two particles in the last file of the corpus, AKI56. In this file, the particle *ga* was observed 28 times, while the particle *ni* was observed 9 times. The following formula was used in the test.

	<i>ga</i>	<i>ni</i>	
AKI28	31	1	
AKI56	28	9	

$$\left(\frac{28}{28+9} \right)^{31} = 1.77^{-4} = 1 \times 10^{-4} \quad (p < .001)$$

The result of this calculation shows that the situation in which *ga* appears before *ni* by chance, has the probability of one in 10^4 . That is, it is highly unlikely.³

The results strongly indicate that the sequence of particle acquisition is not accidental. The following table shows the results of the sign test,

based on the frequency of the particles in the speech of each individual child, for the acquisition sequence of *ga>ni* (*ga* used before *ni*), *ga>o* (*ga* used before *o*), and of *ni>o* (*ni* used before *o*).

Table 7

Results of the sign tests for the acquisition
sequence of the three particles

	AKI	KAN	Sumihare
<i>ga>ni</i>	$p<.001^*$	$p<.001^*$	$p<.001^*$
<i>ga>o</i>	$p<.001^*$	0.36	$p<.001^*$
<i>ni>o</i>	$p<.001^*$	0.28	0.359

(*=statistically significant at the .001 level)

The particle *ga* appeared significantly earlier than *ni* in all three corpora. This particle appeared significantly earlier than *o* in AKI and Noji Corpora. The particle *ni* appeared significantly earlier than *o* only in AKI Corpus. To summarize, the universal acquisition sequence of Case-particles is *ga* before *o*, and *ga* before *ni*.

The adult input does not necessarily encourage the children to follow this ordering.⁴ For example, AKI began to use the Nominative Case-particle *ga* significantly before the particle *ni*. Even though the adults in the AKI corpus used *ga* and *ni* more frequently than *o*, there is no noticeable difference in frequency of the adult use of *ga* and *ni*. In early files, *ni* is observed slightly more frequently than *ga*; but the trend reverses at AKI 29 (Age 2;5;6). In the adult speech in the KAN corpus, *ni* is used much more

often than *ga*. Also, AKI uses the particle *o* more frequently than do the adults whose speech is transcribed. In the adult speech in the Noji Corpus, the usage of *ga* and *o* outnumbers that of *ni*.

The input patterns from the adult speech in the three corpora were all different. Nevertheless, there is no observable difference among the three children in terms of the order of particle acquisition and frequency of particle usage. The Nominative particle *ga*, which appears first in early speech, is the most dominant particle. The usage of the particles *ni* and *o* follows soon thereafter; but *o* seems to be used productively at a later stage, at least in the AKI Corpus.⁵

The sequence of Nominative Case particle acquired first was also observed in early German speech (Mills 1986). Case in German is visible in endings of definite and indefinite articles, as well as on demonstrative and attributive adjectives.

Mills (1986) reported that 'the case form of the article which first appeared is the nominative case form. Nominative case marking is overgeneralized to accusative case (this is only observable in masculine gender nouns) with considerable frequency.' (1986: 178)

Stern (3;2)

(4-1)	hab	*der	Stuhl	(g)e-	hau	-t
	PAST.AUX	DEF.ART:	chair: MASC	PAST	hit	PAST
		MASC:SG:NOM				

'I have hit the chair.'

(Mills 1986)

The Nominative Case was dominant in both definite and indefinite articles in the speech of young German children.

However, in German, the Dative Case appears after the use of Accusative Case is established: Mills reported that the Accusative Case is overgeneralized for the Dative Case, as in the following example.

(Scupin 2;9)

(4-2)	mach	*den	Mann	Beine
	make: IMP	DEF.ART:	man	legs
		MASC;SG:ACC		

'make legs for the man'

(Mills 1986)

The dominance of the Accusative Case over the Dative Case in German is suggested by the observation that 'it is rare for the dative to be used instead of the accusative.' (Mills 1986: 184)

The Case morphemes in German appear in the form of bound morphemes and hence not possible to be 'dropped' in the sense of the missing Case-particles in adult Japanese. Hence, there is no way in which omission of Case morphemes in the adult input would affect the acquisition order of the Nominative Case morpheme before the Dative or Accusative morphemes. ⁶

4.2. The acquisition of the Tense system and the Nominative Case-particle

4.2.1. Development of Tense and Case-particles

According to the checking theory of Case, the lexical entries are chosen from the lexicon with formal features, including the Case features. Those features are checked against the features of the verb, mediated by functional heads. The verb is assumed to adjoin to the AgrO head, and then to the Tense head. The complex head, T+AgrO+V, adjoins to the AgrS head. The DP which carries the Nominative Case moves to the Spec of AgrS, where the Case is checked against the features of the combined head.

The Tense head seems to be playing a major role in licensing the Nominative Case in Japanese, since the Nominative Case-particle *ga* can appear with the subject only in a tensed clause (Takezawa 1989). The examples used in Chapter 2 to support this conclusion are repeated here:

(4-3)a. Shinji-wa [tomodachi-ga taisetsu da] to omot-ta.
 Shinji-TOP friend-NOM important COP-NPAST COMP think-PAST
 'Shinji thought friends were important.'

b. *Shinji-wa tomodachi-ga taisetsu ni omot-ta.
 Shinji-TOP friend-NOM important COP think-PAST
 'Shinji thought friends were important.'

It is assumed that case-particles are a manifestation of the Case feature. Then the theory of Case-checking provides the prediction that children would not be able to use the Case-particles in a productive fashion, until the Tense system is fully developed. The research question repeated below was raised to test this prediction.

Research question 2: Does the Nominative Case-particle *ga* appear in child speech only after the tense system is fully operational?

It is assumed that the Tense system is fully operational when both nonpast and past verbal endings are used productively. (See Section 3.4.2. for examples of the form of the verbs with the two types of tense.)

4.2.2. Results and discussions

The following table shows each child's age when the three tense/aspect markers and *ga*, *o*, and *ni* are first used productively. The asterisk next to the age indicates that this age is for the first file in the database.

