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Innate Constraints on Language Variation: Evidence from Child Language

Koji Sugisaki, Ph.D. University of Connecticut, 2003

Within the Principles and Parameters approach to Universal Grammar (Chomsky 1981). language acquisition is assumed to be the process of setting the values of *parameters*, which are conceived of as innately-specified points of grammatical variation that have multiple consequences for the surface grammar. Given this view, it is expected that parameter-setting, more accurately the time required to accommodate the data indicating the correct parameter-settings plays an important role to explain why language acquisition is not 'instantaneous' and proceeds gradually. Yet, despite this expectation, few pieces of clear evidence have been provided for parameter-setting from child language acquisition. This situation has led to the recent, influential hypothesis by Wexler (1996, 1998), which claims that basic parameters are set correctly at the earliest observable stages (Very Early Parameter-Setting, VEPS).

Koji Sugisaki -- University of Connecticut, 2003

In this thesis, I will present evidence against the "strongest" form of VEPS, the hypothesis that all the parameters are set to the adult value at the earliest stages. The evidence comes from the acquisition of three syntactic properties: preposition stranding, scrambling, and resultatives. A strong acquisitional association has been found (i) between preposition stranding and the prepositional complementizer construction, (ii) between the multiple-nominative construction and Japanese-type scrambling, and (iii) between noun compounding and transitive resultatives. These results not only argue for the existence of the relevant parameters, but also constitute a clear indication that parameter-setting in fact plays a significant role in explaining the non-instantaneous and gradual nature of language acquisition. These findings in turn demonstrate that the time course of child language acquisition is a rich source of evidence concerning the innate constraints on language variation.

Innate Constraints on Language Variation: Evidence from Child Language

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Chapter 1

Introduction

1.1 Goal

This dissertation is an attempt to provide new arguments from child language acquisition for the existence of *parameters*, the innate constraints on language variation that have simultaneous consequences for different aspects of the surface grammar. By so doing, I will show that parameter-setting, more accurately the time required to accommodate the data indicating the correct parameter-settings plays an important role in explaining the non-instantaneous, gradual nature of language acquisition. This in turn demonstrates that the time course of acquisition is a potentially rich source of evidence concerning the parameters of variation permitted by human language.

In this introductory chapter, I will review some of the fundamental assumptions in generative grammar, and discuss the principal issues in constructing the theory of language acquisition.

1.2 Logical Problem of Language Acquisition

When presented with the sentences in (1), an adult native speaker of English can tell that while *herself* is interpreted as *Mary* in (1a), this interpretation is not possible in (1b) or in (1c): In (1b), *herself* is interpreted as *Mary's sister*, and in (1c), it is interpreted as *Susan*.

- (1) a. Mary patted herself.
 - b. Mary's sister patted herself.
 - c. Mary said that Susan patted herself.

This knowledge is uniform in the sense that every adult native speaker of English has the relevant information in his/her knowledge of English (the *grammar* of English). In addition, the relevant knowledge is complex in that it relies on the notion *c-command* defined in (2): The distinction between (1a) and (1b) is explained by saying that while *Mary* c-commands *herself* in (1a), it does not in (1b), as shown in (3).

(2) Node A c(onstituent)-commands node B if neither A nor B dominates the other and the first branching node which dominates A dominates B.



Furthermore, the relevant knowledge is abstract: The notion in (2) required to explain the difference between (1a) and (1b) cannot be directly perceived from the sentences. And this knowledge contains grammar-specific information like *c-command* and *clause*: The anaphor *herself* cannot be interpreted as *Mary* in (1c) because they are not in the same clause, and the notion of clause is not employed in other cognitive domains.

On the other hand, the linguistic data that children make use of in acquiring the grammar of English is structurally simple. Morgan (1986:106) analyzed the input sentences for three English-learning children (Adam, Eve, Sarah; Brown 1973), and found that more than 90% of the input was sentences without any embedded clause. In addition, the input data are unorganized in that (i) the order of presentation of the data and (ii) the timing of presentation of each datum differ from child to child. Furthermore, direct *negative evidence* (the information that a sentence S is ungrammatical in the target language) is not systematically available to children.¹ The dialogue given in (4)

¹ Several studies claim that parents provide certain patterns of replies in different proportions depending on the grammaticality of children's utterances, and that such "noisy feedback" plays the role of negative evidence (e.g. Hirsh-Pasek et al. 1984, Morgan & Travis 1989). See Marcus (1993) for various arguments against this view.

illustrates this point: It shows that adults do not reliably correct the grammatical errors the child has made.²

(4)	Eve:	Mama isn't a boy, he a girl.	
	Eve's mother:	That's right.	(Brown & Hanlon 1970:49)

Summarizing so far, while the input data a child make uses of in constructing her

grammar have the properties listed in (5), the acquired grammar exhibits the properties in

(6).

(i)

(5) *Major Properties of the Input Data:*

- a. The sentences are structurally simple for the most part.
- b. The corpus is unorganized.
- c. Direct negative evidence is not systematically available.³

 $^{^{2}}$ It is sometimes argued that a dialogue like the following is an indication that children do not accept negative feedback even when it is available:

Child:	Want other one spoon, Daddy.
Father:	You mean, you want THE OTHER SPOON.
Child:	Yes, I want other one spoon, please, Daddy.
Father:	Can you say "the other spoon"?
Child:	Other one spoon.
Father:	Say "other".
Child:	Other
Father:	Spoon
Child:	Spoon
Father:	Other spoon
Child:	Other spoon. Now give me other one spoon.

(Braine 1971:160-161)

This argument is not conclusive, since the above dialogue can also be interpreted as an indication that children do not accept positive evidence (the correct forms) from parents (McCawley 1992:449). I thank Howard Lasnik for pointing this out to me.

³ Yet, there is a possibility that negative evidence is available in an indirect way and children rely on such information. See Chomsky (1981:9), Lasnik (1989), and Otsu (1987:247-258) for this possibility. (6) *Major Properties of the Adult Grammar:*

- a. It contains complex and abstract information.
- b. It is essentially uniform.
- c. It contains domain-specific information.

As we can see, there is a qualitative gap between (5) and (6), and hence the fundamental properties of the attained grammars are radically underdetermined by evidence available to the child. In other words, there is a "poverty of the stimulus" situation in child language acquisition. Yet, in spite of such "poverty of the stimulus", every child can acquire her target grammar under normal circumstances. Then, a question arises as to how. This is the question called "Plato's problem" (e.g. Chomsky 1975:5, Chomsky 1986a:xxv), or "the logical problem of language acquisition" (Baker & McCarthy 1981, Hornstein & Lightfoot 1981).

1.3 Universal Grammar

As an answer to the logical problem of language acquisition, generative grammar assumes that the human child is genetically endowed with a *Language Acquisition Device* (LAD), and that the child acquires her grammar through the interaction of the LAD with the linguistic experience she takes in after birth.⁴ This assumption can be schematically

⁴ The assumption that the LAD constitutes part of human genetic information contributes to explain the fact that language is species-specific (only a human child acquires a grammar) and species-uniform (every human child acquires a grammar).

shown as in (7).

(7) Linguistic experience of \implies LAD \implies Grammar of L a language L

Properties of the LAD define the initial state of language development, and include (at least) the following two ingredients: *Universal Grammar* (UG), and the associated learning principles. UG consists of biologically predetermined properties of language that characterize the set of possible natural-language grammars. The learning principles specify how UG interacts with linguistic experience to yield a particular grammar.⁵ Linguistic experience plays a crucial role in setting the LAD into operation, but does not directly determine the properties of the acquired grammar (Chomsky 2000:55-58; see also Chomsky 1965:33). Major properties of the attained grammars stem from UG, and hence are essentially uniform within the same speech community.

An important feature of the acquisition model presented in (7) is that it is based on the simplifying assumption of 'instantaneous acquisition': If LAD is provided with the totality of the data of L available to the language learner, then the grammar of L is attained. The time course of language acquisition is abstracted away from in this model. Even though this assumption is obviously false in that actual development is not

⁵ Several important proposals have been made regarding the nature of the learning principles: Representative proposals are Indirect Negative Evidence (Chomsky 1981:9), the Subset Principle (Berwick 1985, Dell 1981, Wexler & Manzini 1987), and the Triggering Learning Algorithm (Gibson & Wexler 1994).

instantaneous, Chomsky (1975:121, 1986:52) argues that this instantaneous model of language acquisition is a legitimate "idealization". given that such temporal factors as order of presentation of data and time of presentation do not seem to have significant effects on the attained grammars, and hence can be ignored.⁶ This simplifying assumption makes it possible to attribute general and abstract properties that hold among adult grammars directly to properties of the initial state (UG).⁷

There are two basic conditions that the theory of UG has to satisfy (Chomsky 1981:3). First, UG must be abstract enough to be compatible with the diversity of existing (or more accurately, possible) grammars. Second, UG must be rich and restrictive enough to account for the fact that each of the particular grammars develops in the child's mind on the basis of quite limited experience.

In an attempt to meet these two conditions, Chomsky (1981) proposed the *Principles and Parameters approach to UG* (P&P approach). Under this approach, UG consists of (i) a number of *principles* that hold in any language and sharply restrict the class of possible adult grammars and narrowly constrain their form, and (ii) *parameters* that should be fixed by experience. Parameters are points of grammatical variation that have simultaneous consequences for different aspects of the surface grammar.⁸ Chomsky (1981:6) characterizes parameters as follows: "In a tightly integrated theory with fairly

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⁶ Yet, some studies cast serious doubt on the validity of this idealization. See Kajita (1977, 1997, 2002), for example.

⁷ On the other hand, it raises an important question of why actual language acquisition is not instantaneous. See Section 1.5.

⁸ See Baker (2001) for a wide variety of examples.

rich internal structure, change in a single parameter may have complex effects, with proliferating consequences in various parts of the grammar." The P&P approach interprets the process of language acquisition as "the process of fixing the parameters of the initial state in one of the permissible ways" (Chomsky 1995:6). This view is called *the parameter-setting model of grammar acquisition*.

The P&P approach has yielded many proposals regarding the specific properties of UG, and these proposals have opened up research on language acquisition that tries to bridge acquisition studies and the findings of linguistic theory.⁹ In the next section I review one of the initial attempts: Otsu (1981).

1.4 Early Emergence of UG Principles

If principles of UG are innately given, the simplest possibility is that they constrain grammar acquisition from virtually the very beginning: Their effects should be observed as soon as the child acquires relevant lexical items and structures. Otsu (1981) attempted to show experimentally that this simplest possibility is in fact the correct one.

In one of his experiments. Otsu took up the Subjacency Condition (Chomsky 1973), a locality principle that can be stated informally as follows:

⁹ For one of the earliest attempts to connect grammatical theory and language acquisition, see C. Chomsky (1969).

(8) A single instance of movement can cross at most one bounding node, where the bounding nodes are S and NP. (Lasnik & Uriagereka 1988:21)

In order to see whether English-speaking children have knowledge of Subjacency, Otsu presented questions like (9) and investigated how children interpret them.

- (9) What is Jane drawing a monkey that is drinking milk with?
- (10) a. What is [s Jane drawing [NP a monkey that [s is drinking milk]] with t]?
 - b. * What is [s Jane drawing [NP a monkey that [s is drinking milk with t]]]?

The sentence in (9) is potentially ambiguous in its structure: The PP headed by *with* can be attached to the matrix VP headed by *draw* as in (10a), or to the embedded VP headed by *drink* as in (10b). Yet, in the latter structure, a single instance of *wh*-movement crosses more than one bounding node and thus violates the principle in (8). Given this, Otsu reasoned that children who have knowledge of Subjacency should interpret the question in (9) only as in (10a). The results of his experiment have shown that children obey the Subjacency Condition as soon as they acquire language-specific properties (the structure of English relative clauses). This finding in turn provided support for the innateness of the proposed UG principles and the underlying assumption of instantaneous acquisition.

A large number of acquisition studies pursued this line of research, and consequently, many principles of UG were demonstrated to constrain the course of acquisition from the earliest observable stage (see Crain & Thornton 1998, among others).

This situation led Chomsky (2001:1) to adopt the view that child grammars and adult grammars are essentially of the same nature throughout the course of acquisition:

(11) Strong Uniformity Thesis for Language Acquisition (Chomsky 2001:1):
Each attainable state of FL [language faculty] is a further specification of S₀
[initial state] with parameters fixed.

1.5 Identifying the Developmental Factors

As we have discussed above, a theory of UG has to provide an answer to "the logical problem of language acquisition", namely, the question of why language acquisition is possible despite the limited evidence. On the other hand, a theory of language acquisition must answer "the developmental problem of language acquisition": the broader question of how language is acquired. The finding that UG principles are functioning from the outset of development made a significant contribution to the theory of language acquisition. Yet, at the same time, it raised the following important question, whose answer definitely constitutes a crucial part of the acquisition theory: Why does grammar acquisition take time, and proceed gradually?

As a first step to answer this question, several factors are proposed as potentially relevant to the gradual, non-instantaneous nature of language development. In the following subsections I will review three major proposals: parameter-setting, maturation, and the delayed development of "pragmatic" knowledge.¹⁰

1.5.1 Parameter Setting

The early speech of English-learning children shows several interesting properties that are not permitted in the adult grammar of English. For example, children before or around the age of two often produce 'subjectless sentences', sentences that lack overt subjects:

- (12) a. See window.
 - b. Want more apple. (Bloom, Lightbown & Hood 1975)

In addition, the same period of development shows a notable lack of two classes of grammatical elements: the absence of overt expletives like *it* and *there*, and the lack of auxiliary *be* and modal auxiliaries. The examples in (13) and (14) illustrate these properties.

(13)	a.	Outside cold.	('It's cold outside')
	b.	No more cookies.	('There's no more cookies')
			(Bloom, Lightbown & Hood 1975)

¹⁰ One factor which is not discussed here but is still may be crucially relevant to the actual language acquisition is the development of processing abilities. I thank Yukio Otsu for pointing this out to me.

('I am drawing a dog')

b. I read the book.

('I will read the book')

(Brown & Fraser 1963)

Based on the observation that the availability of null-subject sentences and the lack of overt expletives are shared by adult Italian and Spanish. Hyams (1986) proposed that the above characteristics of the child's speech follow from the early non-adult-like setting of the null-subject parameter. The null-subject parameter divides languages into two basic types, namely null-subject languages like Italian and non-null-subject languages like English. According to Hyams, the grammar of young English-learning children is set to the null-subject value, thereby permitting the lack of overt subjects and overt expletives. The lack of auxiliaries in the child grammar also stems from this mis-setting of the parameter: While the null-subject value requires auxiliaries to be generated within VP, the lack of morphological marking on them (e.g. **cans.* **musts.* **musted*) in the input data precludes a main verb analysis, and this contradiction results in the "filtering out" of the auxiliaries.¹¹ Hyams's parameter-setting analysis also nicely accounts for the fact that the optionality of overt subjects, the absence of auxiliaries and

(i)Spanish:Juan no puede nadar.
Juan not can swim(cf. Hyams 1986:48)(ii)English:John cannot swim.

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¹¹ As a piece of evidence for the assumption that auxiliaries are inside VP in Italian and Spanish, Hyams (1986) shows that the auxiliary follows the negative element in these languages (while it precedes the negation in English):

Under the assumption that the negative element is located immediately above VP, the example in (i) indicates that the modal auxiliary appears within VP in Spanish.

the lack of overt expletives disappear at around the same time in the course of acquisition. Based on the observation that overt expletives only appear in non-null-subject languages, Hyams argued that the change to the correct value is induced by the acquisition of overt expletives: Once English-learning children become aware of the elements that are void of semantic content, they no longer stay with the null-subject value, and hence the above characteristics go away simultaneously.

A question arises as to why the shift to the correct value takes time, even though the triggering data (overt expletives) seem to be abundant in the input. Hyams (1986:163) argues that the non-null-subject option is more complex than the null-subject option. Under her analysis, all the pronouns are represented as sets of features (for person, number, gender) without a phonological matrix at the level of D-structure. While no operation is applied at S-structure in null-subject languages, the operation of lexicalization (the assignment of the phonological matrix) is obligatory in non-null-subject languages. Hyams assumes that the parametric value that induces such a discrepancy between D-structure and S-structure is more complex than the one that does not. She speculates that children cannot accommodate the more complex option (and consequently the data indicating that option) until their representational abilities grow up.

Hyams (1986) was the first study that pointed out the possibility that even the grammatical errors children make may fall under the range of possible adult grammars

determined by UG.¹² More importantly in this context, the study by Hyams revealed that there is a situation where the process of parameter-setting is observable in the course of acquisition. Under her analysis, this is due to the development of the abilities to accept the more complex value. Then, the time required to accommodate the complex settings and their triggering data constitutes one of the factors that contribute to explain the non-instantaneous and gradual nature of language development.^{13,14}

1.5.2 Maturation

Even though many UG-related properties (such as Subjacency) have been shown to emerge early, as we have discussed in Section 1.4, this is not the only logical possibility. In principle, there could be properties of UG that emerge later in the course of acquisition due to *maturation*: Their emergence is biologically controlled and hence they are not available until the child reaches a certain stage of development.¹⁵ Pursuing this possibility. Borer & Wexler (1987) made a proposal that the ability to form A-chains is

¹² Yet, many problems have been pointed out. See Section 1.6.