Table 8

Usage of Tense and aspect morphemes by children

	Aki	Kan	Sumihare
nonpast	1;10;0	2;2;3+	1;11+
past	2;1;17	2;2;3+	1;11+
te-ir	2;3;12	2;2;3+	1;11+
ga	2;2;22	2;2;3+	1;11+

(+ = the first file in the database)

Table 9 summarizes the results of the sign test performed on the order of appearance of the tense morpheme and the three particles. For example, 'pres>ga' is for the probability that the present tense ending appears before the first use of *ga*.⁷ Results of the sign test are included in the table.

Table 9

The ordering of the tense endings and three particles (*ga*, *o*, and *ni*)

	AKI		KAN	Sumihare
npast>ga	75	p<<.001	NA	NA
past>ga	30	p<<.001	NA	NA

The nonpast ending and the Nominative Case-particle *ga* both appear at a very early age. Since they were both present in the first file of the KAN and Noji Corpora, it was not possible to determine their order of appearance.

However, the data from the AKI Corpus indicate that the nonpast ending appears earlier than the Nominative Case-particle *ga*. This observation is statistically significant at the .001 level.

To summarize, the data from the three sets of databases suggest that the nonpast and the past tense ending appears at the same time or the first use of the three particles. That is, the tense system seems fully operative before the young children begin to use the particles. This observation is in conformity with the assumption that the Tense head is responsible for the licensing of the Nominative Case.

Children seem to distinguish between the tense morphemes and the aspect morpheme (*te-ir*). Table 10, below, is a summary of children's use of Case-particles and the morpheme, *te-ir*.

Table 10

The ordering of the aspectual morpheme (*te-ir*)
and three particles (*ga*, *o*, *ni*)

	AKI	KAN	Sumihare
te-ir >ga	0	NA	NA
ga >te-ir	1 p=0.62	NA	NA

There is no ordering effect between the aspectual morpheme *te-ir* and the Nominative particle *ga*. The aspectual morpheme and the Nominative Case-particle *ga* seem to appear around the same period in the AKI Corpus: there is no significant ordering effect between them (sign Test: $p=0.62$).⁸

4.3. The Nominative object in child speech

4.3.1. Multiple Checking of Nominative Case

The next research question is related to the issue of licensing of the Nominative Case on the object. The Nominative Object appears with [+stative] predicates. Some Japanese predicates, such as *wakaru* (to understand), *iru* (to need), *dekiru* (to be able to handle), *hoshii* (desirable), *suki* (be fond of), are inherently [+stative]. Only Nominative Objects are allowed to appear with those predicates such as (4-4a,b).

(4-4)a. Misato-ga doitsugo-ga deki-ru (koto)
 Misato-NOM German-NOM able to handle-NPAST (fact)
 '(The fact that) Misato can speak German.'

b. *Misato-ga doitsugo-o deki-ru (koto)
 Misato-NOM German-ACC able to handle-NPAST (fact)
 '(The fact that) Misato can speak German.'

The [-stative] verbs can be converted into [+stative] by the potential verbal morpheme, *-(rar)e-*.⁹ When this happens, the object can appear either with the Nominative or the Accusative Case-particle.

- (4-5)a. Misato-ga doitsugo-ga hanas-e-ru (koto)
 Misato-NOM German-NOM speak-can-NPAST (fact)
 '(The fact that) Misato can speak German.'
- b. Misato-ga doitsugo-o hanas-e-ru (koto)
 Misato-NOM German-ACC speak-can-NPAST (fact)
 '(The fact that) Misato can speak German.'

In recent studies of Japanese syntax, it is argued that the Tense head can check the Nominative Case on both the subject and the object, since it carries multiple sets of formal features (Koizumi 1994, Ura 1996). This multiple feature-checking is enabled by setting the parameter to a certain value (Ura 1996). As discussed in Section 2.3.3, based on the learnability consideration, it was argued that the default value of the multiple feature-checking parameter is negative: that is, multiple checking of the features is not available in early grammar.

An empirical prediction from this assumption is that at some early point, children will not produce any multiple Nominative constructions, such as (4-6), early in the time course of language development:

- (4-6) Yuchan-ga omizu-ga hoshi-i.
 Yuchan-NOM water-NOM desirable-NPAST
 'Yuchan wants water.'

Research Question 3, below, was raised in relation to that prediction.

Research question 3 : Will the multiple Nominative construction be observed in early child speech?

4.3.2. Results and Discussion

As noted in the previous section, the Nominative Case-particle *ga* is observed to appear early in the transcripts. Most of those early uses of *ga* are attached to the subject of intransitive verbs or non-stative transitive verbs, though. The stative predicates, with or without Case-particles, seem to appear a few months later than the first use of *ga*. The following table summarizes the age of the first appearance of *ga* and the stative predicate.

Table 11

The First appearance of the Nominative particle and stative predicates

	<i>ga</i>	stative predicate	Nominative object
AKI:	2;2;22	2;4;29	2;6;15
KAN:	2;2;3+	2;3;14	2;4;25
Sumihare:	1;11+	1;11+	2;3

(+ = the first file in the database)

The following is a summary of the number of stative predicates, with or without particles and the number of multiple Nominative constructions.

Table 12

Multiple Nominative construction in child speech

	stative predicates	Nominative Objects	Multiple Nominative (with the stative pred)
AKI	199	19	0
KAN	42	3	0
Sumihare	48	18	0

There were no multiple Nominative constructions, with stative predicates, observed in any corpus.¹⁰

When two arguments appear with a stative predicate in children's speech, only one Nominative Case-particle was used, mostly on the object.¹¹ The object was marked more frequently with the Nominative Case-particle *ga*.

Table 13

The particle *ga* in the stative predicates with two arguments

	on the Subject	on the Object
AKI	1	18
KAN	0	3
Sumihare	1	17

The following are examples of Nominative objects used by the children:

(4-7) Aki-chan are-ga hoshi-i yo. (AKI48, 2;10;7)

AKI that-NOM want-NPAST

'I (AKI) want that thing.'

(4-8) Kore-ga deki-na-i. (KAN 10-1, 2;4;25)

this-NOM can-NEG-NPAST

'(I) can't do this.'

(4-9) hiru-wa omanju-ga tabe-ta-i. (Sumi27, 2;7)

noon-TOP sweet bun-NOM eat-want-NPAST

'I want to eat a sweet bun for lunch/afternoon snack.'