¹³ The 'gradual' nature of language acquisition may not directly follow from parameter-setting, unless we exclude the possibility that many parameters happen to be set simultaneously. In this thesis I adopt the Single Value Constraint proposed by Gibson & Wexler (1994:411), and assume that parameter-setting can potentially be a source of gradualness, given this constraint.

⁽i) The Single Value Constraint Assume that the sequence $\{h_0, h_1, ..., h_n\}$ is the successive series of hypotheses proposed by the learner, where h_0 is the initial hypothesis and h_n is the target grammar. Then h_i differs from $h_{i,i}$ by the value of at most one parameter for i > 0.

¹⁴ See McDaniel, Chiu & Maxfield (1995) for evidence from the setting of the parameter of wh-movement types.

¹⁵ See Gleitman (1981) for a related discussion.

maturationally controlled.

The hypothesis by Borer & Wexler (1987) is based on the following two observations concerning the acquisition of passives in English. First, English-speaking children have difficulty in comprehending and producing passives of non-actional verbs as in (15), but not passives of actional verbs like (16) (Maratsos et al. 1985).

- (15) The doll was seen (by Mary).
- (16) The doll was combed (by Mary).

The second observation is that passives without a *by*-phrase (short passives) are comprehended and produced earlier than passives with a *by*-phrase (long passives).

Borer & Wexler (1987) argue that these observations can be accounted for by assuming that children are not able to form A-chains: In passives, the underlying object moves to the subject position and forms an A-chain, but the child lacks the ability to handle this property. This hypothesis directly accounts for children's difficulty with sentences like (15), which can only be analyzed as verbal passives. In contrast, the participle in (16) is potentially ambiguous between a passive interpretation and an adjectival interpretation. Thus, while the participle in (15) cannot appear prenominally, this is possible with the participle in (16):

- (17) a. * the seen doll
 - b. the combed doll

Given this distinction, Borer & Wexler claim that children analyze examples like (16) as adjectival passives, and hence are able to provide an interpretation. Borer & Wexler also suggest that the lack of long passives in the child's speech follows from the fact that adjectival passives are in many cases incompatible with *by*-phrases, as shown in (18).¹⁶

(18) The fact was unknown (*by Peter).

Even though Borer & Wexler's specific proposal of A-chain maturation is controversial, their proposal shed light on the possibility that certain properties of UG may take time to unfold due to biological reasons.¹⁷

1.5.3 Delayed Development of Pragmatic Knowledge

In examples like (19) and (20), the pronoun *her* cannot have an antecedent within the same clause. Thus, the pronoun cannot be coreferential with *Mama Bear* in (19), and similarly, the pronoun cannot be interpreted as a variable bound by *every bear* in (20).

(19) Mama bear is touching her.

¹⁶ As the qualification "in many cases" suggests, there are adjectival passives that are compatible with a *by*-phrase. The following example was suggested to me by Howard Lasnik:

⁽i) Antarctica is uninhabited by humans.

¹⁷ See Babyonyshev et al. (2001) and Sugisaki (1999) for further arguments, and Demuth (1989), Fox & Grodzinsky (1998), Sano (2000), Snyder, Hyams & Crisma (1995), and Thornton (2001) for counterarguments. For the maturation of UG properties other than A-chains, see Radford (1990) and Sano (2002)

(20) Every bear is touching her.

Chomsky (1981:188-191) proposed that these facts are explained by Condition B of the Binding Theory, a principle of UG that can be stated informally as in (21) (Lasnik & Uriagereka 1988:33).

- (21) Condition B: A pronominal must be free within its clause.
- (22) A binds B iff (i) A c-commands B

and (ii) A and B are coindexed.

- (23) Principles of Interpretation (Chomsky & Lasnik 1993):
 - a. If the index of α is distinct from the index of β , then α and β are disjoint in reference.
 - b. If the index of α is identical to the index of β , then α and β are coreferential.

Free means 'not bound', and the definition of *bind* is given in (22). The principles required to interpret the indexes are stated in (23). Under this analysis, the unavailability of the interpretations described above stems from the ungrammatical status of the following representations:

- (24) * Mama bear₁ is touching her₁.
- (25) * Every bear₁ is touching her₁.

In the acquisition literature, it has been observed at least since Otsu (1981) that young English-speaking children have difficulty in comprehending sentences like (19). Specifically, they often take the sentence as meaning 'Mama bear is touching herself', violating Condition B. It is also reported in Chien & Wexler (1990) that these difficulties are not observed in the comprehension of sentences like (20), where the antecedent is a quantified NP: Children never take the sentence as meaning 'Every bear is touching herself'.

In order to account for these observations, Chien & Wexler (1990) proposed an analysis which attributes children's errors to the lack of certain pragmatic knowledge.¹⁸ Under their analysis, children have knowledge of the UG principle in (21), and hence provide a correct interpretation for bound-variable cases as in (20). Similarly, in the case of (19), children correctly rule out the representation in (24) and instead assign the one in (26).

(26) Mama bear $_1$ is touching her₂.

In the adult grammar, the coreferential interpretation of such contraindexed NPs is not permitted in general, but is still possible to a very limited context, as exemplified in (27). Chien & Wexler (1990) attribute this limited availability to the pragmatic principle of *Principle P*:

(27) That must be John. At least he_1 looks like him_2 . (Chien & Wexler 1990:256)

¹⁸ See Grodzinsky & Reinhart (1993) for a related proposal.

(28) Principle P (Thornton & Wexler 1999:30):
Contraindexed NPs are noncoreferential unless the context explicitly forces coreference.

Chien & Wexler argue that the source of children's errors is the lack of Principle P: This pragmatic principle is absent from the child's grammar, and as a consequence, the coreferential interpretation of (19) is permitted even when the context does not force it.

Chien & Wexler (1990) do not provide an explanation of why Principle P is missing in children, and how it is acquired (see Thornton & Wexler (1999) for relevant discussion). Their proposal, however, made it clear that what takes time to develop in the course of language acquisition can be not only the properties of UG themselves (as in parameter-setting and syntactic/grammatical maturation) but can be the properties that belong to other, related modules of knowledge. In addition, as Chien & Wexler emphasize, such dissociation in development lends strong acquisitional support for the modular nature of human knowledge. The delayed development of pragmatic knowledge is also employed in accounting for other developmental phenomena: See Avrutin (1999), Hoekstra & Hyams (1995, 1998), and Schaeffer (2000), among others.

1.6 Very Early Parameter-Setting

As we have discussed in the previous section, three major factors have been

proposed as relevant to the question of why grammar acquisition is not instantaneous and proceeds gradually: parameter-setting, maturation of UG properties, and the delayed development of pragmatic knowledge. Yet, the basis of the parameter-setting proposal, namely the analysis of null subjects in child English by Hyams (1986), has undergone various criticisms. For example, Valian (1991) compared the rate of sentences with overt subjects in the speech of English-speaking children and that of Italian-speaking children. and found out that there is a significant difference between them: English-speaking children produced twice as many overt subjects as Italian-speaking children. This finding, Valian argues, casts serious doubt on the view that these children are the same with respect to the setting of the null-subject parameter. Furthermore, Valian's analysis of the child's speech data also led to the finding that English-speaking children use shorter VPs with lexical subjects than with no subjects. Given this finding, Valian argues that Hyams's parametric account cannot be maintained, and that the source of null subjects in child English should be some performance factors.¹⁹

In addition to the fact that the parametric account of Hyams (1986) has had to undergo many revisions, few pieces of clear evidence have been presented for the view that parameter-setting plays a role in accounting for the gradual process of grammar acquisition. ²⁰ Furthermore, the above contrast between English-speaking and

¹⁹ See also Bloom (1990, 1993), Boster (1997) and Valian & Eisenberg (1996) for performance accounts. Hyams & Wexler (1993) present arguments against them. Lillo-Martin (1991) provides valuable data from American Sign Language.

²⁰ McDaniel, Chiu & Maxfield (1995) and Snyder (1995a, 2001) are among the few exceptions. The studies by Snyder will be discussed in detail in Chapter 4.

Italian-speaking children was provided with an alternative interpretation by Wexler (1996, 1998): Both of these sets of children have already set the value of the null-subject parameter correctly at the earliest stage, and the null-subject in child English is PRO licensed by the non-finite main verb (an independent error observed in early child English). Generalizing this claim, Wexler (1996, 1998) proposed the hypothesis of *Very Early Parameter-Setting* (VEPS).

(29) Very Early Parameter-Setting (Wexler 1998:25):
Basic parameters are set correctly at the earliest observable stages, that is, at least from the time that the child enters the two-word stage, around 18 months of age.

According to Wexler (1998:29), 'basic parameters' include the following:

- (30) a. Word order, e.g. VO versus OV (e.g. Swedish versus German)
 - b. V to I or not (e.g. French versus English)
 - c. V2 or not (e.g. German versus French or English)
 - d. Null subject or not (e.g. Italian versus English or French)

It is already reported in Brown (1973:156) that children make very few word-order errors. and this constitutes one piece of evidence for (30a). The empirical basis for (30b) and (30c) comes from the studies by Pierce (1992) and Poeppel & Wexler (1993). Pierce (1992) examined natural production data of four French-speaking children, and made two striking findings. First, children incorrectly use nonfinite verbs as the matrix verb. Second, they make virtually no errors with respect to the syntactic positions of the verbs: Verbs precede the negation *pas* when they are finite, but follow *pas* when they are nonfinite. The following table summarizes the data of one of the four children, Nathalie:

(31) Verb placement in negatives as a function of tense (Pierce 1992:66):

	+FINITE	-FINITE
verb-Neg	68	0
Neg-verb	3	82

A similar observation was made by Poeppel & Wexler (1993) with respect to German. Even though the German-speaking child they studied incorrectly used nonfinite verbs in matrix contexts, these verbs were placed in the correct syntactic positions: When verbs are finite, they occur in the second position, and when they are nonfinite, the appear in the final position. The relevant data is summarized in (32).

(32) Finiteness versus verb position: three or more constituents

		(Poeppel & Wexler 1993:7):	
	+FINITE	-FINITE	
V2 / not final	197	6	
V final / not V2	11	37	

A question arises as to why children go through a stage in which nonfinite forms are permitted in matrix contexts (the *Optional Infinitive* or *Root Infinitive* stage). Yet, the correlation between finiteness of the verbs and their syntactic position clearly indicates that French-speaking and German-speaking children set the value of the verb-movement parameter extremely early.²¹

Even though Wexler (1996, 1998) provides an explicit list of early-set parameters, not much discussion has been provided as to what count as "basic parameters." Then, the paucity of acquisitional evidence for parameters suggests that Wexler's proposal can be strengthened as follows: *All* the parameters are set correctly at the earliest stages. This "strongest" form of VEPS implies that the process of parameter-setting is not observable at all in the time course of acquisition. This means that the setting of parameters plays no role in explaining why grammar acquisition proceeds gradually and takes time. Moreover, the "strongest" form of VEPS, if correct, indicates that child language acquisition has no potential for revealing whether language variation is constrained by parameters, or what parameters are contained in UG. These considerations suggest that the evaluation of the "strongest" form of VEPS is an important task for the current stage of acquisition research.

1.7 Outline of the Dissertation

In this dissertation, I argue against the "strongest" form of VEPS, by presenting

²¹ For analyses of the Optional Infinitive stage, see Hoekstra & Hyams (1998), Rizzi (1993/1994), Sano (2002), and Wexler (1994), among many others.
three new pieces of evidence from child language acquisition for the existence of parameters. In Chapter 2, I will show that English-learning children acquire preposition stranding earlier than or at the same time as the prepositional complementizer construction. This finding, I will argue, lends strong support to Kayne's (1981, 1984) proposal that there is a parameter which these two properties are dependent on. In Chapter 3, I will report results of an experiment that examines Japanese-speaking children's knowledge of the multiple-nominative construction and scrambling. The results provide evidence for the parametric system of Grewendorf & Sabel (1999) that creates an implicational relationship between natural-language grammars permitting Japanese-type scrambling and those permitting multiple nominatives. In Chapter 4, I will present a new acquisitional argument for the Compounding Parameter proposed by Snyder (1995, 2001). It will be shown experimentally that Japanese-speaking children acquire Noun-Noun compounding and the transitive resultative construction at around the same time. These findings, as a whole, strongly suggest that the time required to accommodate the triggering data and to reach the correct parameter-settings in fact plays a significant role in explaining the non-instantaneous and gradual nature of language acquisition, as originally envisioned by Hyams (1986). More importantly, these findings in turn demonstrate that the time course of child language acquisition is a rich source of evidence concerning the innate constraints on language variation.

Chapter 2

Preposition Stranding and Parameters

2.1 Introduction

From a cross-linguistic perspective, the possibility of preposition stranding illustrated in (1) is among the more exotic properties of English.¹ As far as I know, the productive use of preposition/postposition stranding (hereafter, *P-stranding*) with A'-movement is attested only in some of the Germanic languages and in African languages of the Kru family (Maling 1977, van Riemsdijk 1978, Koopman 1984), and P-stranding with A-movement (which is called *prepositional passives* or *pseudopassives*)

¹ This chapter is based on three studies done in collaboration with William Snyder (Sugisaki, Snyder & Yaffee 2000, Sugisaki & Snyder 2001, Sugisaki & Snyder 2003).

is observed only in a proper subset of the languages that allow P-stranding with A'-movement (Maling & Zaenen 1985). More specifically, productive P-stranding with A'-movement is observed in English, Danish, Icelandic, Norwegian, Swedish, and Gbadi; Among them, P-stranding with A-movement is permitted only in English, Norwegian, Swedish, and Gbadi.^{2,3,4} The relevant examples are given in (1)-(6).

I asked where he often of thinks

(i) Hokker kandidaat stimme jimme op?

The fact that an inflected preposition allows a null complement suggests that P-stranding in Welsh is also derived via an empty resumptive-pronoun strategy.

(iii) Soniodd Megan amdano. talked Megan adout-3sgm 'Megan talked about him.'

(Borsley 1986:78)

See Willis (2000) for an alternative analysis of the Welsh data.

¹ See Campos (1991) for discussion of apparent cases of P-stranding in Spanish.

² Dutch also allows P-stranding as shown in (i), but to a very limited extent: P-stranding is possible only with *R-pronouns* (*er. daar* (both =there), *hier* (=here), *ergens* (=somewhere), *nergens* (=nowhere), *waar* (=where) and *overal* (=everywhere)).

^{&#}x27;I asked what he often thinks of.' (van Riemsdijk 1978:209) See van Riemsdijk (1978), Zwarts (1997) and Koopman (1999) for discussion of P-stranding in Dutch.

³ There are languages that have a surface equivalent of P-stranding in English whose syntactic source is quite different. Frisian apparently allows extractions of full DPs out of PP, as well as that of R-pronouns, as illustrated in (i). Yet, according to Hoekstra (1995), P-standing with full DPs in Frisian makes use of an (empty) resumptive pronoun strategy.

which candidate vote you (plur.) for (Hoekstra 1995:97) In Welsh, P-stranding is possible only with those prepositions that are inflected to agree with certain types of objects: In the case of uninflected prepositions, an overt resumptive pronoun is

obligatory. (i) Beth soniodd Megan amdano? y talked Megan about-3sgm what prt 'What did Megan talk about?' (Borsley 1986:79) ef / *o ? (ii) Beth siaradodd ef V ag what prt spoke he about it 'What did he speak about?' (Borsley 1986:73) The fact that an inflected preposition allows a null complement suggests that P-stranding in

1	1	\ n •.•	. 1		• 1	r 1	• 1
1		1 Promontra	11 0110/11/11/1	inn	ın F	4 Mal	1011
x.	1	1 110000000	'n sir unu	ועצ	<i>III</i> 1.	ווצוו	STL.
- 5		,		··· • • •			

- a. What did they talk <u>about</u> *t* ?
- b. This problem was already accounted for *t*.
- (2) Preposition stranding in Danish (Merchant 2001:93, see also Herslund 1984:49):
 Hvem har Peter snakket med ?
 who has Peter talked with
- (3) Preposition stranding in Icelandic (Maling & Zaenen 1985:151)⁵:
 Hann spurði hvern ég herði talað við.
 He asked whom_{acc} I had talked to
- (4) *Preposition stranding in Norwegian* (Merchant 2001:93, Vikner 1995:246):

a.	Hvem	har	Per	snakke	t med?	
	who	has	Per	talked	with	
b.		at	Petter	ble	ledd	av
		that	Peter	was	laughed	at

(5) *Preposition stranding in Swedish* (Merchant 2001:93, Vikner 1995:246):

Peter was-laughed

a.	Vem	har	Peter	talat	med?
	Who	has	Peter	talked	with
b.	•••	att	Peter	skratta	des

that

- (6) *Postposition stranding in Ghadi* (Koopman 1984:54):
 - táðlĒ₁ yl kÉ -lÒ līlÈ a. wa [e]1 klÚ jIIE table WH FUT-A-FOC they food on put it is the table they will put the food on.

åt.

at

⁵ Mailing & Zaenen (1985) argue that Icelandic sentences like (i) that look like prepositional passives are in fact Topicalization of prepositional objects.

(i)	Þessa	konu	er	oftast	talað	vel	um.	
	that	woman _{ace}	is	usually	spoken	well	of	
						(Mai	ling & Zaen	en 1985:151)

b. tá6lĒ₁ kÉ līlÈ [e]₁ klÚ jIIIÒ
 table FUT-A food on put-PAS
 'the food will be put on the table.'

In light of such cross-linguistic variation, many attempts have been made to determine what parameters are crucially relevant for the availability of this marked property (Abels, in press, Bošković 2001, Herslund 1984, Hornstein & Weinberg 1981, Kayne 1981, 1984, Law 1998, Maling 1977, van Riemsdijk 1978, Salles 1997, Stowell 1981, 1982, among many others). In a pre-Minimalist framework, Kayne (1981, 1984) proposed that the possibility of P-stranding should be derived from a parameter concerning the Case-assigning and government properties of prepositions, whose settings are also relevant to the availability of double-object datives as in (7) and the prepositional complementizer construction as in (8).

- (7) Mary sent Susan a letter.
- (8) Fred wants (very much \underline{for}) John to leave.

In this chapter, I will evaluate the validity of Kayne's parameter by examining the time course of the acquisition of English. I will argue that the findings directly contradict Kayne's view that natural-language grammars permitting the double-object dative are a proper subset of those permitting P-stranding. Yet, I will show that acquisitional evidence strongly supports one component of Kayne's parameter, namely that natural-language

grammars permitting the prepositional complementizer construction are a proper subset of those permitting P-stranding. Thus, the findings provide a new instance of delayed parameter setting, and hence lend strong acquisitional support for the parameter-setting model of grammar acquisition.

2.2 Kayne's (1981, 1984) Parameter of Prepositional Case

It is well known that English and French, despite their superficial similarity, show several interesting differences in their syntactic properties. For example, while English allows P-stranding in *wh*-constructions, French does not allow it:⁶

- (9) a. English: Which candidate have you voted for?
 - b. French: * Quel candidat as-tu voté pour?

In addition, while English allows an infinitival clause with a lexical subject that is accompanied and assigned Case by an (optionally overt) prepositional complementizer *(prepositional complementizer construction, PC construction)*, the corresponding sentences in French with *de*, or with any other preposition, are ungrammatical:⁷

⁶ A variety of French spoken in Prince Edward Island, Canada, reportedly allows P-stranding. See King & Roberge (1990) and Roberge & Rosen (1999) for discussion.

⁷ Case-assignment to the infinitival subject by the prepositional complementizer is an important defining characteristic of the English-type PC construction. Thus, Portuguese constructions as in (i), whose embedded subject bears nominative Case, do not count as an English-type PC

- (10) a. English: Mary wants (for) John to leave.
 - b. French: * Marie veut (de) Jean partir.

Another important difference between English and French lies in the availability of a structure in which a single verb is followed by two accusative NPs (*double-accusative construction*).⁸ The structure is possible in English but not in French:

- (11) a. English: John gave Mary a book.
 - b. French: * Jean a donné Marie un livre.

Icelandic is a language that has an intermediate status between English and French: It allows P-stranding in *wh*-questions as shown in (12), but does not have the PC construction or the double-accusative construction.

(12)	Hann	spurði	hvern	ég	hefði	talað	við.
	Не	asked	whom _{acc}	I	had	talked	to
					(Malin	g & Zae	nen 1985:151)

const	ruction:						
(i)	Somos (we) are	ledas [de glad of	e tu f you(NOM)	padeceres to-suffer-2SG	por for	Christo Christ].
	'We are glad	I that you suffe	er for Christ."		(Mei	nsching 199	ا. (90:27

⁸ The term *double-accusative construction* is based on the fact that both of the two NPs that follow the verb in the English example (11a) bear morphological accusative case. We can observe this in the following example, in which both of the objects are pronouns:

(i) I showed him her.

Yet, it might be the case that one of the two objects bears a dative Case, and that the loss of the morphological distinction between accusative and dative in English masks this fact. In the analysis by Kayne (1984) presented below, it is crucially assumed that both of the NPs in fact bear accusative Case.

The observed cross-linguistic variation is summarized in Table 2.1.

Language	P-stranding	PC construction	double accusatives
English	YES	YES	YES
Icelandic	YES	NO	NO
French	NO	NO	NO

Fable 2.1:	Cross-ling	uistic Survey
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Kayne (1981; 1984, Chapter 5 and 9) argued that these differences between English, French and Icelandic should be derived from an abstract difference in the governing and Case-assigning properties of prepositions in these languages. Specifically, he proposed the following parameter concerning prepositional Case/government (which I call the *Prepositional Case Parameter*):

(13)The Prepositional Case Parameter:

P structurally governs NP. a.

b.P assigns structural accusative Case.c.P assigns structural oblique Case.

- d. P governs NP only in the sense of subcategorization.

The Prepositional Case Parameter consists of two, related sub-parameters. The parameter allows a choice between (13a) and (13d), and when the value (13a) is taken, there arises a further choice between (13b) and (13c). The value (13a), which is the English/Icelandic

value, dictates that the government domain for a preposition extends to the nearest barrier (see Chomsky 1986), while the value (13d), which is the French value, dictates that the government domain for a preposition is restricted to its sister. The differences between English and Icelandic are related to the types of Case assigned by prepositions. English prepositions assign structural accusative Case, taking the value (13b), while in Icelandic they assign structural oblique Case, taking the value (13c).

The choice between the values (13a) and (13d), coupled with the UG principles given in (14) and (15), accounts for the availability of P-stranding in a given language.

- (14) Preposition is not a proper governor (Kayne 1984:51).
- (15) Reanalysis between two lexical categories is possible only if they govern in the same way (Kayne 1984:116).

Given (14). when the complement of a preposition has undergone *wh*-movement, its trace is not properly governed by the preposition, and hence induces an ECP violation. Yet, English and Icelandic take the value (13a), and thus both a verb and a preposition structurally govern their complements. Since they govern in the same way, the condition in (15) allows the verb and the preposition to undergo reanalysis (Hornstein & Weinberg 1981). Under Kayne's system, this operation unifies their government properties, which, as a consequence, makes the verb the proper governor of the trace in the complement of a preposition. ⁹ Therefore, *wh*-movement in English and in Icelandic can strand

⁹ Note that even though Kayne (1981, 1984) basically follows Hornstein & Weinberg (1981) in

prepositions without violating the ECP. In contrast, French takes the value (13d), and consequently a verb and a preposition differ in their government properties: While verbs structurally govern NP, prepositions only govern NP as their sister. In this situation, the reanalysis of a verb and a preposition is ruled out by the constraint in (15). Thus, the trace in the complement of a preposition is never properly governed, and P-stranding is ruled out in French as a violation of the ECP.

The PC construction, which has the structure shown in (16), is allowed only in those languages that take the value (13b).¹⁰

(16) Mary wants $[_{CP} (for) [_{IP} John to leave]].$

In English, a language with the value (13b), the prepositional complementizer (either *for* or a null counterpart) governs the subject of the infinitive *John*, given that no barrier intervenes between them.¹¹ Thus, the NP *John* receives Case from *for* under government

assuming that reanalysis is necessary in order for P-stranding to be possible, he does not assume that a verb and a preposition are amalgamated into a single constituent by the reanalysis operation (Kayne 1984:115). See Baltin & Postal (1996) for arguments against amalgamating the verb and the preposition.

¹⁰ Kayne assumes that ECM constructions with verbs like *believe* also have the structure shown in (16) (accompanied by an obligatorily null prepositional complementizer). Yet, given that there are many syntactic arguments that the subject of the infinitive in ECM depends on the matrix verb for its Case (Lasnik & Saito 1991, Postal 1974), 1 will exclude the ECM construction from consideration in this study.

¹¹ Lasnik & Saito (1991:337) provide several pieces of evidence that the infinitival subject is assigned Case not by the matrix verb but by the null prepositional complementizer when *for* is not overtly present in sentences like (16). For example, while the embedded-clause subject can license an anaphor and a negative polarity item within a matrix adverbial in the case of *believe*, such licensing is not possible with *want*:

and satisfies the Case Filter (Chomsky 1981:49). On the other hand, in French, a language with the value (13d), the prepositional complementizer does not govern the subject of the infinitive, because the government domain for a preposition in this language is restricted to its sister. Since no element is able to assign Case to the embedded subject, that NP induces a violation of the Case Filter, thereby making the sentence ungrammatical.

As for Icelandic, which takes the value (13c), Kayne (1984:117) argues that prepositions have the ability to structurally govern NP, but the structural oblique Case that they assign to the NP is tied to subcategorization. In other words, while the government domain for a preposition is not restricted to its sister, Case assignment by a preposition is possible only under sisterhood. The subject of the infinitive in the PC construction is therefore unable to obtain Case from the prepositional complementizer, and the Case Filter effectively excludes the PC construction.

Under Kayne's system, the double-accusative construction is also available only in those languages that take the value (13b). Kayne assumes that the double-accusative construction involves a null preposition and has the structure shown in (17). In addition,

(ii)

⁽i) a. ??* I wanted [those men to be fired] because of each other's statements.

b. ? I believed [those men to be unreliable] because of each other's statements.

a. ??* I wanted [none of the applicants to be hired] after reading any of the reports.

b. ?? I believed [none of the applicants to be qualified] after reading any of the reports. The above contrast can be accounted for if we assume that the infinitival subject of *believe* undergoes A-movement into the matrix clause in order to be assigned Case by the matrix verb, but the infinitival subject of *want* is assigned Case by the null counterpart of *for* and hence stays within the embedded clause.

he postulates the UG principles given in (18).

- (17) John gave [$[PP P_e Mary] [NP a book]$].
- (18) a. An empty preposition P_e cannot be the source of Case (Kayne 1984:195).
 - b. In a given language, P_e can transmit to its object an accusative Case received by percolation only if in that language prepositions normally assign structural accusative Case (Kayne 1984:196).

Given the structure in (17) and the constraints in (18), the first object is able to obtain accusative Case only in those languages with the value (13b), where prepositions assign structural accusative Case. In languages with the value (13c) or (13d), the structure in (17) is ill-formed: Since the Case that prepositions assign in these languages is not structural accusative, the null preposition is unable to transmit percolated accusative Case to the first object.

To summarize, under Kayne's (1981, 1984) Prepositional Case Parameter, P-stranding is possible only in those languages in which prepositions structurally govern NP. This explains why P-stranding is possible in English and Icelandic, but not in French. The availability of the PC construction and the double-accusative construction has a further requirement, namely that prepositions assign structural accusative Case. Accordingly, these constructions are allowed in English, but are unavailable in both French and Icelandic.

2.3 Predictions for Cross-linguistic Variation and Acquisition

Kayne's (1981, 1984) analysis that we have reviewed in the previous section contains several problems. First, it relies on the notion of government, which is abandoned in the current Minimalist framework due to its lack of conceptual necessity (Chomsky 1993, 1995:176). Second, some of the assumptions of the analysis are stipulative in nature. For example, no independent evidence is provided for the assumption that the first NP in double accusatives is actually a PP headed by a null preposition. or for the assumption that the assignment of structural oblique Case is restricted to its sister. Yet, it still makes interesting predictions for cross-linguistic variation and the acquisition of P-stranding, double accusatives and the PC construction. These predictions are worth testing, because Kayne's view that the availability of P-stranding is a necessary condition for double accusatives has been adopted in other studies (for example, in Larson 1988a:379), and also because the results may shed light on the nature of the P-stranding parameter, which remains mysterious in current syntactic theory.

Let us first consider the predictions for cross-linguistic variation. Under Kayne's (1981, 1984) analysis, P-stranding requires only that prepositions structurally govern NP, but the PC construction and the double-accusative construction further require that

prepositions assign structural accusative Case. This analysis makes the following prediction for cross-linguistic variation in the availability of these three constructions:

(19) *Prediction for Cross-linguistic Variation*:

The natural-language grammars permitting the PC construction or the double-accusative construction will be a proper subset of those allowing P-stranding.

Zhang (1990) argues that this prediction is not borne out with respect to the double-accusative construction. Specifically, Zhang claims that Chinese allows the double-accusative construction, as illustrated in (20) (as well as *to*-datives, as in (21)), even though P-stranding is impossible, as shown in (22) (Zhang 1990:312-3).

(20)	Wo		song	le	Lisi	yi	ben	shu.			
	I		give	Asp	Lisi	one	copy	book			
	ʻI g	ive	Lisi a b	ook.`							
(21)	Wo		song	le	yi	ben	shu	gei	Lisi.		
	I		give	Asp	one	copy	book	to	Lisi		
	ʻl g	ive	a book	to Lisi.							
(22)	a.	*	Zhang	san ₁ .	wo	gen	t_1	bu	shu.		
			Zhang	san	I	with		not	familia	ır	
			•Zhang	gsan. I a	m not fa	amiliar	with.'				
	b.	*	Lisi ₁ .	wo	song	le	yi	ben	shu	gei	<i>t</i> 1.
			Lisi	Ι	give	Asp	one	copy	book	to	
			Lisi, I	l gave a	book to	.'					

Even though Zhang's (1990) argument is quite interesting, it is not crystal-clear whether the Chinese construction in (20) is syntactically equivalent to the double accusatives in English, especially in light of the fact that Chinese has no case particles and thus we cannot tell from the morphology which Case the objects in (20) bear. In addition, if the double-accusative construction can have multiple syntactic sources, one of which does not involve a null preposition, then the availability of the surface equivalent to English double accusatives is not enough to falsify Kayne's prediction concerning cross-linguistic variation in the availability of P-stranding and (the English type of) double accusatives. Thus, a more detailed syntactic investigation is necessary to determine whether Chinese has a double-accusative construction whose structure is exactly the same as the one in English, and thus constitutes a real counterexample to Kayne's account.

The same remark holds for the PC construction. Some varieties of Brazilian Portuguese allow a surface equivalent of the PC construction in English, even though Brazilian Portuguese does not permit P-stranding:

(23)Êle sanduíche trouxe um [para mim comer]. he brought sandwich а for me to-eat (Thomas 1969:185, cited in Mensching 2000:28)

Yet, in this language, the infinitival subject can also bear nominative Case, which is not possible in English:

(24)	Ele	pediu	(para	João)	para	eu	fazer	isso.
	he	asked	of	João	for	Ι	to do	this
								(Lightfoot 1993:99)

Given this difference, it is not obvious whether the availability of this Brazilian Portuguese construction poses a serious problem for Kayne's parametric proposal. Again, a more detailed syntactic investigation is required to determine the relevance of the construction in (23).¹²

An alternative approach to testing the parametric system of Kayne is to examine the time course of children's acquisition of English. Given that P-stranding and the PC construction of the English-type are extremely rare cross-linguistically, acquisitional evidence will be especially valuable in this domain. Kayne's parameter makes predictions concerning the order of acquisition of P-stranding and the other two constructions. While P-stranding depends on the knowledge that prepositions structurally govern NP, the double-accusative construction and the PC construction also depend on the knowledge that prepositions assign structural *accusative* Case. Then, since the language-particular knowledge required for P-stranding is a proper subset of the knowledge required for the double-accusative construction and the PC construction, the following orders of

¹² Landau (2002:note 6) notes that the following example in Hebrew is presumably the PC construction, in which *me*-assigns Case to the infinitival construction.

(i) Ha-bikuš ha-acum mama me-ha-mexirim laredet. the-demand the-huge prevented from-the-prices to-fall The huge demand prevented the prices from falling.

Yet, further investigation is necessary to determine that me- in fact occupies the position of C.

39

acquisition are predicted:

- (25) *Predictions for the Acquisition of English*:¹³
 - a. Children learning English should never acquire the double-accusative construction significantly earlier than P-stranding.
 - b. Children learning English should never acquire the PC construction significantly earlier than P-stranding.

Stromswold (1988) has already investigated the acquisitional ordering of these constructions in order to test the validity of Kayne's parametric system. She claims that her findings from analysis of the five corpora for English-learning children then available in CHILDES (MacWhinney and Snow 1985, 1990) do not support Kayne's parameter at all. In our view, however, Stromswold's study contains several empirical and theoretical problems. First, Stromswold counted as PC constructions only the examples that contain an overt *for*. This is unnecessarily strict. Since in adult English, a null prepositional complementizer is permitted in certain environments (for example, in the complement of *want*), we should take account of that possibility also in the child's speech. Second, in her transcript analysis. P-stranding by null-operator movement as in (26) was not taken into consideration.

¹³ In other words, the age of acquisition for P-stranding should always be less than or equal to the age of acquisition for the double-accusative construction and the age of acquisition for the PC construction.

(26) Mary has many things [Op_1 [PRO to talk about t_1].