This observation indicates that the Nominative Case, on the subject and the object, is licensed by the Tense head, which carries only one set of formal features to check the Nominative Case.¹²

Young children seem to assume the negative value of the multiple Case-checking parameter at early stages of language acquisition. Children seem to begin with the most conservative option, namely assuming that one head can check a certain formal feature only once. This is consistent with the assumptions that (1) multiple feature-checking is subject to parametric variation (Ura 1996), and (2) the default value of the parameter is negative.

Another possible reason for the choice of the parameter's value comes from the Uniqueness Principle in Pinker (1984). He argued that

children tend to show a preference toward the Uniqueness assumption, namely to assume a one-to-one relationship between a form and its meaning. It might be possible that children extend this conservative strategy and assume that one functional category carries only one set of formal features (e.g. the Nominative Case feature) of the same type (but see footnote 7).

Double Nominative constructions in adult speech, such as (4-10) below, can serve as positive evidence for re-setting the parameter:

(4-10) *kotori-ga omizu-ga nomi-ta-i tte (iw-te-ir-u).*
 little bird-NOM water-NOM drink-want-NPAST COMP (say-teir-NPAST)
 'The little bird is saying that she wants to drink some water.'

Sentences such as (4-10) abound in adult speech.

4.4. Children's nonadult usage of *ga*

4.4.1. *ga* in Copula construction

One of the children's notable non-adult uses of the Nominative Case-particle is frequently observed in copula sentences. In adult Japanese, as shown in (4-11) below, no Case-particle is allowed before the copula.

(4-11) kore-wa hon(*-ga/o) da.

this-Top book(*-NOM/ACC) COP

'This is a book.'

This constraint holds even when the copula is dropped in casual speech (overt copula is optional in casual speech). In the naming situation, when an item is newly introduced in the discourse, or answering questions such as 'what is this?', particles cannot be attached to the DP.

(4-12) a, tombo(*-ga).

oh dragonfly(*-NOM)

'Look, (it's) a dragonfly.'

(4-13) Q: kore nani?

this what

'What's this?'

A: tombo(*-ga).

dragonfly(*-NOM)

'(It's) a dragonfly.'

It is possible to supply the Nominative particle to a DP without an overt predicate, only if the null predicate can be interpreted as *aru* or *iru* ('to exist', 'there is'). For example, the sentence (4-12), with the overt Nominative particle *ga*, sounds better if the sentence is interpreted as

indicated in the following. (Even with this interpretation, the sentence would sound incomplete and awkward, though.)

(4-14) a tombo-ga (iru).

oh dragonfly-NOM (exist)

'Look, there is a dragonfly.'

There is no possible interpretation to save the ungrammatical phrase in (4-13), since the form of the question sentence implies the copula interpretation of the null VP.

Children's use of the Nominative particle with a null VP was observed in all three corpora.

Table 14

The use of the Nominative Case-particle with the null VP

	<i>ga</i> with null VP	With a possible copula interpretation ¹³
AKI	86	60
KAN	5	1
Sumihare	158	91 ¹⁴

The possible copula interpretation were counted based on the information contained in the preceding utterances before the target utterance (except

the Noji Corpus. See footnote 14.) The following are examples from the AKI Corpus.

(4-15) (AKI40, age: 2;8;11)

SUZ: kore nan to iw-u?

this what that say-NPAST

(Susanne): 'What is this called?'

AKI: kore ne # densha-ga.

this I mean train-NOM

(AKI): 'This, I mean, is a train.'

In the following example, AKI answers his own question about where the button of the glove is.

(4-16) (AKI 48, Age 2;10;7)

AKI: tebukuro-no botan doko?

glove-GEN button where

(AKI): 'Where is the button of the gloves?'

AMO: n?

(noise)

(mother): 'huh?'

AKI: koko-ga.

here-NOM

(AKI): '(It's) here.'

In adult Japanese, the location word, *koko*, would appear with the location postposition *ni* and a predicate, or with no particle (the copula interpretation).

(4-17) *koko ni at-ta*.

here at exist-PAST

‘(It) was here.’

(4-18) *koko (dat-ta)*.

here (COP-PAST)

‘(It was) here.’

The choice of the Nominative particle in this situation results in an ungrammatical sentence.

(4-19)* *koko-ga (dat-ta)/(at-ta)*

here-NOM COP-PAST/exist-PAST

‘(It was) here.’

The 60 instances of AKI's use of the Nominative Case-particle *ga* involve the copula interpretation of the null VP, which is not accepted in adult Japanese.

This non-adult use of *ga* might have resulted from children's assumption that the existence of Tense is enough to license the Nominative

Case. The copula *da* 'to be', is assumed in the examples above, even though it is dropped for a stylistic reason. As discussed earlier with the example (4-3), *da* is a tensed form of the copula. The following example from German shows that a tensed copula can license the Nominative Case on a DP in other languages.

(4-20) Q: Was ist das?

what is that

'What is that?'

A: Das ist ein Auto.

that is a (NOM) car

'That is a car.'

In other words, adult Japanese has a language-specific restriction on the use of the Nominative Case *ga*: the particle can be used only when a tense morpheme and a verbal/adjectival predicate are present (or implied) in the sentence. Japanese children's non-adult use of *ga* in copula sentences indicates that they take some time to acquire this constraint.

4.4.2. Other non-adult use of *ga* and Default Case in Japanese

It is notable that the majority of the children's errors in the usage of Case-particles is the overuse of *ga*, in situations which call for a different

particle or a postposition. (4-21b) is the grammatical equivalent to (4-21a) in adult Japanese.

(4-21)a. *Reechan dotchi-ga asobi-ta-i no? (AKI43, age 2;9;0)

Reechan which-NOM play-want-NPAST Q

'With which do you want to play, Ree?'

b. Reechan dotchi de asobi-ta-i no?

Reechan which with play-want-NPAST Q

'With which do you want to play, Ree?'

In the following example, KAN replaced the postposition *ni* by *ga*. The grammatical equivalent is shown in (4-22b).

(4-22) (Looking at the picture of a mouse inside a big shoe)

a. *kutsu-ga hait-te(i)r-u. (KAN5-2, age 2;2;27)

shoe-NOM enter-teir-NPAST

'(The mouse) is being inside the shoe.'

b. kutsu ni hait-te(i)r-u.

shoe in enter-teir-NPAST

'(The mouse) is staying inside the shoe.'