As we will see below (see Appendix), some children used a null-operator construction as their first clear use of P-stranding. Thus, it is crucially necessary to include this construction in the transcript analysis in order to determine the exact age of acquisition for P-stranding. Finally and most importantly, Stromswold tested the prediction that all three relevant constructions would appear in the child's speech *simultaneously*, which is unnecessarily strong. P-stranding, double accusatives and the PC construction differ in the specific grammatical knowledge they depend on, as we have discussed above: P-stranding depends only on the government properties of prepositions, but the double accusatives and the PC construction also depend on the types of Case that prepositions assign to NPs. Thus, the prediction Stromswold tested was not the correct set of predictions, stated in (25).

In the next section we present the results of our own transcript analysis testing the prediction in (25a), concerning the acquisition of P-stranding and the double-accusative construction. The prediction in (25b), concerning the acquisition of P-stranding and the PC construction, will be tested in Section 2.5.

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2.4 Transcript Analysis I: Preposition Stranding and Double Accusatives

2.4.1 Subjects and Methods

In order to test the acquisitional prediction of Kayne's (1984) parametric system for P-stranding and double-accusative constructions, ten longitudinal corpora for English were selected from the CHILDES database (MacWhinney & Snow 1985, 1990), to obtain a total sample of approximately 163,000 lines of child's speech. The list of transcripts analyzed in our study is presented in Table 2.2.

Child Co	orpus collected by	Ages	#Files analyzed	#Child utterances	
Abe	Kuczaj (1976)	2;4.24 - 2;11.30	0 60	7,648	
Adam	Brown (1973)	2;3.4 - 3;5.0	30	26,776	
Allison	Bloom (1973)	1;4.21 - 2;10.0	6	2,192	
April	Higginson (1985)	1;10.0 - 2;11.0	6	2,321	
Eve	Brown (1973)	1;6.0 - 2;3.0	20	12,473	
Naomi	Sachs (1983)	1;2.29 - 4;9.3	93	16.634	
Nina	Suppes (1973)	1;11.16 - 3;1.6	44	27,552	
Peter	Bloom (1970)	1;9.8 - 3;1.20	20	30.256	
Sarah	Brown (1973)	2;3.5 - 3;8.27	75	20,787	
Shem	Clark (1978)	2;2.16 - 3;0.20	43	16.282	
Total				162,921	

Table 2.2:Corpora Analyzed

For each child, we began by locating the first clear uses of (a) a direct-object *wh*-question. (b) a *wh*-question or a null-operator construction with P-stranding, and (c) a double-accusative construction. We reasoned that on Kayne's account, any child capable of producing both the double-accusative construction and a direct-object *wh*-question would necessarily be able to produce P-stranding with A'-movement. The CLAN program Combo, together with a complete file of English prepositions and a file of potentially dative verbs from Snyder & Stromswold (1997:292), was used to identify potentially relevant child utterances, which were then searched by hand and checked

against the original transcripts to exclude imitations, repetitions, and formulaic routines.^{14,15}

2.4.2 **Results and Discussion**

Results are summarized in Table 2.3. Nine of the ten children produced all three of direct-object *wh*-questions, the double-accusative construction, and P-stranding by the end of their corpora. Following Snyder & Stromswold (1997), the age at which a child produced his or her first clear example of a construction (followed soon after by additional uses) was considered to be the age of acquisition for this construction. Mean age of acquisition for direct-object *wh*-questions was 2;3 (years;months), with a range of

¹⁴ As for prepositions, the search included *aboard*, *about*, *above*, *abroad*, *according*, *across*, *afore*, *after*, *again*, *against*, *aloft*, *along*, *alongside*, *alongst*, *amid*, *amidst*, *among*, *amongst*, *and*, *anti*, *around*, *as*, *aside*, *astride*, *at*, *atop*, *before*, *behind*, *below*, *beneath*, *beside*, *besides*, *between*, *betwixt*, *beyond*, *but*, *by*, *concerning*, *considering*, *consisting*, *cross*, *depending*, *despite*, *down*, *downward*, *during*, *except*, *excepting*, *excluding*, *following*, *for*, *from*, *gainst*, *in*, *including*, *infra*, *inside*, *inter*, *into*, *involving*, *less*, *like*, *mid*, *midst*, *midway*, *minus*, *more*, *near*, *nearer*, *nearest*, *neath*, *next*, *notwithstanding*, *o'er*, *of*, *off*, *on*, *only*, *onto*, *opposite*, *or*, *out*, *outside*, *over*, *past*, *pending*, *per*, *plus*, *post*, *pursuant*, *rather*, *regarding*, *respecting*, *round*, *save*, *since*, *spite*, *than*, *through*, *throughout*, *thru*, *till*, *times*, *to*, *together*, *toward*, *towards*, *under*, *underneath*, *unless*, *unlike*, *until*, *unto*, *up*, *upon*, *upward*, *upwards*, *versus*, *via*, *vis-à-vis*, *with*, *within*, and *without*. ¹⁵ As for dative verbs, the search included *address*, *admit*, *afford*, *allocate*, *allocating*, *allow*, *ask*,

As for dative veros, the search included dataress, damit, afford, allocate, allocating, allow, ask, assign, bake, baking, bought, bring, broadcast, brought, build, building, built, buy, buying, commend, communicate, communicating, concede, conceding, convey, demonstrate, demonstrating, denied, denies, deny, describe, describing, devote, devoting, dictate, dictating, did, dig, do, does, doing, done, dug, explain, gave, get, give, giving, got, gotten, grant, guarantee, impart, lend, lent, made, make, making, mention, order, ordering, orders, preach, prescribe, prescribing, promise, promising, radio, read, refer, refuse, refusing, relate, relating, relay, reserve, reserving, restore, restoring, reveal, sell, send, sent, serve, serving, show, sold, submit, take, taking, taught, teach, telegraph, tell, told, took, transmit, unveil, volunteer, whisper, wire, wiring, write, writing, and wrote.

1:8.0 (years;months.days) to 2;10.11. Mean age of acquisition for P-stranding was 2;7, with a range of 2:2.0 to 3:3.7. Yet, mean age of acquisition for double-accusative constructions was *earlier* than P-stranding, at 2:1 (range: 1:8.0 to 2:10.20). Each child's first clear uses of these constructions are presented in the Appendix.

Child	direct-object wh-questions	double accusatives	P-stranding
Abe	2;5.0	2;6.14	2;7.7
Adam	2;5.0	2;3.4	2;5.0
Allison	2;10.0	1;10.0	
April	2;1.0	1;10.0	2;9.0
Eve	1;8.0	1;8.0	2;2.0
Naomi	1;11.30	2;0.5	2:8.30
Nina	2;2.12	1;11.29	2;9.13
Peter	2;1.18	2:1.0	2:5.3
Sarah	2;10.11	2;10.20	3;3.7
Shem	2;2.16	2;3.21	2:6.6
Mean	2;3	2;1	2;7

 Table 2.3:
 Ages of Acquisition for Direct-Object Wh-question, Double

 Accusatives, and P-stranding

As for those nine children who acquired all three constructions before the end of the corpus, in order to evaluate the statistical significance of the observed age-differences between acquisition of P-stranding and acquisition of the double-accusative construction, we began at the first direct-object *wh*-question, and then counted the number of clear uses of the earlier construction (either P-stranding or the double-accusative construction) before the first clear use of the later construction. We next calculated the relative frequency of the two constructions in the child's own speech, starting with the transcript after the first use of the later construction, and continuing for a total of fifteen transcripts or through the end of the corpus (whichever came first). We then used a modified sign test to obtain the probability of sampling the observed number of tokens of the earlier construction simply by chance, before the first use of the later construction, under the null hypothesis that both became available concurrently and had the same relative probability of use as in later transcripts (Stromswold 1996, Snyder & Stromswold 1997).

The results of the statistical analysis are summarized in Table 2.4. Six of the nine children (April. Naomi. Nina, Peter, Sarah, Shem) actually acquired the double-accusative construction significantly earlier than P-stranding, by modified sign test. One child (Adam) acquired the double-accusative construction and P-stranding at the same time: He acquired double accusatives earlier than direct-object *wh*-questions and P-stranding, but the transcript containing his first clear use of a direct-object *wh*-question also contained his first clear use of P-stranding. For the remaining two children, the age-discrepancy did not reach significance (p > .05, by modified sign test). But in absolute terms, all nine children acquired the double-object construction earlier than P-stranding (by about six months, on average).

	Relative frequency					
Child	# of earlier construction double		ble accusatives	P-stranding	<i>p</i> =	
Abe	1	(double accusative	s) .691	.309	<i>p</i> >.10	
Adam	0		.544	.456		
April	4	(double accusative	s) .250	.750	<i>p</i> <.05	
Eve	19	(double accusative	s) .889	.111	<i>p</i> >.10	
Naomi	11	(double accusative	s) .692	.308	p <.05	
Nina	16	(double accusative	s) .811	.189	<i>p</i> <.05	
Peter	38	(double accusative	s) .919	.081	p <.05	
Sarah	18	(double accusative	s) .837	.163	<i>p</i> <.05	
Shem	5	(double accusative	s) .405	.595	p <.05	

Table 2.4:Results of the Statistical Analysis

In sum, the prediction in (25a) from Kayne's parameter was false. Six children in this study clearly exhibited grammars that permitted the double-accusative construction but did not permit P-stranding. Our findings thus directly contradict Kayne's view that natural-language grammars permitting the double-accusative construction are a proper subset of those permitting P-stranding.¹⁶

In the next section we turn to the other acquisitional prediction from Kayne's parameter, the one for P-stranding and the PC construction.

¹⁶ The crucial assumption behind our argument here is that all the intermediate stages of acquisition fall under possible natural-language grammars (cf. Hyams 1986). I thank Howard Lasnik for relevant discussion.

2.5 Transcript Analysis II: Preposition Stranding and the Prepositional Complementizer Construction

2.5.1 Subjects and Methods

To test the acquisitional prediction for the PC construction, we selected the same ten longitudinal corpora for English from the CHILDES database (see Table 2.2 in the previous section for the details). For each child, we took from Analysis I the first clear uses of a *wh*-question or a null-operator construction with P-stranding, and then we located the first clear use of a PC construction with the verb *want*. To count as a clear use, we required the PC construction to contain an overt NP subject and an overt INFL *to* in the CP complement of *want*. The CLAN program Combo was used to identify potentially relevant child utterances, which were then searched by hand and checked against the original transcripts to exclude imitations, repetitions, and formulaic routines.

2.5.2 **Results and Discussion**

Results are summarized in Table 2.5. Seven of the ten children produced P-stranding and the PC construction by the end of their corpora. Mean age of acquisition for P-stranding was 2;7, with a range of 2;2.0 to 3;3.7. Mean age of acquisition for the PC

construction was 2;10, with a range of 2;8.12 to 3;3.13. On average, children acquired P-stranding earlier than the PC construction by about three months. Each child's first clear uses of these constructions are presented in the Appendix.

Child	P-stranding	PC construction
Abe	2;7.7	2;8.14
Adam	2;5.0	2;10.0
Allison		2;10.0
April	2;9.0	
Eve	2;2.0	
Naomi	2;8.30	2;11.18
Nina	2;9.13	2;10.21
Peter	2;5.3	2;8.12
Sarah	3;3.7	3;3;13
Shem	2;6.6	2;8.15
Mean	2;7	2;10

Table 2.5:Ages of Acquisition for P-stranding and the PC Construction

As for those seven children who acquired both constructions before the end of the corpus, in order to evaluate the statistical significance of observed age differences between acquisition of P-stranding and acquisition of the PC construction, we counted the number of clear uses of the earlier construction before the first clear use of the later construction. We next calculated the relative frequency of the two constructions in the

child's own speech, starting with the transcript after the first use of the later construction, and continuing for a total of ten transcripts or through the end of the corpus (whichever came first). We then used a modified sign test to obtain the probability of sampling the observed number of tokens of the earlier construction simply by chance, before the first use of the later construction, under the null hypothesis that both became available concurrently and had the same relative probability of use as in later transcripts.

The results of the statistical analysis are summarized in Table 2.6. Three of the seven children (Adam, Nina, Shem) acquired P-stranding significantly earlier than the PC construction. The remaining four children (Abe, Naomi, Peter, Sarah) acquired P-stranding and the PC construction at approximately the same age (no significant difference, p > .05, by modified sign test). Crucially, no child in our study acquired the PC construction significantly earlier than P-stranding.¹⁷ This result is especially striking because the two constructions had very similar age ranges for their acquisition. Moreover, an explanation simply in terms of relative frequency of usage of the two constructions is excluded, because the modified sign test already takes relative frequency into account. Thus, our results have borne out the prediction in (25b), and in turn lend strong support to the portion of Kayne's analysis that creates an implicational relationship between the PC

¹⁷ Allison poses a potential problem for this conclusion, because she showed clear uses of the PC construction, but not P-stranding, by the end of her corpus. Yet, closer examination of her data reveals that the difference in age of acquisition between the PC construction and P-stranding did not reach statistical significance. Her first clear use of the PC construction appeared in the last transcript, and she produced only two clear uses of that construction before the end of her corpus. Consequently, if we run a modified sign test using the average relative frequency (.399) from the seven children in Table 2.6, the result does not reach significance (p > .10).

construction and P-stranding.

Child	Relative frequency					
	# of earlier construction		P-stranding	PC construction	<i>p</i> =	
Abe	5	(P-stranding)	.684	.316	<i>p</i> >.10	
Adam	23	(P-stranding)	.824	.176	<i>p</i> < .05	
Naomi	4	(P-stranding)	.500	.500	<i>p</i> >.05	
Nina	10	(P-stranding)	.476	.524	<i>p</i> <.01	
Peter	1	(P-stranding)	.455	.545	<i>p</i> >.10	
Sarah	1	(P-stranding)	.700	.300	<i>p</i> >.10	
Shem	11	(P-stranding)	.571	.429	<i>p</i> <.01	

Table 2.6:Results of the Statistical Analysis

2.6 Discussion

In the previous sections we have drawn two acquisitional predictions from Kayne's (1981, 1984) Prepositional Case Parameter, and evaluated their validity by analyzing ten longitudinal corpora for English. The results have shown that several English-learning children acquired double accusatives significantly earlier than P-stranding, which directly contradicts Kayne's view that natural-language grammars permitting the double-accusative construction are a proper subset of those permitting P-stranding. At the same time, we have presented acquisitional evidence that

English-learning children never acquire the PC construction significantly earlier than P-stranding, which lends strong support to one component of Kayne's parametric system, namely that natural-language grammars allowing the PC construction are a proper subset of those allowing P-stranding. This finding provides support for Kayne's proposal that the parameter-settings required for P-stranding are a proper subset of the parameter-settings required for the PC construction. More importantly, the ordered acquisition of P-stranding and the PC construction supports the parameter-setting model of grammar acquisition proposed in Chomsky (1981), where parameters are seen as points of syntactic variation with consequences for multiple areas of surface grammar.

Our findings also have implications for the default values of parameters. The parameter in (13) divides natural-language grammars into two types, namely those that require obligatory pied-piping (like French) and those that allow stranding of prepositions (like English and Icelandic). As we can see in Table 2.3, some children showed a large temporal gap between the acquisition of direct-object *wh*-questions and P-stranding: April, Eve, Naomi and Nina exhibited a gap of more than five months. This observation suggests that the P-stranding value cannot be the default setting: If it were, children should use P-stranding as soon as they acquire *wh*-movement. Furthermore, these children did not show any instance of pied-piping of PPs before they acquired P-stranding. Then, pied-piping value cannot be the default, either. In the period before the acquisition of P-stranding, children entirely avoided any utterance with a *wh*-phrase as

the complement of a preposition. These observations suggest that the parameter of P-stranding is not specified for a default, and thus constitute an empirical argument that there exist parameters without a default specification.¹⁸

Even though acquisitional evidence greatly strengthens Kayne's generalization about syntactic variation in the domain of P-stranding and prepositional complementizers, an important syntactic question remains: Is there any way to formulate the relevant part of Kayne's parameter without using the notion of *government*? As mentioned in Section 2.3. the recent theoretical framework called the Minimalist Program (Chomky 1995) has abandoned the use of this theoretical device, and hence the parameter in (13) proposed by Kayne cannot be maintained in its original formulation. Thus, even though it is not the major purpose of this study to propose a full-blown analysis of the P-stranding parameter. I will speculate on one possibility in the next section.¹⁹

2.7 On the Nature of the Preposition-Stranding Parameter

It has been observed in the literature that Germanic languages like English and Romance languages like French show interesting differences with respect to the

¹⁸ See Sugisaki & Snyder (2003) for more detailed discussion, with additional data from the acquisition of Spanish.

¹⁹ I will restrict my discussion in the next section to the cases of P-stranding under A'-movement.

interpretation of the PPs that follow verbs of manner of motion (e.g. Talmy 1985, Klipple 1997). The examples in (27) illustrate this point.

The bottle floated under the bridge. (27)a. La bouteille flotté le b. а sous pont. The bottle has floated under the bridge 'The bottle floated under the bridge.'

The English example in (27a) is ambiguous: It can mean that the bottle is located under the bridge, floating around, or it can mean that the floating bottle was moving toward the bridge so that it came to be under it. In contrast, the French example (27b) is unambiguous: It only has the former, stationary meaning. In French, it is not possible to interpret the PP as the goal of motion.

One way to capture this difference would be to assume that PPs in English-type languages and those in French-type languages have a different structure, and the interpretive difference stems from this structural difference. Pursuing this line, I assume that in English, but not in French. PP is dominated by a functional projection of pP. as shown in (28).²⁰

²⁰ For the proposal that PP is dominated by specific functional categories, see Fujita (1996), Koopman (1999, Ch.8), Matsubara (2000), Takano (1996:94), and van Riemsdijk (1990), among others.

(28)	a.	English:	[<i>p</i> P	р	[pp	Р	DP]]
	b.	French:			[pp	Р	DP]

In English. PP is always dominated by pP, and the functional head p provides telic-aspect interpretation when necessary: p constitutes the potential source for this interpretation. Thus, PP can be interpreted as the goal of motion. In contrast, in French, this interpretation is not available, due to the absence of the p head.²¹ Then, in more general terms, there is a parameter as in (29) that determines the structure (and consequently, the interpretation) of PPs in a given languages.

- (29) *Parameter of pP Projection*:
 - a. PP is dominated by *p*P.
 - b. PP is not dominated by *p*P.

While the Germanic languages like English and German take the value (29a). Romance languages like French and Spanish take the value (29b).

I will also assume that in some of the languages that project pP. the functional head p can attract the head of PP. as illustrated in (30).

²¹ The goal interpretation of PPs is possible even in Romance, when a PP is combined with a verb that is intrinsically telic. The effect of p is observable only when a PP is combined with an atelic verb.



In other words, there is a parameter that divides the languages with the value (29a) into two types: those that permit the head-movement of P to p, and those that do not permit this movement. Adopting the assumption that Move is a complex operation that consists of Copy + Merge (Collins 1997. Nunes 1995, 2001, Takano 1996: see also Kitahara 1997). I formulate the relevant parameter as follows:

- (31) *Parameter of p-P Merger*:
 - a. p can be merged with P.²²
 - b. *p* cannot be merged with P.

The parameter in (31), combined with the UG constraint in (32) that I postulate, determines the possibility of P-stranding with A'-movement in a given language.

(32) DP cannot be A'-moved out of PP.

The constraint in (32) dictates that P-stranding (with A'-movement) in the strict sense is impossible in every language. As a consequence, A'-movement targets the PP that

²² P cannot merge directly with p when it takes a complement DP, because P has to merge first with DP in order to satisfy its theta-requirement.

immediately dominates the relevant DP. In languages that have taken the value (31b) (and also those that have taken the value (29b)), P never moves out of the PP, and hence the movement of PP always results in pied-piping sentences. In contrast, in languages that have taken the value (31a), the movement of PP can happen after the head-movement of P to *p*. This "remnant PP movement", I claim, corresponds to P-stranding sentences. The relevant structures are shown in (33).



In addition, I assume that when the value (31a) is chosen, there appears a sub-parameter that determines the availability of the PC construction.

- (34) *Parameter of INFL-P Merger*:²³
 - a. Nonfinite INFL can be merged with P.
 - b. Nonfinite INFL cannot be merged with P.

²³ The specification about finiteness may be unnecessary: If P is merged with finite INFL, either the Case of P or the Case of INFL would remain unchecked, and hence the derivation would not converge. I will leave its detailed investigation for future research.

The choice of the value (34a) makes it possible to generate the PC construction, whose derivation is assumed to be as in (35).



In this structure, P is merged with INFL, assigning Case to the subject under specifier-head relation, and then adjoins to C.24 The intuition behind this is that the merger of INFL and P is a marked variety of the merger between p and P: Only in those languages that permit P to merge with its specific functional category p. P can be merged with a different functional category.²⁵

In sum, the parameter concerning the possibility of P-stranding and the PC construction consists of three sub-parameters, as shown in (36).²⁶

²⁴ The following example from Belfast English suggests that in this language, for does not necessarily moves to C.

I wanted Jimmy for to come with me. (Henry 1995:85) (i)

For the derivation of the PC construction, see also Watanabe (1993:89-91) and Bošković

^{(1997:17-20). &}lt;sup>25</sup> An important question remains as to how to accommodate a surface equivalent of the PC construction observed in Portuguese, in which the infinitival clause is headed by a preposition but still its subject bears nominative Case (see note 7 for an example). I will leave this problem for future research.

²⁶ Given that the functional head p is the source of telic aspect, it will be plausible to assume that this functional head also has close association with particles in the verb-particle construction, in light of the fact that particles often add telicity. Then, the observation that P-stranding is possible



Since the positive value of the parameter of INFL-P merger requires the positive value of the *p*-P merger in (36), the implicational relationship between the PC construction and P-stranding is captured.

Under this analysis, the availability of the functional head p constitutes a necessary condition for the availability of P-stranding. In order to determine whether p exists in the target language, the child has to figure out whether PP can be interpreted as the goal of motion, even when it is combined with an atelic verb. Then, the subtlety of the triggering information might be the source of the delay in setting the values of P-stranding parameters in (36).^{27,28}

Even though the analysis presented here is preliminary and sketchy in that many questions were not touched upon, it has opened up the possibility of formulating the

only in those languages that permit the verb-particle construction may also follow from the parameter in (36). See Herslund (1984), Stowell (1981, 1982), and Sugisaki & Snyder (2002) for the cross-linguistic association between verb-particles and P-stranding.

²⁷ Alternatively, the availability of productive N-N compounding may act as a trigger for determining whether PP can be interpreted as a goal. See Beck & Snyder (2001a) for relevant discussion.

²⁸ Sentences containing stranded prepositions would not be a reliable trigger, in light of the fact that there are languages that have a surface equivalent of P-stranding whose syntactic sources is different from `true` P-stranding, involving movement (e.g. null-resumptive strategy). See note 3.
crucial part of Kayne's (1981, 1984) parameter without relying on the notion of *government*. Thus, the proposed analysis suggests that the relevant parameter is not inherently incompatible with the current Minimalist Program.

2.8 Conclusion

In this chapter, we conducted an acquisitional investigation of the parameter proposed by Kayne (1981, 1984) that creates an implicational relationship between the grammars permitting the double-accusative or prepositional complementizer construction and those permitting P-stranding. By testing its acquisitional predictions, we argued against the component of Kayne's parameter relating P-stranding and the double-accusative construction. Yet, at the same time, we have shown that the other component of his parameter, relating P-stranding and the prepositional complementizers. receives strong acquisitional support. Even though Kayne's parameter needs to be reformulated within the current Minimalist framework, the results obtained in this study impose an additional explanatory burden on any approach to the P-stranding parameter. More importantly, the results revealed a new instance of delayed parameter-setting in the course of acquisition, and thus provided an argument for the existence of parameters, which are conceived of as points of syntactic variation that have consequences for superficially unrelated constructions. These findings in turn indicate that the setting of parameters, more accurately the time required to accommodate triggering data for parameters, plays a significant role in explaining the non-instantaneous and gradual process of language acquisition.

Appendix to Chapter 2: Children's First Clear Use

(37)	Abe:		
	a.	*ABE: what you doing ?	(Abe002: line 119)
	b.	*ABE: no you show Mike this picture for Mike [] (Abe017:37)
	c.	*ABE: Mom # I blowed you in the fingers Mom #	what's that for ?
			(Abe021:274)
	d.	*ABE: because I [/] I want it to snow and I sled.	(Abe030:24)
(38)	Adam	:	
	a.	*ADA: what shell doing ?	(Adam05:24)
	b.	*ADA: gi(ve) me screwdriver .	(Adam01:810)
	c.	*ADA: where dat come from ?	(Adam05:9)
	d.	*ADA: want car to <go> [/] go dat way?</go>	(Adam15:313)
(39)	Alliso	n:	
	a.	*ALI: what does the pig say.	(Allison6:411)
	b.	*ALI: get Mommy cookie .	(Allison4:123)
	c.	*ALI: want her to put her feet down.	(Allison6:573)
(40)	April:		
	a.	*APR: what goat say ?	(April02:854)
	b.	*APR: give Roy it .	(April01:597)
	c.	*APR: owl to play with .	(April04:419)
(41)	Eve:		
	a.	*EVE: what doing # Mommy ?	(Eve05:69)
	b.	*EVE: Fraser read Eve Lassie .	(Eve05:29)
	c.	*EVE: it's a bathtub for a boy get in .	(Eve18:1980)

(42)	Naomi	i:	
	a.	*NAO: what-'is Mommy doing ?	(N34:78)
	b.	*NAO: can make it horse ?	(N37:136)
	c.	*NAO: what-'is this go in ?	(N70:105)
	d.	*NAO: I want you to read this.	(N79:228)
(43)	Nina:		
	a.	*NIN: what is daddy holding ?	(Nina14:1119)
	b.	*NIN: Frank sent Nina book .	(Nina03:1173)
	c.	*NIN: who's that you talking to # Momma.	(Nina32:1429)
	d.	*NIN: she # she wants me to carry her.	(Nina37:600)
(44)	Peter:		
	a.	*PET: Mommy # what you doing .	(Peter08:528)
	b.	*PET: <oh #="" get="" gonna="" mama="" my="" pen=""> [<] .</oh>	(Peter07:3594)
	c.	*PET: what this come from ?	(Peter13:2043)
	d.	*PET: want em to fall down.	(Peter17:2068)
(45)	Sarah	:	
	a.	*SAR: what my doing ?	(Sarah033:522)
	b.	*SAR: give me some more .	(Sarah034:79)
	c.	*SAR: whe(r)e you at .	(Sarah052:332)
	d.	*SAR: I wan(t) Daddy to help me.	(Sarah053:556)
(46)	Shem	:	
	a.	*SHE: what is mommy doing ?	(Shem01:539)
	b.	*SHE: (I)-'m draw you uh baby fast .	(Shem05:291)
	c.	*SHE: i(t)'s step for sitting on .	(Shem15:801)
	d.	*SHE: i wan(t) uh porcupine to be duh boy.	(Shem21B:108)

Chapter 3

Scrambling and Parameters

3.1 Introduction

Among the many typological differences between English and Japanese, there are two major phenomena that have been of central concern in the area of comparative syntax of these languages: the multiple-subject (or more accurately, multiple-nominative) construction (MNC) and scrambling. Japanese allows multiple nominative phrases to occur in a single clause, but English does not, as shown in (1) and (2) (Kuno 1973:71, Fukui 1988:257).¹

¹ There are several syntactic, semantic and pragmatic restrictions that the MNC must satisfy (see e.g. Kuno 1973:62-78), most of which will not be discussed in detail here. I assume that these

(1) Japanese:

bunmeikoku-ga dansei-ga heikinzy'umyoo-ga mizikai. civilized countries-Nom male-Nom average-life-span-Nom short 'It is civilized countries that men, their average lifespan is short in.'

(2) *English*:

* civilized countries, male, the average lifespan is short.
(with the intended meaning `it is civilized countries that men, their average lifespan is short in.`)

Japanese has relatively free word-order induced by the existence of 'scrambling' operation (see e.g. Saito 1985), whereas English word-order is fixed to a large extent, as illustrated by the following examples (Fukui 1988:257):

(3) Japanese:

a.	Mary-ga	John-ni	so-no hon-o	watasita.
	Mary-Nom	John-to	that book-Acc	handed
	'Mary handed	that book to John.'		
b.	John-ni ₁	Mary-ga <i>t</i> ₁	so-no hon-o	watasita.
	John-to	Mary-Nom	that book-Acc	handed
c.	so-no hon-o ₂	Mary-ga	John-ni t ₂	watasita.
	that book-Acc	: Mary-Nom	John-to	handed
d.	so-no hon-o ₂	John-ni ₁	Mary-ga t_1 t_2	watasita.
	that book-Acc	e John-to	Mary-Nom	handed
e.	John-ni ₁	so-no hon-o2	Mary-ga t_1 t_2	watasita.
	John-to	that book-Acc	Mary-Nom	handed

restrictions follow from the positive setting of the parameter that determines the availability of the MNC.

(4) *English*:

- a. John put that book on the table.
- b. that book₁, John put t_1 on the table.
- c. on the table₂, John put that book t_2 .
- d. * on the table₂, that book₁, John put $t_1 \quad t_2$.
- e. * that book₁, on the table₂, John put t_1 t_2 .

As illustrated in (4b,c). English also has an operation that moves a phrase to the sentence-initial position, which is known as 'topicalization.' Yet, there is a crucial difference between scrambling in Japanese and topicalization in English: While the former can be iterated, the latter cannot, as indicated by the contrast between (3d,e) and (4d,e).² Thus, the existence of 'multiple scrambling' constitutes another major difference between English and Japanese.

In light of these differences between English and Japanese, many attempts have been made to deduce the availability of the MNC and scrambling in Japanese from the same source: Fukui (1986, 1988, 1995, 1999), Fukui & Speas (1986), Kuroda (1988), Ura (1994), Ogawa (1996), Saito & Fukui (1998), and Grewendorf & Sabel (1999), among others. In this chapter, I present acquisitional evidence for the view that scrambling of the Japanese-type and the MNC are governed by the same parameter. More specifically, the findings from child Japanese argue for Grewendorf & Sabel's (1999) claim that natural-language grammars permitting Japanese-type scrambling are a proper subset of

 $^{^2}$ See Müller & Sternefeld (1993:479-484) for a detailed discussion of the difference between topicalization and scrambling.

those permitting the MNC. The results provide an instance of delayed parameter-setting, and thus constitute a new piece of evidence from child language for the parameter-setting model of grammar acquisition.

3.2 Deriving the MNC and Scrambling

In this section, I will discuss three analyses that attempt to derive the MNC and scrambling (of the Japanese-type) from the same source: Fukui (1986), Kuroda (1988), and Grewendorf & Sabel (1999).

3.2.1 Fukui (1986): Defective INFL in Japanese

Fukui (1986) proposed a system of category projection that is later called 'the relativized X-bar theory' (see Fukui 1995). In this system, the notion of maximal projection is relativized based on the distinction between lexical categories (N, V, A, P) and functional categories (D, I, C). Specifically, building on the contrast between (5) and (6), Fukui argues that lexical categories project up to the single-bar level, allowing free iteration at this level, while functional categories can project up to the double-bar level, taking a unique specifier.

(5) Recursion at N': the <u>tall</u>, <u>dark</u>, <u>handsome</u> stranger

(6) No recursion of DP SPEC: *<u>vesterday's Chomsky's</u> lecture

(based on Fukui 1986:32, 38)

This difference between lexical and functional projections is schematically shown in (7).



Fukui derives the above difference between lexical and functional categories from the following three assumptions (Fukui 1988:252, Fukui 1986:83):

- (8) The SPEC position is licensed by an *agreement* relation (including Case assignment) with the head.
- (9) Only functional heads can bear agreement features.
- (10) If X, a functional head, agrees with Y, then there is no Z such that $Z \neq Y$ and X agrees with Z.

Since lexical heads never have agreement features, they cannot license specifiers. Therefore, these heads only project up to the single-bar level, and permit free recursion at that level (as long as other conditions are satisfied). On the other hand, functional projections can project up to the double-bar level when the head bears agreement features. When an agreement relation is established, the SPEC position is licensed and the relevant category projection is 'closed off' due to the 'one-to-one' nature of agreement stated in (10), disallowing further iteration.

Let us now see how this relativized X-bar theory accounts for the fact that while English has neither the MNC nor multiple scrambling, Japanese has both. The phrase structure of English transitive sentences under this system looks like (11).

(11) a. D-structure: $\begin{bmatrix} IP \\ I \end{bmatrix} \begin{bmatrix} I \\ V' \end{bmatrix} \begin{bmatrix} V \\ DP \end{bmatrix} \begin{bmatrix} V' \\ V \end{bmatrix} \begin{bmatrix} V \\ DP \end{bmatrix} \end{bmatrix}$ b. S-structure: $\begin{bmatrix} IP \\ DP_1 \end{bmatrix} \begin{bmatrix} I \\ V' \end{bmatrix} \begin{bmatrix} V' \\ t_1 \end{bmatrix} \begin{bmatrix} V' \\ V \end{bmatrix} DP \end{bmatrix} \end{bmatrix}$

(12) The Principle of Agreement (Fukui 1988:255):Agreement relation must be satisfied at S-structure.

The subject DP is generated at D-structure in one of the base-generated 'adjoined' positions within a lexical head's own projections, and moves to the specifier of IP in order to receive Case satisfying the condition in (12). If more than one subject DP is generated within V', all of them except one will be Caseless, because only one DP can enter into an agreement relation with INFL, receiving nominative Case. Thus, the MNC is excluded in English by the Case Filter.

Since in English the SPEC position of IP is projected, the movement to the position immediately preceding the subject necessarily results in an adjunction to IP.

Then, the condition that bans multiple adjunction to a single category (May 1985:81) rules out the sentences comparable to those that have undergone multiple scrambling.³

Turning to Japanese, Fukui (1986:209) argues that the availability of the MNC and multiple scrambling in Japanese follows from the fundamental parametric property (13).

(13) INFL in Japanese lacks agreement features.