Sumihare replaced the dative Case-particle *ni* by *ga* in the following example.

(4-23) a. **boku-ga mata kat-te* *ne.* (Sumi21, age : 2;1)

I-NOM again buy-CONT I mean

'Buy (it) for me again, okay?'

b. *boku-ni mata kat-te* *ne.*

I-NOM again buy-CONT I mean

'Buy (it) for me again, okay?'

The data presented in this section suggest that the default Case in Japanese is the Nominative Case *ga*. That is, when a child's grammar cannot determine the type of Case-particle to be used for a DP, the Nominative Case-particle is chosen.

4.5. Conclusions

In this chapter, the first three research questions were investigated, based on spontaneous speech data of three Japanese children. The hypothesis of UG-driven language acquisition was supported by the observation that the three children follow a universal sequence in the acquisition of Case-particles *ga* and *ni*, despite different patterns seen in adult input. This observation was discussed in relation to early German data. The data provided empirical support for the argument that the Tense head is responsible for Nominative Case-checking.¹⁵ It was reported that the children's use of the Nominative Case-particle with stative predicates is consistent with the multiple feature-checking hypothesis (Ura 1996). Finally,

children's nonadult-use of the Nominative Case-particle in the Copula construction was reported. Children do not seem to be aware of the language-specific constraint on the usage of *ga* in the Copula construction. Other non-adult uses of the particle *ga* suggest that the Nominative Case-particle *ga* is the default Case in Japanese. ¹⁶

Appendix: Non-adult use of the particle o

This appendix gives four child utterances which contain non-adult uses of the particle o. Each utterance is followed by two possible intended interpretations.

(AKI 54, age 2;11;25)

(4-24) a. *taiya-o chotto ne mawa-ru wa.¹⁷
tire-ACC a little you-know rotate-NPAST I-tell-you

(possible intended utterance 1)

(4-24) b. taiya-o chotto ne mawa-s-u wa.
tire-ACC a little you-know rotate-CAUSE-NPAST I-tell-you
'(I) am going to rotate the tire a little bit, you know.'

(possible intended utterance 2)

(4-24) c. taiya-ga chotto ne mawa-ru wa.
tire-NOM a little you-know rotate-NPAST I-tell-you
'The tire, you know, is rotating a little bit.'

(Sumi21, age 2:1)

(4-25) a. * to-o ai-te.
 door-ACC open-CONT

(Possible intended utterance 1)

(4-25) b. to-o ake-te.
 door-ACC open-CONT¹⁸
 'Open the door.'

(Possible intended utterance 2)

(4-25) c. to-ga ai-te.
 door-NOM open-CONT
 'The door opens, and....'

As can be seen in the potential intended utterances above, the non-adult-like nature of (4-24a) and (4-25a) could have resulted because the child was confused with the semantic difference between related verbs. The causative form *mawa-s-u* 'to cause to rotate' in (4-24b) is derived from the intransitive form *mawa-ru* 'to rotate'. In (4-25), the verb *ak-u* (the continuation form : *ai-te*) is an inchoative form of *to open* in English, while *ake-ru* (the continuation form: *ake-te*) is a transitive form of *to open*.

The following example from the Noji Corpus indicates that Sumihare did not realize that the verb *iru* (the polite form *irimasu*) is a stative verb, which requires Nominative Case on its internal argument.

(Sumi 210, age 2;10)

(4-26) a. *Yukikonko-o irimas-en ka.

Snow-ACC need-NEG Q

(Possible intended utterance)

(4-26) b. Yukikonko-ga iri-mas-en ka.

Snow-NOM need-NEG Q

'Don't you want snow?'

Note that the verb appeared in the polite form, *iri-masu*, which is not common in child speech or child-directed speech. It is possible that Sumihare failed to recognize that a same verb can appear either in a polite form or a casual form. As shown in the following example, Sumihare seems to understand that the verb *iru* is a stative verb.

(Sumi 22, age 2;2)

(4-27) Chisa-i no-ga ir-u no yo, boku.

small-NPAST one-ACC need-NPAST I-explain I-tell-you I

'It's that I need the small one.'

(Sumi210, age 2;10)

(4-28) Okaachan-no kugi-ga ir-u n yo.

mother-GEN nail-ACC need-NPAST I-explain I-tell-you

'It's that (I) need mom's nail.'

The last example of KAN is an overextension of the usage of the particle *o*.

The particle replaced a postposition *ni*.

(4-29) a. *koko-o suwa-ru. (KAN 6-1, age 2;3;6)

here-ACC sit-NPAST

(possible intended utterance)

(4-29) b. koko-ni suwa-ru.

here-at sit-NPAST

'(I) will sit here.'

This example seems to indicate that he has a tendency to provide the particle *o* to the DP located immediately next to the verb. A similar tendency was reported in results of an imitation task in Sano (1977). However, it is not clear how consistent this alleged 'tendency' is: (4-29a) is one of the three utterances of KAN with the particle *o*. There is no similar non-adult use in AKI and Noji Corpus.

Notes for Chapter 4

¹ Hiroko Miyata (1992) noted that young children left out particles on the object more often, compared to the particle attached to the subject. She argued that young children know that the Case-particles on the internal argument can be dropped only when the argument is c-commanded by the verb (Takezawa 1987). If her interpretation is on the right track, it is predicted that children would not drop the Accusative Case-particle when the object is scrambled, since the scrambled object is not c-commanded by the verb.

The data from the three corpora showed that children often failed to attach a particle to the object in scrambled sentences. This does not necessarily undermine Miyata's argument, though. As Otsu (1994a:256) noted, there is a discourse-related constraint for the use of the Accusative particle on the scrambled object. The object must be the discourse topic to be able to appear with the Accusative particle. Otherwise, the object in the Object-Subject-Verb word order would be interpreted as a topic. Hence, the missing particle for the object could be the Topic particle *wa*.

Since the corpora include limited amounts of contextual information, a study of Japanese children's narratives would be appropriate to consider Miyata's argument for the children's knowledge of the c-commanding constraint on the use of the particle on the internal argument.