Given this property, the SPEC of INFL is not licensed in Japanese, and thus the subject stays within V'. Due to the lack of agreement features in INFL, a 'default' nominative-case marking mechanism is at work in Japanese, which licenses otherwise Caseless NPs.⁴

(14) In the environment: _____ V', insert ga. (cf. Fukui 1986:266)

³ In later analyses, Fukui (1993, 1995) proposed a system in which the directionality of optional movements is determined by the values of the head-parameter. This system requires that in head-final languages like Japanese, optional movements should be leftward (which is instantiated as scrambling), while in head-initial languages like English, optional movements should be rightward (which is instantiated as heavy NP shift). If this system were on the right track, the lack of scrambling in English would be explained by the head-initial character, without resorting to the ban on multiple adjunction to a single category. Yet, Slavic languages like Russian and Serbo-Croatian pose a serious problem to this system: Even though they are widely assumed to be SVO languages, they permit multiple scrambling in Serbo-Croatian, and Bailyn (1995, 2001), Sekerina (1997) and Yadroff (1991) for discussion of scrambling in Russian.

⁴ Fukui (1986:206) assumes that Japanese lacks the category D. Thus, while noun phrases in English are DPs, those in Japanese are NPs.

Since V is a lexical category and has no agreement features, more than one NP may appear in freely-iterated positions at V', and they are all licensed by the rule in (14). Thus, in Japanese, multiple nominative phrases may occur in a single clause. In addition, given that V allows recursion at the single-bar level, multiple movements of NPs into the base-generated 'adjoined' positions in front of the subject are possible, which instantiates multiple scrambling.⁵ The MNC and multiple scrambling in Japanese are schematically shown in (15).⁶

(15) a. Multiple-Nominative Construction:

$$\begin{bmatrix} r \begin{bmatrix} v^{v} & NP-ga & \begin{bmatrix} v^{v} & NP-ga & \begin{bmatrix} v^{v} & V \end{bmatrix} \end{bmatrix} \end{bmatrix} I \end{bmatrix}$$
b. Multiple Scrambling:

$$\begin{bmatrix} r \begin{bmatrix} v^{v} & NP_{2} & \begin{bmatrix} v^{v} & NP_{1} & \begin{bmatrix} v^{v} & subject & \begin{bmatrix} v^{v} & t_{1} & t_{2} & V \end{bmatrix} \end{bmatrix} \end{bmatrix} I \end{bmatrix}$$

In sum, under Fukui's (1986) theory, the parametric difference regarding the existence of agreement features in INFL results in the difference in the S-structure position of subjects in each language: In English, the subject occupies the SPEC of INFL.

⁵ Fukui (1986:241) provides the following definition of "adjunction" and "substitution."

⁽i) A movement is an adjunction iff the structure created by that movement is non-base-generable (otherwise, the movement is a substitution).

Under this definition, scrambling in Japanese is an instance of "substitution," since the landing site for scrambling is "base-generable": Those positions can potentially be licensed at D-structure, given that the nominative phrases in the MNC appear in those positions. Thus, multiple scrambling does not violate the condition that rules out multiple "adjunction" to a single category. ⁶ A question remains as to why free leftward adjunction of an object to V' is impossible in English, as indicated by the ungrammaticality of (i).

⁽i) * John the book₁ read t_1 .

Fukui (1988:26) attributes this to a violation of the string adjacency condition between V and INFL.

while in Japanese, it stays within the projection of V. And this structural difference plays an important role in determining the availability of the MNC and multiple scrambling to the sentence-initial position.

3.2.2 Kuroda (1988): Forced Agreement Parameter

Kuroda (1988) argues, contrary to Fukui (1986), that the relevant difference between English and Japanese should not be attributed to functional categories themselves. Instead, he proposes that UG is equipped with the parameter given in (16a), and that English and Japanese take different values, as stated in (17).⁷

- (16) a. Principle of Forced Agreement Parameter (Kuroda 1992:323, 352):
 Languages are parametrized as to whether X-Agreement is forced or not.
 - b. Principle of X-Agreement (Kuroda 1992:323, 352):
 X-Agreement is a feature-sharing (co-specification) between a base category and a Max(X) that it governs.⁸
 - *Principle of the Uniqueness of Agreement* (Kuroda 1992:353):
 An agreement inducing base category Agrees with at most one Max(X).
- (17) a. English is a forced Agreement language.
 - b. Japanese is not a forced Agreement language. (Kuroda 1992:325, 326)

⁷ Kuroda (1988) is reprinted in Kuroda (1992:315-357). I use Kuroda (1992) for page references in the following discussion.

⁸ 'Max(X)' and 'a base category' in Kuroda's theory correspond to XP and X^0 , respectively.

Kuroda further assumes that the subject of a clause is universally generated in the specifier of VP at D-structure (Kuroda 1992:318), and also that multiple specifiers are possible in every language as long as (16c) is satisfied (Kuroda 1992:316).

In English, which is a forced Agreement language, an Agreement-inducing head must establish an agreement relation with at least one specifier position. Thus, the subject generated within VP has to move to the specifier of IP at S-structure, in order to instantiate an Agreement relation by being Case-marked by AGR in INFL. If more than one subject is generated within VP, only one of them can be assigned Case by AGR and other arguments become Caseless, due to the principle in (16c) that requires the Agreement relation to be one-to-one. Thus, the MNC is ruled out in English as a violation of the principle in (18).

(18) Principle of Morphological Licensing (Kuroda 1992:352):Arguments must be licensed by Case or case.

In Japanese, which is a nonforced Agreement language, an Agreement-inducing head need not establish an agreement relation with its specifier positions, and hence those positions can be left vacant or may be occupied by an XP devoid of the expected Agreement (Case-marking). Thus, the subject generated within VP need not move to the specifier of IP: It can stay within VP at S-structure, leaving the specifier of IP vacant. In addition, Kuroda argues that in such a non-forced Agreement language, a 'lower-case case-marking mechanism' is at work that licenses arguments that are not Case-marked. For Japanese, he postulates the following 'linear case-marking rule' that applies cyclically to the domain of VP (Kuroda 1978):

(19) case marking (Kuroda 1992:225):
 Mark the first unmarked noun phrase with ga, and mark any other unmarked noun phrase or phrases with o.

No matter how many arguments appear in the specifier of VP, they are all assigned nominative gu by the cyclic application of (19) and thus satisfy the principle in (18). Thus, Japanese sentences may have multiple-nominatives with the structure in (20) (cf. Kuroda 1992:343).

(20)	a.	zoo-ga	hana-ga	nagai.	
		elephant-Nom	trunk-Nom	long	
		•Elephants have long	trunks.`		
	b.	[IP e [I' [VP ZOO-	\cdot ga ₁ [_{VP} [t_1 ha	na-ga] $\left[V' \left[V \text{ naga} \right] \right] \left[1 i \right]$]	

If specifiers can in principle be multiple in every language, why is it impossible in English to move complements of V to the outer specifiers of IP, yielding a structure comparable to multiple scrambling in Japanese? Kuroda suggests that this possibility is excluded by the principle in (21).

(21) Principle against Double Case-marking (Kuroda 1992:328, 353):If a chain is marked with Case, it cannot occupy more than one Case position.

This condition says that Case-marked phrases cannot move into a position that can be assigned Case, irrespective of whether the relevant head has already assigned its Case to some argument. Since complements are assigned Case by V in English, they are not able to move into (outer) specifiers of finite IP even though the Case of INFL is assigned to the subject in the inner specifier of IP, because the specifier of IP is a Case-marking position. Thus, scrambling is ruled out in English by the principle (21).⁹

On the other hand, given its non-forced Agreement status, a lower-case case-marking rule as in (19) is active in Japanese. Therefore, arguments in Japanese can be licensed not by Case but by case. Since they are not Case-marked, complements in Japanese can move to the specifier positions of IP without violating the constraint in (21). This way, the availability of multiple scrambling in Japanese is accounted for.¹⁰

To summarize, under Kuroda's (1988) theory, the difference between English and Japanese concerning the availability of multiple scrambling and the MNC stems from the parametric difference that Agreement is forced in English while it is not in Japanese,

 $^{^{9}}$ Yet, a question remains as to what excludes a sentence like (i), if movement within VP is possible (see note 6):

⁽i) * John the book₁ read t_1 .

¹⁰ Under Kuroda's system, scrambled sentences in Japanese seem to be structurally ambiguous: They can reflect movement of the object to the specifier of IP over the subject within VP; or they can reflect movement of the object to the outer specifier of IP over the subject in the inner specifier of IP. Kuroda (1992:321) also leaves open the possibility that scrambling takes place within VP. I thank William Snyder for the relevant discussion.

coupled with various principles (those given in (16), (18), (19), and (21)) and the assumption that multiple specifiers are potentially possible in every language.^{11.12}

3.2.3 Problems of Fukui (1986) and Kuroda (1988)

Fukui (1986) and Kuroda (1988) both proposed a system in which the availability of the MNC and that of multiple scrambling co-vary with each other: Under their systems, the lack of obligatory agreement triggers a certain case-marking mechanism, and these two properties together constitute a sufficient condition for the availability of the MNC and multiple scrambling. Thus, their analyses successfully account for languages like Japanese and Korean that permit both of those properties, as well as languages like English and French that allow neither of them. Yet, there are two other types of languages which their approaches cannot immediately accommodate. One of them is languages like

¹¹ A technical question remains in the details of Kuroda's (1988) system. Kuroda (1992:353) allows the possibility that "a forced Agreement language may also have lower-case case-marking," and suggests that Irish and Latin may exemplify this possibility. Yet, if we permit such a possibility, the necessity of the forced Agreement parameter seems to be weakened. This is because such a forced Agreement language with lower-case case-marking is predicted to permit the MNC and multiple scrambling, though in a slightly different form. In such a language, at least one phrase must enter into an Agreement relation with INFL but other phrases can be licensed by the lower-case case-marking. Thus, the multiple-nominative construction will be possible. In addition, those phrases that are licensed by lower-case case-marking will be able to undergo scrambling. Therefore, the existence of a forced Agreement language with lower-case case-marking will lead to the conclusion that the availability of the two relevant properties depends not on the negative setting of the Agreement parameter but on the availability of the lower-case case-marking. Shibatani (1989:178-179) points out this problem.

¹² See Saito & Fukui (1998:468-469) for the discussion of the difference between (the extended version of) Fukui's (1986) approach and Kuroda's (1988) approach.

German, which permits multiple scrambling as shown in (22) but does not have the MNC. The other type is languages like Mandarin Chinese, in which the MNC is possible as illustrated in (23) but multiple scrambling (to the clause-initial position) is not.

(22) *Multiple Scrambling in German*:

a.		weil	ein Kind	dem Mann	das Buch	gegeben	hat.
		because	a child _{nom}	the man _{dat}	the $book_{acc}$	given	has
b.		weil	das Buch	dem Mann	ein Kind	gegeben	hat.
		because	the book _{ace}	the man _{dat}	a child _{nom}	given	has
c.	?	weil	dem Mann	das Buch	ein Kind	gegeben	hat.
		because	the man _{dat}	the book _{ace}	a child _{nom}	given	has
						-	

(23) Multiple-Nominative Construction in Mandarin Chinese

(cf. Teng 1974, Ura 1994):¹³

Zhangsan	baba	hen	quiong
Zhangsan	father	very	poor
(T. 1) (71)	C .1 .		

'Lit. Zhangsan, father is very poor. (Zhangsan's father is very poor.)'

Unless some additional constraints are postulated, Fukui's (1986) and Kuroda's (1988)

systems cannot be extended to these languages.¹⁴

The existence of languages like Chinese and German may at first sight cast

(i) Zhangsan de baba hen quiong. Zhangsan DE father very poor. 'Zhangsan's father is very poor.'

¹³ When *Zhangsan* is in genitive form, the morpheme *de* appears, as shown in (i).

¹⁴ Another problem for Fukui's (1986) theory is that it makes the prediction that the MNC is permitted only in those languages that have defective INFL and thus have no subject-verb agreement. According to Ura (1994:47) and Ogawa (1996:67), this prediction is false: Languages like Persian have morphological subject-verb agreement but still allow the MNC.

serious doubt on the view that there is a parameter that governs both the MNC and scrambling. Yet, it is quite plausible that there are several distinct types of scrambling cross-linguistically, and only one of them is closely associated with the availability of the MNC. This possibility is pursued by Grewendorf & Sabel (1999), which I review in the next subsection.

3.2.4 Grewendorf & Sabel (1999): Projection of Multiple Specifiers

As noted in the previous section, German is the same as Japanese in that it has scrambling: It allows more than one DP to move to the clause-initial position, as illustrated in (22). Yet, German significantly differs from Japanese in two respects. First, while the scrambled phrase in Japanese exhibits properties of an A-position, the scrambled phrase in German does not have such properties. Thus, while a scrambled phrase may bind an anaphor inside the subject DP in Japanese, this is not possible in German, as indicated by the contrast between (24b) and (25b).^{15,16}

¹⁵ Hoji (1997) argues that *otagai*, which is often treated on a par with *each other* in English, is not in fact a local anaphor. If so, the data in (24) may not reliably indicate that the scrambled phrase is in an A-position. Yet, there is at least one other argument for A-scrambling in Japanese. As observed by Miyagawa (1997:13), while a chunk of an idiom can undergo clause-internal scrambling, it cannot undergo long-distance scrambling, as shown in (i) and (ii).

⁽i) Te-o₁ John-ga hoteru-gyoo-ni t_1 nobasita. hand-Acc John-Nom hotel-business-to extended 'John became involved in the hotel business.'

- (24) Japanese (Saito 1992:74-75):
 - a. ?* [[Otagai₁-no sensei]-ga [karera₁-o hihansita]] (koto)
 each other-Gen teacher-Nom they-Acc criticized fact
 `Each other`s₁ teachers criticized them₁'
 - b. ? [Karera₁-o [otagai₁-no sensei]-ga [t₁ hihansita]] (koto) they-Acc each other-Gen teacher-Nom criticized fact
 'Them₁, each other's₁ teachers criticized t₁'
- (25) *German* (Grewendorf & Sabel 1999:9):
 - * weil [die Lehrer von sich₁] zweifellos den Studenten a. since [the teacher of himself]_{nom} undoubtedly the student acc in guter Erinnerung behalten haben. in good memory kept have 'The teachers of himself have undoubtedly kept the student in good memory."
 - b. * weil den Studenten₁ [die Lehrer von sich₁] zweifellos t
 since the student acc [the teacher of himself]_{nom} undoubtedly
 in guter Erinnerung behalten haben.
 in good memory kept have

(ii) ??? Te-o₁ [_{IP} Mary-ga [_{IP} John-ga hoteru-gyoo-ni t₁ nobasita] to] hand-Acc [_{IP} Mary-Nom [_{IP} John-Nom hotel-business-to extended to] C] hookokusita. reported

'Mary reported that John became involved in the hotel business.'

Given that long-distance scrambling is typically viewed solely as A'-movement (Mahajan 1990:38-61, Tada 1993:32), the contrast between (i) and (ii) suggests that clause-internal scrambling can be a different type of phrasal movement, namely A-movement.

- (i) * The guests₁, [each other₁'s dance partners] criticized t.
- (ii) * Which actors₁ did [pictures of themselves₁] convince the director that he should interview t?

¹⁶ The following examples suggest that A'-moved phrases cannot bind an anaphor (Grewendorf &Sabel 1999:8).

Second, while Japanese allows long-distance scrambling (scrambling across finite-clause boundaries), German does not, as exemplified in (26) and (27).

(26) Japanese:

sono hon-o [IP John-ga [VP Bill-ni ſıp [CP Mary-ga t that book-Acc John-Nom **Bill-Dat** Mary-Nom motteiru to] itta]]] (koto). have С said fact 'That book, John said to Bill that Mary has.'

(27) German (Grewendorf & Sabel 1999:11):

k	daß	[1P	dieses	Buch	[1P	Hans	[vp	dem	Studenten
	that		this bo	ok _{ace}		Hans _{no}	m	the	student _{dat}
	gesagt	hat	[ср	daß	Maria	t	besitzt]]]].	
	told	has		that	Maryno	m	owns		
	'Hans	told the	student	that Ma	irv own	s this bo	ook.'		

Based on these differences between German and Japanese, Grewendorf & Sabel (1999) propose the following cross-linguistic generalization.

(28) Scrambling Generalization (Grewendorf & Sabel 1999:3):
 A scrambling language allows A-scrambling as well as scrambling out of finite clauses iff multiple Agr-specifiers are licensed in the language.

Grewendorf & Sabel (1999) account for this generalization by postulating two related parameters given in (29) and (30).

- (29) Parameter of Multiple-Specifier Projection: The agreement system in a language {permits, does not permit} multiple Agr-specifiers.
- (30) Parameter of Scrambling Feature:Agr-head {can, cannot} bear scrambling feature [Σ].