² It should be noted that the databases were not originally developed for the analysis of adult speech. For example, Susanne Miyata, in her description of the AKI Corpus, warns that 'This data is NOT suitable for the study of the mother's overall language behavior, except for questioning and answering behavior.' (Miyata 1995/7, from the *Readme* file of the AKI Corpus) The Noji Corpus includes adult speech only in later files. The results discussed in the text should be considered with this empirical limitation. Nevertheless, the adult usage of the particles was analyzed based on the assumptions (1) that the utterances in the corpus reflect the basic property of adult speech directed to the children and (2) that the adults would not significantly change their pattern of particle usage as the child grows older (even though they might use more particles as the child grows).

³ I thank William Snyder for his instruction about the rationale and the application of this sign test.

⁴ The lack of direct influence of adult input to children's usage of

Case-particles could not be statistically supported, since three corpora are not enough to run a statistical test. For example, a table of the Critical values of Spearman's Rank Correlation Coefficient requires at least five sets of data (Mendenhall et al, 1986).

⁵ There is no theoretical reason why the three particles should be acquired in this particular order, though. *ga* and *ni* both have multiple functions. However, *ni* is ambiguous between being the Dative Case-particle or a postposition, while *ga* has only one syntactic function as the Nominative Case-particle. The syntactically ambiguous nature of the particle *ni* could have resulted in the acquisition ordering of *ga-ni*. Also, see footnote 6.

⁶ The current theory of Case licensing does not give any insight to why the Nominative Case is used productively earlier than the Dative or Accusative Case. Possibly, this acquisition order is a reflection of properties of language acquisition device (LAD). The theory of LAD is 'an account of the ways in which its (= UG's) principles interact with experience to yield a particular language.' (Chomsky 1986: 3) (the word in parenthesis was added by the author.) The investigation of properties of LAD is acknowledged as a future research topic. The author thank William Snyder for this discussion.

⁷ The timing of the onset of the productive usage is decided by the age when the Tense morpheme or Case-particles were used more than twice, which is followed by frequent usage in immediate data files. It is very difficult, particularly in earlier speech, to be able to tell that children understand the meaning of the past-tense, for example. I assume the children are using the past morpheme in an adult-like fashion, at least most of the time, based on the following observations. In the AKI Corpus, there is no indication that the past tense morpheme was ever used in a non-past context. During the data collection for the KAN corpus, there was no significant non-adult use of the past morpheme observed. Data in the Noji Corpus do not address the issue, since there was no adult utterance included in most of the files.

⁸ The concurrent occurrence of the aspect morpheme *te-ir* and the Nominative particle *ga* can be possibly interpreted to indicate that their development is related. If that is the case, the aspectual head, in addition to Tense head is involved in licensing of the Nominative Case. (W. Snyder, p.c.) Since the observation is based on only one child's corpus, however, further research is required to evaluate this possibility.

⁹ The *-rar-* part of the morpheme appears only when the morpheme is

attached to the *itidan* verbs (see 3.4.2. for the classifications of the Japanese verbs).

godan verb

- (i) Misato-ga doitsugo-ga/o hanas-e-ru (koto)
 Misato-NOM German-NOM/ACC speak-can-NPAST (fact)
 '(The fact that) Misato can speak German.'

ichidan verb

- (ii) Misato-ga karai mono-ga/o tabe-rare-ru (koto)
 Misato-NOM spicy food-NOM/ACC eat-can-NPAST (fact)
 '(The fact that) Misato can eat spicy food.'

¹⁰ A few double Nominative constructions were observed with non-stative predicates. One utterance was observed in the AKI Corpus (age 2;9;14, *ana ga aiterunde ne, sennnaka ga*. 'There is a hole, on the back.), and another from the Noji Corpus (Age 3;2, *niichan-ga shita-ga akaku nattara toru n yo*. 'When the big brother gets a red tongue, you take it out.) This type of multiple Nominative construction occurs only when a certain semantic restriction is satisfied. (Kuno 1973: Chapter 3) We do not consider this type of multiple Nominative construction in this study.

¹¹ It is possible that children have a tendency to assign the Nominative Case-particle to an internal argument, whenever possible. More than 60% of early use of the Nominative particle *ga* was assigned to the internal argument of ergative verbs. Further research is needed to confirm this informal observation.

¹² Note that a simple strategy, in which *ga* is mapped to logical subject is inconsistent with the children's willingness to use *ga* on objects of stative predicates. (W. Snyder, p.c.)

¹³ The rest of the occurrences of *ga* with a null VP are interpreted as the result of VP ellipsis, since there was a corresponding VP in previous utterances. A typical example is as follows.

- (AKI 19, 2;2;22)
 (i) Mother: *tabe-ru yo.*
 eat-NPAST I-tell-you
 '(Someone) eat(s)'

AKI: *Aki-chan-ga.*
 Aki-NOM
 'I (eat)'

¹⁴ Since contextual information was not available in most files in the Noji Corpus, the transcriber's comments on the interpretation of the null VP were used in the selection of utterances. The number in the table includes the null VP fragments with the transcribers' notes such as (*iru*), (*aru*), etc

¹⁵ The children uttered DPs without Case-particles before the tense morphemes were realized. It is important to consider if these DPs carry any Case-feature. One possibility is that UG allows an option for a DP to be selected with no Case-feature. In fact, the children seem to use DP without Case-feature. For example, they dropped Case-particles when there is no c-commanding relationship between the verb and the DP. That is not possible in adult Japanese (Takezawa 1987).

- (i) Aki-chan *are-ga hoshi-i yo.* (AKI48, 2;10;7)
 AKI that-NOM want-NPAST
 'I (AKI) want that thing.'

In (i), there is no c-commanding relationship between the verb and the DP *Aki-chan*. Nevertheless, particle for *Aki-chan* is dropped. As a result, sentences such as (i) are considered degraded by adult speakers. It is possible that *Aki-chan* in (i) is selected with no Case-feature. If it is selected with a Case-feature, that feature cannot be checked off according to early grammar, since Tense has only one set of formal features.

¹⁶ The topic particle *wa* is not a Case-particle and hence not included in this study. Children seem to use this particle frequently from early files in the corpora. For example, AKI began to use *wa* productively in AKI23 (age 2;3;18). In each of the three corpora, there are a few utterances which contained both *ga* and *wa*, such as the following examples.