Both German and Japanese take the positive setting of the parameter (30) and thus permit scrambling, while languages like English take its negative setting and disallow scrambling. The differences between scrambling in German and that of Japanese stem from the parameter in (29). Japanese takes the positive value of this parameter, and makes its Agr_S head able to check a nominative Case feature more than once, which results in the availability of the MNC.^{17,18,19} Under Grewendorf & Sabel's system, the MNC as in (31a) has the structure shown in (31b).²⁰

(31) a. Mary-ga kami-ga nagai (koto).Mary-Nom hair-Nom long (fact)Mary has long hair.`

¹⁷ The Agr_s head in Japanese has to undergo Case-checking with at least one DP, but not necessarily with every DP in its specifier positions. Otherwise, scrambling to those specifier positions in Japanese would be a movement of a Case-marked phrase to Case-position, which is generally impossible. ¹⁸ Chinese is also a language that takes the positive value of this multiple-specifier parameter,

¹⁸ Chinese is also a language that takes the positive value of this multiple-specifier parameter, even though it differs from Japanese in taking the negative value of the parameter in (30).

¹⁹ The positive setting may also be relevant to the multiple-accusative construction observed in Korean, although Grewendorf & Sabel (1999) do not discuss this point.

²⁰ See also Doron & Heycock (1999) for the multiple-specifier analysis of the MNC.



When a language is able to project multiple Agr-specifiers by selecting the positive value in (29) and when this language has also chosen the positive value in (30), the scrambled phrases in this language land in the specifier positions of the Agr_S head. This is the case of Japanese.²¹ On the other hand, when a language has taken the negative value of the multiple-specifier parameter but still has taken the positive value of the scrambling-feature parameter, then the scrambled phrases in this language adjoin to the Agr_SP. This possibility is instantiated by German. The relevant structures are schematically shown in (32).²²

 ²¹ McGinnis (1998), Richards (1997) and Ura (1994) also provide a multiple-specifier analysis of A-scrambling in Japanese.
 ²² A question remains as to how to accommodate Equation

²² A question remains as to how to accommodate English-type topicalization in this system, if both German-type scrambling and English-type topicalization are adjunction to Agr_sP . One simple way would be to say that while a scrambling feature can undergo multiple checking, a topicalization feature can be checked only once.



Notice that under Grewendorf & Sabel's analysis, the landing site of Japanese scrambling is always the specifier of Agr_SP, which is an A-position, and that of German scrambling is always the adjoined position to Agr_SP, which is an A'-position. Grewendorf & Sabel in fact argue that scrambling in Japanese has A-movement properties throughout (except for the long-distance one), and that scrambling in German has only A'-movement properties. They claim that the test based on anaphoric binding we have discussed above is the only decisive one, and that the other familiar tests do not provide any conclusive evidence. For example, Condition A reconstruction given in (33) is often treated as an indication of an A'-property of Japanese scrambling, but such reconstruction is possible with A-movement, as the English example in (34) suggests.

(33)	Zibunzisin-o	Hanako-ga	1	hi	hansita		(koto)	
	self-Acc	Hanako-Nom		cr	iticized	I	(fact)	
	Herself, Hanako criti	cized.					(Saito 1992:	76)
(34)	Each other ₁ 's pictures	seem to the men	1 ₁ [_{IP}	ť	to be	t	the most beautiful].
					(Gr	ewe	ndorf & Sabel 1999	:13)

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In addition, the absence of weak crossover effects with German scrambling illustrated in (35) is often regarded as its A-movement property.²³ Yet, in German, *wh*-movement does not induce a weak crossover effect either (Grewendorf & Sabel 1999:16-17).

(35)	a. *	weil s	seine	e ₁ Mutter		jede	n Studen	liebt.	
		since l	his n	nother _{nom}		ever	every student _{acc}		loves
		'His ₁ m	othe	r loves eve	ery stu	dent ₁ .'			
	b. weil [1P jeden Studenten				41 [1P	$[_{1P}$ seine ₁ Mutter <i>t</i>			
		since		every stuc	lent _{acc}		his motl	ner _{nom}	loves
(36)	[ср	Wen1	[C'	liebt	[IP 5	seine ₁]	Mutter	$t = t_V$]]]?
		who _{acc}		loves		his mo	ther _{nom}		
	'Who ₁ does his ₁ mother love?'								

Given these considerations, Grewendorf & Sabel assume that scrambling in Japanese and

that of German are purely A-movement and A'-movement, respectively.

The contrast between German and Japanese with respect to the possibility of long-distance scrambling also follows from the parameter in (29). Given the locality condition on movement that makes it impossible to skip potential landing sites, the phrase

²³ In all of the eight scrambling languages that I have investigated, mitigation of weak crossover effects by clause-internal scrambling (to the sentenced-initial position) was observed, which suggests that this is a characteristic property of clause-internal scrambling in general. See Appendix I for the relevant examples. Given that five of these eight languages do not allow binding of an anaphor in the subject position by the scrambled object (as discussed in the next section), it is not clear whether such mitigation of weak crossover effects tells us anything about the A/ A'-status of the scrambling in a given language. See Lasnik & Stowell (1991) for the cases where obvious instances of A'-movement do not yield weak crossover effects. I leave for future research the investigation of Tagalog, in which clause-internal scrambling induces weak crossover effects. according to Norvin Richards (personal communication).

that undergoes long-distance scrambling also has to land in the positions shown in (32) as its intermediate landing site: the outer specifier position of Agr_SP in the case of Japanese, and the Agr_SP-adjoined position in the case of German. Grewendorf & Sabel (1999:4) assume that "adjunction is a 'dead end' for every kind of movement." Thus, while the scrambled phrase that has moved to the specifier of Agr_SP is able to undergo further movement, the scrambled phrase that has adjoined to Agr_SP cannot move anymore. This way, the difference between German and Japanese concerning the availability of long-distance scrambling is accounted for.

To summarize, Grewendorf & Sabel proposed that there are (at least) two types of scrambling languages: languages like Japanese that have A-scrambling, and languages like German that have A'-scrambling. They proposed a parametric system in which a scrambling language has A-scrambling if and only if the language has the MNC. More specifically, they proposed the parameter of multiple-specifier projection given in (29) that is relevant both to the availability of the MNC and the availability of Japanese-type A-scrambling. Since Grewendorf & Sabel's analysis is able to explain languages like German (and Chinese: see note 19), which Fukui (1986) and Kuroda (1988) failed to accommodate. I will adopt their analysis and evaluate its cross-linguistic and acquisitional predictions in the following sections.

3.3 Evaluating Predictions for Cross-linguistic Variation from Grewendorf & Sabel (1999)

Let us now consider what predictions Grewendorf & Sabel's parametric system makes for cross-linguistic variation. The two parameters given in (29) and (30) are an attempt to account for their generalization given in (28), which is repeated below.

(37) Scrambling Generalization (Grewendorf & Sabel 1999:3):A scrambling language allows A-scrambling as well as scrambling out of finite

clauses iff multiple Agr-specifiers are licensed in the language.

One of the predictions that their parametric system makes, which we can see in this generalization, is that long-distance scrambling is possible if and only if the language has clause-internal A-scrambling: Under their system, in order for a phrase to undergo long-distance scrambling, the phrase has to move through the Agr_sP-specifier position, which is an A-position.

Russian is consistent with their prediction: In Russian, the scrambled phrase does not license an anaphor within the subject, and long-distance scrambling of multiple phrases is not permitted, as the examples in (38) and (39) show.²⁴

²⁴ Long-distance preposing of a single phrase is possible, which suggests that Russian has long-distance topicalization.

⁽i) a. Ivan shazal, čto_{ind} Maša kupila etu knigu včera. Ivan said that Masha bought this book yesterday 'Ivan said that Masha bought this book yesterday.'

(38) *Anaphor-binding by the Scrambled Phrase in Russian:*

	a.	*	Profess	ori	drug dr	ruga ₁ u		uvideli		Ivana i Mašu ₁ .	
			profess	ors	each ot	her		saw		Ivan and Masha.	
			'The pr	ofessor	s of eac	h other :	saw Iva	n and M	lasha.'		
	b.	*	[Ivana	i Mašu]	1	profess	ori	drug di	ugai	uvideli	<i>t</i> ₁ .
			Ivan an	id Mash	a	profess	ors	each ot	her	saw	
(39)	Lor	ıg-a	listance	Scramb	ling in l	Russian	:				
	a.	a. lvan skazal, čto _{ind} Ivan said that		čto _{ind}		Dmitry	1	podaril	l		
					Dmitry			gave as a present			
			Maše _{da}	t	etu	sobaku	sobaku _{ace} včera.				
			Masha		this	dog		yesterd	lay		
			'Ivan s	aid that	Dmitry	itry gave a dog to Masha yesterday.					
	b.	*	Maše ₁		etu	sobaku	2	Ivan	skazal.		čto _{ind}
			Masha		this	dog		Ivan	said		that
			Dmitry	,	podaril	l	t_1	12	včera.		
			Dmitry	7	gave as	s a prese	ent		yester	lay	
	c.	*	Etu	sobaku	l <u>2</u>	Maše ₁		Ivan	skazal	•	čto _{ind}
			this	dog		Masha		Ivan	said		that
			Dmitry	/	podari	1	11	<i>l</i> ₂	včera.		
			Dmitry	/	gave as	s a prese	ent		yester	day	

There are at least two languages that falsify the above prediction, however: Serbo-Croatian and Turkish. These languages allow long-distance scrambling, as shown in (40) and (41). Yet, scrambled phrases cannot bind an anaphor inside the subject position, as illustrated in (42) and (43).

b.	Etu	knigu _l	Ivan	shazal,	čto _{ind}	Maša	kupila	t_1	včera.
	this	book	Ivan	said	that	Masha	bought		yesterday

(40) Long-distance Scrambling in Serbo-Croatian (Stjepanović 1999a:316):

	a.	Petar	misli	da	Marija	daje	ove	knjigu		Ivanu.
		Petar	thinks	that	Marija	gives	this	book _{acc}	:	Ivanu _{dat}
		•Petar	thinks tl	nat Mari	ija is giv	ving this	s book te	o Ivan.'		
	b.	Ove	knjigu		Ivanu		Petar	misli	da	Marija daje.
		this	book _{ace}	•	Ivanu _{da}	ıt	Peter	thinks	that	Marija gives
	c.	Ivanu		ove	knjigu		Petar	misli	da	Marija daje.
		Ivanu _d	at	this	book _{acc}	:	Petar	thinks	that	Marija gives
(41)	Long-a	listance	Scram	oling in	Turkish:					
	a.	Ahmet	t	Ali		bu kita	b-ı	Ayşe-y	e	dün
		Ahmet	t-Nom	Ali-No	m	this bo	ok-Acc Ayşe-Dat			yesterday
		ver-di]	san-iyo	san-1yor.					
		give-P	ast	think-I	Pres					
		•Ahme	et thinks	that Al	i gave tł	nis book	to Ayş	e yester	day.'	
	b.	bu kita	ab-11	Ayşe-y	e ₂ [Ahmet	:	[Ali	t_1	<i>t</i> ₂
		this book-Acc Ayşe-Dat Ahmet-Nom Ali-Nom								
		dün		ver-di]	san-iyo	or.]			
		yester	day	give-P	ast	think-I	Pres			
	с.	Ayşe-y	/e ₂	bu kita	1b-11 [Ahmet	t	[Ali	<i>t</i> ₁	<i>t</i> ₂
		Ayşe-I	Dat	this bo	ok-Acc	Ahmet	t-Nom	Ali-No	om	
		dün		ver-di]	san-iyo	or.]			
		yester	day	give-P	ast	think-l	Pres			
(12)	4 1	<i>,</i> .	· · · ·		11 10	., .	0.1	<i></i>		

(42) *Anaphor-binding by the Scrambled Phrase in Serbo-Croatian:*

a. *	Prijafelji	jedan drugog	vole	Marka i Petra.			
	Friends _{nom}	each othergen	love	Marko and Petaracc.			
	'Friends of each other love Martha and Petra.'						

b. *	Marka i Petra	prijafelji	jedan drugog	vole	1.
	Marko and Petaracc	friends _{nom}	each other _{gen}	love	

(43) *Anaphor-binding by the Scrambled Phrase in Turkish* (Kural 1992:263):

a.	* [[Birbirlerinin each other-Agr-Gen dün aramış yesterday call-Pa		sekreterleri]		adamları men-Acc		
				secretary-PI-A				
]				
				st-Agr				
		'Each other's secretaries called the men yesterday.'						
b.	*	Adamları [[birbirle	erinin	sekreterleri]	t	dün	

men-Acc each other-Agr-Gen secretary-Pl-Agr-Nom yesterday aramış]. call-Past-Agr

These languages clearly indicate that a language may have long-distance scrambling even if the clause-internal scrambling in that language does not exhibit A-movement properties. Thus, the availability of long-distance scrambling should not be associated with the positive value of the multiple-specifier parameter in (29), but should stem from the setting of some other parameters.²⁵

The other prediction from Grewendorf & Sabel's analysis, which is crucially relevant to the central topic of this chapter, is that the languages that permit Japanese-type A-scrambling are a proper subset of those that permit the MNC. Under Grewendorf &

²⁵ As William Snyder (personal communication) correctly points out, there remains a possibility that long-distance scrambling can have multiple syntactic sources, of which the positive setting of the parameter (29) is only one. If so, it is predicted that languages with A-scrambling should be a proper subset of those that allow long-distance scrambling. This prediction is consistent with the cross-linguistic data that I have collected so far: All of the A-scrambling languages in my cross-linguistic survey (Korean, Japanese and Persian) permit long-distance scrambling, and there are A'-scrambling languages that allow long-distance scrambling (Serbo-Croatian and Turkish). I will investigate this possibility further in my future research.

Sabel's system, the availability of the MNC depends on the positive setting of the multiple-specifier parameter in (29), but the availability of A-scrambling depends on the positive setting of the multiple-specifier parameter <u>plus</u> that of the parameter of the scrambling-feature in (30). Thus, the two parameters create an implicational relationship between scrambling of the Japanese-type and the MNC. The prediction can be schematically shown as in (44). Given the set of languages with the MNC and the set of languages that have A-scrambling.



The cross-linguistic data that I have collected, which include data from eight scrambling languages, have borne out this prediction.²⁶ The results of my cross-linguistic survey are summarized in Table 3.1, and the actual examples are given in the Appendix I.

In sum, the data from Serbo-Croatian and Turkish directly contradict Grewendorf

²⁶ Warlpiri constitutes a potential counterexample. According to Legate (2002), this language has A-scrambling. Yet, it still does not permit the MNC (Julie Anne Legate, personal communication). I will leave the investigation of this language for future research.

& Sabel's (1999) view that a language allows long-distance scrambling if and only if clause-internal scrambling in that language has A-movement properties. Yet, the results of my cross-linguistic survey have provided support for one component of Grewendorf & Sabel's parametric system, namely that natural-language grammars permitting Japanese-type scrambling (A-scrambling) are a proper subset of those that permit the MNC.²⁷ Thus, I revise Grewendorf & Sabel's scrambling generalization given in (37) as follows:

- (45) *Scrambling-MNC Generalization*:
 - a. If a language has Japanese-type scrambling (A-scrambling), then it has the MNC.
 - b. If a language has German-type scrambling (A'-scrambling), then it does not have the MNC.

The correlation between the MNC and A-scrambling stated in (45) lends strong support for the existence of a parameter like (29) that governs both of these properties.

²⁷ In principle, there could have been something like a morphological "double nominative" filter permitted by UG, so that the possibility of multiple specifiers for Agr would have been a necessary, but not a sufficient, condition for the MNC. Under such a scenario, it is expected that there are languages that permit A-scrambling but do not allow the MNC. The cross-linguistic data presented in this section (and the acquisition data presented in Section 4.5) suggest that this is not the case. I thank William Snyder for the relevant discussion. See Harada (1973), Hiraiwa (2002), Kuno (1973). Kuroda (1978) and Shibatani (1978) for the discussion of double-o constraint in Japanese.

	Multiple-Nominative Construction		
	YES	NO	
Languages without scrambling	Mandarin Chinese	English	
	Modern Hebrew ²⁸	French	
Languages with scrambling			
Japanese-type A-scrambling	Japanese		
	Korean		
	Modern Persian		
German-type A'-scrambling		German	
		Hindi ²⁹	
		Russian	
		Serbo-Croatian	
		Turkish	

Table 3.1:Cross-linguistic Survey

 $^{^{28}}$ Modern Hebrew has an operation that preposes an element to the clause-initial position, as shown in (i). This operation cannot be iterated in a single clause (under the neutral intonation), which suggests that it is English-type topicalization.

(i)	a.	Dan	kana	et	ha-sefer	ha-ze.			
		Dan	bought	ACC	the-book	the-this	5.		
	Dan bought this book.								
	b.	et	ha-sefer	•	ha-ze	Dan	kana.		
		ACC	the-bool	k	the-this	Dan	bought		
(ii)	a.	Dan	kana	et	ha-sefer	ha-ze	_	le-Ruti.	
		Dan	bought	ACC	the-book	the-this	8	to-Ruti	
	'Dan bought this book for Ruti.'								
	b. *	et	ha-sefer	•	ha-ze	le-Ruti		Dan	kana.
		ACC	the-boo	k	the-this	to-Ruti		Dan	bought
	c. *	le-Ruti	i	et	ha-sefer	ha-ze		Dan	kana.
		to-Rut	i	ACC	the-book	the-thi	5	Dan	bought

²⁹ A potential confounding factor for Hindi is that it is a "split ergative" language, while other languages in the table are nominative-accusative languages: In Hindi, many present tense sentences use an accusative system, whereas simple past tense sentences use an ergative system. This might contribute to the unavailability of the MNC in Hindi. I will leave the investigation of this possibility for future research.