- (i) buta-wa are-ga deki-na-i yo. (AKI50, age 2;10;20)
 pig-TOP that-NOM can-NEG-NPAST I-tell-you
 'As for the pig, (s)he can't do that.'
- (ii) kore-wa dare-ga tabe-n no? (KAN 25-1, age 2;11;19)
 this-TOP who-NOM eat-NPAST Q
 'As for this, who eats (it)?'
- (iii) Kyoo-wa ame-ga fut-te-i-ru. (Sumi 27, age 2;7)
 today-TOP rain-NOM fall-teir-NPAST
 'As for today, it is raining.'

¹⁷ This form of the discourse particle, *wa* (I tell you), could be either a dialectal variation (of the Nagoya dialect) or a feminine variation (influenced by mother's speech) of the particle *yo*.

¹⁸ The continuation form, which is marked by the morpheme *-te*, is used in commands (as in the example in the Appendix). It is also used when the verb is followed by another predicate (see the following example.)

- (i) To-ga ai-te, inu-ga hait-te ki-ta.
 door-NOM open-CONT dog-NOM enter-CONT come-PAST
 'The door opened, and a dog came in.'

Chapter 5

The Acquisition of the Japanese Particle *ni*

5.1. The dual property of *ni* : Dative particle or postposition?

In this chapter, the acquisition process of the Japanese particle *ni* is discussed. One of the challenges in studying the acquisition of the dative Case-particle *ni* is the fact that the particle *ni* has an ambiguous property. Unlike other particles, *ni* is phonetically ambiguous: it can be interpreted as a dative Case-particle or as a postposition. As Sadakane and Koizumi (1995) discussed, the phonetic ambiguity of *ni* may make it challenging for young children to acquire this particle.

The dative particle *ni* is classified in the following five types.
(Sadakane and Koizumi 1995)

(5-1) 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 postposition *ni* can be classified into the following eighteen categories.

(5-2) Postpositions

- B benefactive
 ni yaku (to bake for), *ni kau* (to buy for)
- C1 Dative of confrontation with adjective
 ni yoi (good for), *ni yowai* (not good at)
- C2 Dative of confrontation with a adjective nominal predicate
 ni shinsetsu (to be kind to), *ni ijiwaru* (to be mean to)
- C3 Dative of confrontation with a verb predicate
 ni amaeru (to coax), *ni kiku* (to be effective for)
- E objective stimulus
 ni komaru (to be troubled by), *ni kurushimu* (to suffer from)
- F dependent on
 ni motozuku (to be based on), *ni shitagau* (to obey to)
- G from/by
 ni kariru (to borrow from), *ni narau* (to learn from)
- H1 The underlying agent in a direct passive
 ni shikarareru (to be scolded by)
- H2 The underlying agent in an indirect passive conversion with an
 intransitive verb
 ame-ni furareru (to be adversely affected by the rain)
- H3 The underlying agent in an indirect passive conversion with a
 transitive verb
 sensei-ni musuko-o homerareru (to be affected by the teacher's
 compliment to her son)

- I The instigator of a passivised causative
sensei-ni tsuishi-o ukesaserareta (to be made to take a make-up test by teacher)

- K Pseudo-agent 'by/at'
ni tsutomeru (to work for), *ni tsukaeru* (to serve for)

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

- M Specific time
hachi-ji ni okiru (to get up at eight o'clock)

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

- R purpose
soodan ni iku (to go for consultation)

- T Manner
giniro ni hikaru (to shine silver)

- V Reference
otoshiyori-ni fuben da (inconvenient for the elderly)

Young children will need to recognize the difference between the two types of *ni*, since they present different syntactic characteristics. To investigate how children treat those two different types of *ni* in their language development, the following research question was raised.

Research Question 4: Do Japanese young children distinguish the Case-particle *ni* from the postposition *ni* during the course of language development?

The data from the AKI, KAN, and Noji Corpora were analyzed to address the research question above. Utterances which contained the particle *ni* were handcoded and classified according to the typology in Sadakane and Koizumi (1995). See Chapter 3 for detailed information about processing the data. A total of 1746 utterances were analyzed.

5.2. Results: early usage of the particle *ni*

It does not seem to be the case that young children acquire the dative *ni* earlier than the postposition *ni*. As seen in Table 15, there is no noticeable difference in the timing of different types of *ni*. In two corpora out of three (AKI and KAN), the four categories of *ni* which appeared the earliest were the dative types (D-O1, D-N), and the postposition types (L, O2).

Table 15

First usage of *ni*

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

	AKI	KAN	Sumihare
Dative			
D-A	2;7;19	2;8;18	2;1
<u>D-O1</u>	<u>2;5;6</u>	<u>2;2;14</u>	<u>2;1</u>
D-D	2;8;3	3;0;12	N/A
<u>D-N1</u>	<u>2;7;19</u>	N/A	<u>2;2</u>
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	<u>2;5;6</u>	<u>2;2;14</u>	<u>2;2</u>
<u>O2</u>	<u>2;4;19</u>	<u>2;2;14</u>	<u>2;1</u>
R	N/A	2;10;27	N/A

(N/A: Not observed in the corpus)

The four categories which emerged early, D-O1, D-N, L, and O2, are also among the most frequently used forms of *ni* in the whole corpus. The following chart shows the total number of uses of the different types of *ni*.

Table 16
Number of uses of *ni*

	AKI	KAN	Sumihare
Dative			
D-A	12	1	56
<u>D-O1</u>	<u>22</u>	<u>29</u>	<u>28</u>
D-D	3	1	0
<u>D-N1</u>	<u>11</u>	0	<u>64</u>
Postpositions			
B	4	0	18
G	0	0	42
H	1	0	27
<u>L</u>	<u>78</u>	<u>30</u>	<u>281</u>
<u>O2</u>	<u>34</u>	<u>21</u>	<u>69</u>
R	0	1	0

As shown in Table 17, the four categories, D-O1, D-N, L, and O2, encompass more than 80% of the total usage of *ni*.

Table 17
The Percentage of D-O1, D-N, L, and O2
in the Total Number of Dative/Postposition

	AKI	KAN	Sumihare
D-O1,D-N,L,O2	145	80	642
Total:dative/postposition	165	84	797
Percentage	88%	95%	81%

To summarize, young Japanese-speaking children in these corpora did not distinguish between the dative and postposition *ni* during 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 why it was observed that the four types of *ni* constitute a group, at the early stage of the language acquisition process. In the following section, the properties that those four types of *ni* share are discussed.

5.3. The proto-postposition stage of the acquisition of *ni*

The following repeats the functions of the four types of *ni* that two children seem to classify as one group in their early speech:

(5-3) (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/firu (to exist at, to have)

O2 Change of position with a transitive verb

ni kaku (to write onto), *ni naraberu* (to arrange on)

One might wonder if children associate the particle *ni* with intransitive predicates. Such a conjecture is not relevant here, though. Even though *ni* of the D-O1, D-N, 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*.

One common property among those four types of *ni* is that they are the only types of *ni* which indicate the physical location of an item or the final physical location as a result of an action. For example the type L, commonly called Locative, indicates the physical location of an item. The predicate types D-O1, D-N, 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 as an extension of the function of Locative. The fact 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,¹ or the physical location.

This correlation between a semantic function and a particle, which young children seem to assume, indicates that children treat this particle as a postposition rather than as a Case-particle. Unlike postpositions, 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 (5-4) are virtually identical in meaning:

(5-4) 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 data of children's usage of the Nominative Case-particle *ga* show that there is no observable relationship between the semantic function of the argument and their use of the Nominative particle. 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.

5.4. Re-learning *ni*

I have argued that these three 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 and Koizumi (1995) demonstrated. Hence, children will need to re-classify different types of *ni* into dative-particles and postpositions at some later point in their acquisition process.

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

(5-5) moo gohan (-o) tabe-ta?

already meal (-ACC) eat-PAST

'Have you eaten yet?'

(5-6) sakki Ma-chan (-ga) ki-te-ta yo.

a while ago Ma-chan (-NOM) come-state-PAST I-tell-you²

'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 the second sentence, (5-7b), it is not possible to recover it as the hearer interprets the sentence. The only possible interpretation of the second sentence is indicated in the English translation, which has no relation to the interpretation of the sentence (5-7a).

(5-7) 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.³ The dative-particle *ni* can be (and frequently is) dropped with the D-O1 predicate such as *noru* (to ride) in (5-8a) or the D-N predicates such as *kaeru* (to return) in (5-8b), while it is not possible to delete the locative postposition *ni*, as in (5-9).

- (5-8) 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?'

- (5-9) *Hiro-kun (-wa) koen ??(-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-N types are very common in adult speech directed to young children. The fact that the dative *ni* can be dropped indicates that it is a Case-particle such as *ga* or *o*. Observing the dropped *ni* is enough to sort out the four early proto-postpositions into dative particles or postpositions (D-N, D-O1, L, O2).

5.5. The acquisition of *ni* in the double-object construction

In the previous section, it was argued that missing particles in adult speech serve as positive evidence for the acquisition of *ni* as the dative Case-particle. However, the dative Case-particle cannot be dropped with double object predicates such as *ageru* (to give) as in (5-10). If children entirely rely on the dropped particle to determine the nature of *ni*, they will incorrectly conclude that the *ni* with the D-A predicate is a postposition.

(5-10) Karen(-wa) John*(-ni) shatsu(-o) age-ta?.

Karen(-TOP) John(-DAT) shirt(-ACC) give-PAST

'Did Karen give John a shirt?'

The particle *ni*, used with the D-A predicates, does not appear until the later part of the acquisition process in the AKI (2;7;19) and KAN (2;8;18) corpora. At some later point in the course of the acquisition, additional positive evidence is necessary to distinguish between the O2 postposition, such as the one in (5-11), and the D-A predicates.

(5-11) 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: the construction implies that 'X causes Z to have Y' (Gropen et.al 1989). For example, the particle *ni* in (5-10) 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-N, D-O1) in that it simply implies that 'X causes Z to go to Y'. This semantic property distinguishes the D-A predicate type 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 dative forms of *ni*.

It is suggested by Snyder and Stromswold (1997) that the acquisition of double object datives requires the acquisition of a grammatical property (the 'property A' in their terminology), 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 the following constructions in English:

(5-12)

English-specific constructions which depend on the acquisition of property A

- a. the double object datives
- b. the causative/perceptual constructions
- c. the V-NP-Particle constructions
- d. the *put*-constructions

The property A is sufficient to allow the child's grammar to generate the constructions in (5-12). In fact, Snyder and Stromswold observed that these four constructions appear at around the same time in the speech of thirteen English-speaking children.

On the other hand, the following constructions are argued to depend on the acquisition of the property A and a second property ('B').

(5-13)

English-specific constructions which depend on the acquisition of properties A and B

- a. the *to*-dative
- b. the V-particle-NP construction

Since the acquisition of the constructions in (5-13) requires the two properties, A and B, generally, those constructions appear in the children's speech significantly later than the constructions in (5-12). Snyder and Stromswold reported that this prediction was confirmed by the data of the spontaneous speech of the English-speaking children.

Among the constructions listed in (5-12), (c) and (d) are specific to English. However, the other two constructions, the double-object construction and the causative construction exist in Japanese. They would be reasonable candidates to investigate the possibility that the property A is involved in the acquisition of similar constructions in Japanese. Hence, the

following type of causative construction was collected from the child speech data.

(5-14) Ritsuko-ga sisutemu-o kanpeki-ni shi-ta.

Ritsuko-NOM system-ACC perfect-ni do-PAST

'Ritsuko made the system perfect.'

The causative *ni* began to appear at approximately the same time as the D-A (to give) *ni* was observed in the Japanese children's speech data.

Table 18

First usage of dative (D-A) and causative *ni*

	AKI	KAN	Sumihare
D-A	2;7;19	2;8;18	2;1
causative	2;7;5	2;8;15	2;2

This indicates that the observation made in Snyder and 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 (the property A in Snyder and Stromswold's term).

The acquisition of the Japanese double-object construction requires the acquisition of the Case-particle *ni* plus the abstract grammatical property. Hence the double-object construction with the particle *ni* is

acquired at a later stage, compared to the acquisition of other types of the Case-particle *ni* such as D-N or D-O1.⁴

5.6. Conclusions

Spontaneous speech data of Japanese young children were analyzed to address the research question about how children acquire the two different types of the particle *ni*. The results showed that the children did not exhibit any consistent order of acquisition for dative versus postpositional uses of *ni*. Particularly, *ni* with four types of predicates emerged early and were frequently used throughout the corpora. Those four types of *ni* consist of two dative *ni* and two postposition *ni*. The four types of *ni* are argued to be a proto-postposition in early child speech, which marks the physical location or the final physical location of the item as a result of the action described by the predicate. Possible positive evidence required for the re-classification of *ni* was discussed in section 5.4.

Finally, the fact that the *ni* in double object construction is acquired later than other types of the Case-particle *ni* was discussed as possible empirical support for the existence of a grammatical property which is relevant to the acquisition of small-clause or complex-predicate constructions (Snyder and Stromswold 1997).

Notes for Chapter 5

¹ Children at the Locative stage of the acquisition of *ni* do not seem to use the dative of the D-A type (ex. *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. 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 might be the case that Sumihare, at an early stage of his language development, assumed that the action of giving required a change in physical location. See section 5.5. for more discussion

² The particle *yo* in the example is one of the sentence particles (*shujoshi*), which act as a discourse marker. The sentence particle *yo* indicates that the speaker assumes that she is providing new information for the hearer. The sentence particles are frequently used in Japanese, particularly in casual speech.

³ 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 and Koizumi (1995:14). The syntactic properties of the *ni* with the D-D predicate are to be determined by future syntactic research. The empirical data in this study do not provide insight for this issue. The D-D Predicate was observed infrequently in the data analyzed in this study, and very few verbs such as *au* or *butsukaru* (to bump into) appear in the children's speech in the corpora.

⁴ The O2-type predicate can be considered as an equivalent to the *put*-construction in English. If that is the correct generalization, it is predicted that the *ni* with the O2-type predicate will appear at about the same time as the double object construction is used productively by a child. This prediction does not seem to be supported by the data: *ni* with O2 predicate appear 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 and Stromswold (1997). The *put*-construction which was studied in Snyder and Stromswold included two internal arguments. A similar

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 in an early stage of language development. For example, KAN uttered only 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 produced before the property A becomes available. It is noteworthy that English-speaking children also produce many early utterances of the form such as *put there* or *put in box*, but the '*put-NP-PP*' construction appears later (W. Snyder, p.c.)

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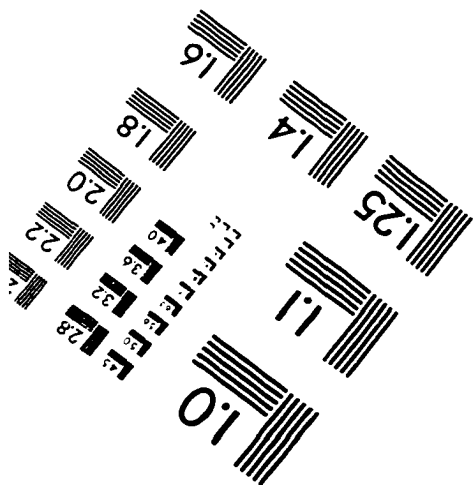
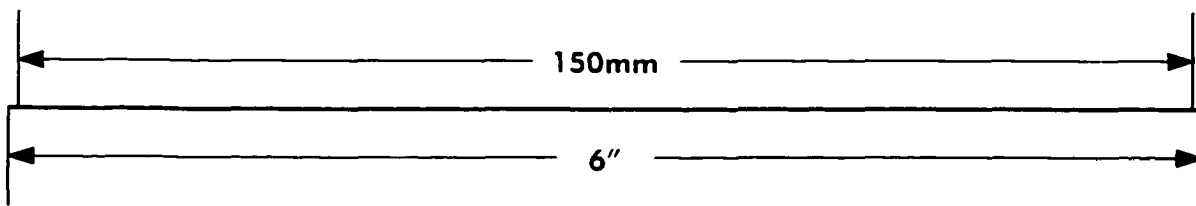
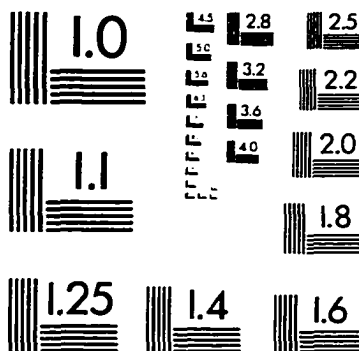
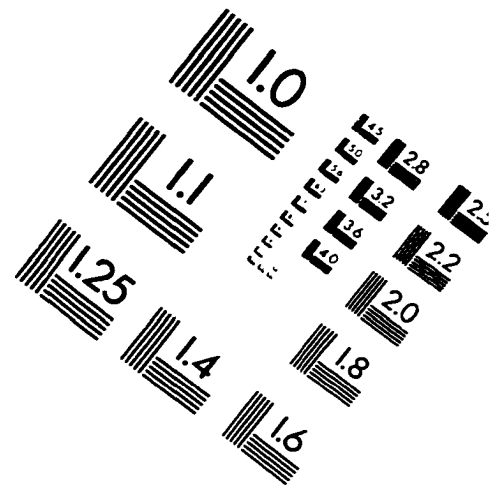
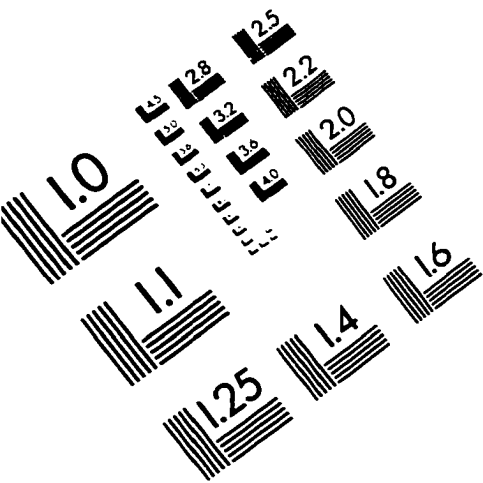
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