3.4 Predictions for Acquisition from Grewendorf & Sabel (1999)

The results of the cross-linguistic survey reported in the previous section were in conformity with the prediction from Grewendorf & Sabel's (1999) parametric system that there should be a one-way implication from Japanese-type scrambling to the MNC. Yet, this may well be due to the fact that only a limited number of languages were investigated. In order to circumvent this limitation, I will now investigate another source of evidence: the acquisition of Japanese.

Under Grewendorf & Sabel's system, the availability of the MNC depends on the positive value of the multiple-specifier parameter in (29). but the availability of Japanese-type scrambling depends on the positive setting of the multiple-specifier parameter and the positive setting of the parameter of scrambling-feature in (30). In other words, the language-particular knowledge required for the MNC is a proper subset of that required for Japanese-type scrambling. Then, it should be impossible for the child learning Japanese to hypothesize a grammar that permits Japanese-type scrambling without also permitting the MNC. Thus, the following prediction is made for the children learning Japanese:

(46) Prediction for the Acquisition of Japanese:Japanese-learning children never acquire scrambling significantly earlier than the MNC.

In other words, if we create a test that examines children's knowledge of the MNC and a test that examines children's knowledge of scrambling, the following prediction should hold:

(47) Prediction for the Distribution of Experimental Subjects: There should be no Japanese-learning child that passes the scrambling test but fails the MNC test.

The experiment reported in the next section tests the accuracy of this acquisitional prediction.

3.5 Experiment

3.5.1 Subjects

The subjects were sixteen Japanese-learning children ranging in age from 3:4 (three years, four months) to 5:3 (mean age 4:6). They were interviewed individually.

3.5.2 Methods

The experiment consists of two tests: the multiple-scrambling test (MS test) and the multiple-nominative construction test (MNC test). Half of the children received the MS test first, and the other half of the children received the MNC test first.

The MS test is intended to determine whether children can correctly comprehend sentences that have undergone multiple scrambling.³⁰ The task is truth-value verification (Crain & Thornton 1998). The child is told a story, which is accompanied by an animation presented on a laptop computer, and at the end of each story, the character Meowce appears on the screen and describes verbally what he thinks has happened in the story. The task for the child is to judge whether Meowce's description is correct or false, by pointing at one of the cards Meowce has in his hands: O (circle, which means 'correct') or X (cross, which means 'wrong').

The test sentences consist of two sentences with the basic order 'Subject -Locative PP - Object - Verb,' four multiple-scrambled sentences with the order 'Object -Locative PP - Subject - Verb,' and three fillers.³¹ Out of the six crucial test items, half are true. A sample story is presented in (48). Giving a correct answer for at least five test

³⁰ The use of multiple-scrambled sentences is crucially necessary, in order to ensure that children have the knowledge of scrambling, not that of topicalization.

³¹ Following Otsu (1994), we have controlled discourse factors when presenting the scrambled sentences so that the use of those scrambled sentences sounds natural. We established the first NP of the multiple-scrambled sentences as the discourse topic, by providing a context sentence. The second NP is made contrastive, as can be seen in the sample story.
items out of six is a prerequisite for passing the MS test.

(48) *Sample Story* (translated from Japanese to English):

Pichu, Pikachu and Satoshi are playing hide-and-seek. Pichu and Pikachu are looking for a good place to hide. They have found a large box and a small box. They are wondering which box they should hide themselves in. They have chosen the large one. Pichu is trying to put Pikachu in that box, but he has failed. Now Pikachu is trying to put Pichu into that box. And he made it! Pikachu hides under the table.

Meowce:	Pikachu-ga		Pichu-to	kakurenbo	kakurenbo shiteruyo		
	Pikachu-Nom	Pikachu-Nom		hide-and-seek	doing		
	'Pikachu is pl	aying hi	de-and-seek w	ith Pichu.			
	Pikachu-o ookii		hako-ni	Pichu-ga	iretayo.		
	Pikachu-Acc	large	box-in	Pichu-Nom	put		
	Pichu put Pik	kachu in	the large box.	•			

The MNC test is intended to determine whether children can assign the multiple-nominative structure to a given sentence.³² In this test, we crucially make use of a cleft sentence like (49), which is structurally ambiguous between (50) and (51).³³

 ³² Matsuoka (1998:85) reports that multiple-nominative construction was not found in the spontaneous speech data of the three young Japanese-speaking children she investigated.
 ³³ The structure shown in (i) will also be possible.

⁽i) [_{CP} Kumasan-ga [_{CP} pro1 ichiban mimi-ga ookii-tte] itta-no]-wa the bear-Nom best ear-Nom large-C said-C-Top dare1-kana? who-is it

^{&#}x27;Who was it that the bear said has the biggest ears?'

A potential problem here is that even though the structure in (i) has the multiple-nominative structure in the embedded CP (both *pro* and *mimi-ga* are assigned nominative), the answer to (i) will be the same as the answer to the question in (51) in the story we have presented. Thus, even

(49) Kumasan-ga ichiban mimi-ga ookii-tte itta-no-wa the bear-Nom best ear-Nom large-C said-C-Top dare-kana?
 who-is it

(50) Multiple-Nominative Structure:

[CP pro1 [CP kumasan-ga ichiban mimi-ga ookii-tte] itta-no]-wa the bear-Nom best ear-Nom large-C said-C-Top dare-kana? who-is it

'Who was it that said the bear has the biggest ears?'

(51) Non-Multiple-Nominative Structure:

[CP	Kumasan-ga <i>pr</i>	ro ₁ [ср	ichiban	mimi-ga	ookii-tte]	itta-no]-wa
	the bear-Nom		best	ear-Nom	large-C	said-C-Top
dare	1-kana?					
who	-is it					

'To whom was it that the bear said, "Your ears are the biggest"?'

The structure in (50) involves a multiple-nominative construction: It contains two nominative phrases, *kumasan-ga* 'the bear-Nom' and *mimi-ga* 'ear-Nom' within its most embedded clause. The *wh*-phrase binds *pro* in the embedded subject position, asking the agent of the verb *say*. On the other hand, the structure shown in (51) has the clause boundary between the two nominative phrases, and thus it does not involve a

if the child answers "the panda" in the story in (52), the child might be able to generate multiple-nominative construction. This possibility is excluded in the following way. If the child can assign both the multiple-nominative structure in (50) and the one in (i), they will choose the structure whose answer is most salient in the story ("the pig"), namely the one in (50). Therefore, if the child chooses the less salient animal ("the panda") as her answer, this suggests that multiple-nominative structure is not available for her.

multiple-nominative structure. The *wh*-phrase binds *pro* in the complement of the verb *say*, asking the person to whom the speech is directed. This way, the structure in (49) is structurally ambiguous between a multiple-nominative structure and a non-multiple-nominative structure.

Based on the structural ambiguity of sentences like (49), we have predicted that those children who have acquired the MNC will be able to assign to (49) both the structure in (50) and the structure in (51), while those children who have not acquired that property can only assign the structure in (51).

In the MNC test, the child is told a story, which is accompanied by an animation presented on a laptop computer, and at the end of each story, the character Meowce appears on the screen and asks a question of the form in (49). The task for the child is to answer these questions.

Since the sentence in (49) is structurally ambiguous for the child whose grammar has the MNC, we have encouraged children to choose the multiple-nominative structure (50) by presenting the relevant event at the end of the story. The story for (50) is given in (52).

(52) Sample Story (translated from Japanese to English):
A bear, a panda and a pig are playing in the woods. Looking at the pig, the panda said, "Your ears are very big." Then, the bear said to the panda, "Your ears are the biggest." The pig then said to the bear, "No, your ears are the biggest."

Meowce:	Kumasan-ga	ichiban	mimi-ga	ookii-tte		
	the bear-Nom	best	ear-Nom	large-C		
	itta-no-wa	dare-kana?				
	said-C-Top	who-is it				
	Who was it that said the bear has the biggest ears?'					
	(MNC interpretation: The answer is "The pig."), or					
	'To whom was it that the bear said, "Your ears are the biggest"?					
	(non-MNC int	erpretation: The	e answer is "Th	e panda.")		

Yet, the structure of the story raises the possibility that the child answers "the pig" in (52) not because she can assign the multiple-nominative structure, but because the pig was made salient by doing the action at the end of the story. In order to check this possibility, we also tested sentences like (53) with the same type of stories. This sentence is not structurally ambiguous, because the relevant multiple-nominative structure is excluded due to the preposing of the embedded CP. If the child provides a non-multiple-nominative interpretation for a sentence like (53), this will indicate that the child is not simply resorting to the saliency of the last event.

(53)Ichiban [CP ude-ga nagai-tte] kumasan-ga t_1 best arm-Nom long-C bear-Nom itta-no-wa dare-kana? said-C-Top who-is it 'To whom was it that the bear said, "Your arms are the longest"?' (non-MNC interpretation)

* 'Who was it that said the bear has the longest arms?" (MNC interpretation)

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The test items consist of four sentences with the ambiguous structure as in (49), two sentences with the unambiguous structure as in (53), and two fillers. The order of presentation is counter-balanced. The criterion for passing the MNC test is to provide five relevant answers out of the six crucial test items in one of the following two ways: (i) The child assigns the multiple-nominative interpretation to at least three ambiguous sentences out of the four and provides correct answers to the two unambiguous sentences, or (ii) The child assigns the multiple-nominative interpretation to all of the four ambiguous sentences and provides a correct answer to at least one of the two unambiguous sentences.

3.5.3 Results

The results are summarized in Table 3.2. and the individual responses are presented in Appendix II. Among the sixteen children we have tested, eight children passed both of the tests, and six children failed both of them. Two children passed the MNC test but failed the MS Test. Crucially, none of them passed the MS test but failed the MNC test. Thus, the results have borne out the prediction give in (47).³⁴

³⁴ Six adults were also tested, and they showed no difficulty with the tasks. Yet, two of them mentioned that the test sentences in the MNC Test have more than one answer, which suggests that the effect from the saliency of the last event is weaker for adults.





3.5.4 Discussion

The results of my experiment have borne out the prediction from Grewendorf & Sabel's (1999) parametric system that creates an implicational relationship between grammars permitting Japanese-type scrambling and grammars permitting the MNC. Thus, the results lend support for the existence of a parameter like the multiple-specifier parameter (29) that is relevant both to the availability of the MNC and a certain type of scrambling.

At the same time, the results pose a potential problem to Fukui's (1986) and Kuroda's (1988) systems. As we have discussed in Section 3.2.3, under their parametric systems, the availability of the MNC and that of multiple scrambling co-vary with each other. Then, the simplest prediction for acquisition would be that the acquisition of the MNC and that of multiple scrambling should be simultaneous. This was not the case, however: There were two children who passed the MNC Test but failed the MS Test. This

type of child remains unaccounted for under their systems.

A consequence of the experimental results is that there is no re-learning from German-type scrambling to Japanese-type scrambling in the course of Japanese acquisition. If Japanese-learning children could set the parameter of scrambling-feature (30) before they made a decision on the multiple-specifier parameter (29), there should be children whose grammar has scrambling of the German-type. In other words, there should be children who pass the test for multiple scrambling but fail the test for the MNC. This is not what we have found. Our results suggest that Japanese-learning children do not internalize scrambling until they figure out the availability of the multiple specifiers. This finding indicates that children are conservative in the sense that the child does not internalize a certain grammatical property in the language until she provides a full analysis for that property.³⁵

The experimental results have revealed that the process of the setting of the relevant parameters is observable in the acquisition of Japanese. This raises the question of why the setting of these parameters is delayed, compared to parameters like the null-subject parameter that are reported to be set extremely early (Wexler 1996, 1998). If the MNC itself is the trigger for the setting of the multiple-specifier parameter, the following possibility can be suggested. In order for the child to determine whether the target language permits the MNC, the mere existence of two nominative elements in a

³⁵ See Snyder (2002:31-32) for relevant discussion.

simple sentence is not sufficient. This is because a superficially quite similar structure may have a different syntactic source. For example, a left-dislocated element in German *Hanging Topic Left Dislocation* (HTLD; Grohmann 2000a, b) is marked nominative, which results in the sequence of two nominative-marked phrases even in the left-dislocation structure, as illustrated in (54a).

- (54) a. Hanging Topic Left Dislocation in German:³⁶
 die Anne, der ihr grüner Mantel ist schön.
 the_{Nom} Anne the_{Dat} her_{Nom} green_{Nom} coat is beautiful
 'Anne, her green coat is beautiful.'
 - b. Multiple-Nominative Construction in Japanese: Mary-ga kami-ga nagai (koto). Mary-Nom hair-Nom long (fact)
 Mary has long hair.

In addition, both HTLD and the MNC allow the sequence of more than two nominative-marked phrases in a single clause, as illustrated in (55).

(55)	a.	Hanging Topic Left Dislocation in German:								
		der	Fritz.	dem	sein	kleiner	Bruder.	dem	seine	Frau
		the _{Nom}	Fritz	the _{Dat}	his _{Nom}	little _{Nom}	brother	the _{Dat}	his _{Nom}	wife
		hat	eine	Werkst	att.					
		has	а	repair s	shop					
		'Fritz ₁	. his ₁ litt	tle broth	her2, his	2 wife has a rep	air shop.`			

³⁶ The determiner is in the possessive-dative form. This form is contingent on the existence of a possessive pronoun immediately following the determiner.

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Multiple-Nominative Construction in Japanese:

b.

Mary-ga	imouto-ga	kami-ga	nagai	(koto).
Mary-Nom	sister-Nom	hair-Nom	long	(fact)
'Mary's sister	r has long hair.'			

One way to distinguish between HTLD and the MNC is to see whether the relevant structure appears in embedded contexts: The former cannot appear in the embedded clause, while the latter can, as the contrast in (56) suggests.

(56) a. *Hanging Topic Left Dislocation in German*:

- * Hans weiß, dass [die Anne. der ihr grüner Mantel Hans knows that the_{Nom} Anne the_{Dat} her_{Nom} green_{Nom} coat ist schön].
 - is beautiful

'Hans knows that Anne, her green coat is beautiful.'

b. Multiple-Nominative Construction in Japanese:
John-wa [Mary-ga kami-ga nagai to] omotteiru.
John-Top Mary-Nom hair-Nom long Comp think
'John thinks that Mary has long hair.'

Then, in order to select the positive value of the multiple-specifier parameter. Japanese-learning children may have to figure out that two (or more) nominative phrases can appear in the embedded clause.³⁷ If so, the structural complexity of the triggering

³⁷ See Roeper (1973) for the proposal of the "subordinate clause strategy", which claims that children must pay attention to embedded clauses to figure out certain grammatical properties. Morgan (1986) provides a degree-1 learnability proof. The idea that children have to check whether multiple nominatives may appear in an embedded clause is still compatible with

sentence may be the cause of the delayed setting of the multiple-specifier parameter in the acquisition of Japanese, which also leads to the delayed setting of the scrambling-feature parameter, due to the conservative nature of grammar acquisition.

Yet, the above scenario is nothing more than a speculation at this point, since it is not clear whether the parameter that governs both the MNC and scrambling of the Japanese-type has consequences for other syntactic properties. Further investigation is necessary in order to determine the exact triggering experience for the relevant parameter, which I believe is the source of their delayed settings.

3.6 Conclusion

Converging evidence from comparative syntax and child language acquisition has provided strong support for a part of the parametric system of Grewendorf & Sabel (1999) that creates an implicational relationship from natural-language grammars permitting Japanese-type scrambling to those permitting the MNC. The results of my experiment with Japanese-learning children have revealed that two superficially unrelated properties of Japanese, scrambling and the MNC, emerge in a certain order in the course of acquisition. This finding provides a new instance of delayed parameter-setting, which

Lightfoot's (1991) hypothesis of "Degree-0 Learnability": Even under this proposal, children must "have access to at least the front of an embedded clause in order to set some parameters" (Lightfoot 1991:31), which eventually means that the triggering experience for some parameters has to be sentences with an embedded clause.

constitutes a novel piece of evidence from child language for the parameter-setting model of grammar acquisition. Namely, the finding strongly suggests that parameter-setting, more accurately the time required to accommodate the triggering data for the correct parameter-settings is one of the principal factors to explain the non-instantaneous and gradual nature of language development.

Appendix I to Chapter 3: Scrambling and the MNC Cross-linguistically

Multiple-Nominative Construction

(57)	Mandarin C	hinese:		
	Zhangsan	baba	hen	quiong
	Zhangsan	father	very	poor
	'Lit. Zhangs	an, father is ve	ery poor. (2	Zhangsan's father is very poor.)'
(58)	Modern Heb	rew (Doron &	Heycock	1999:80):
	ha-arye	[mekor-o	pro]	be-africa.
	the-lion	origin-his		in-Africa
	•The lion or	ginates in Afr	ica.'	
(59)	<i>Japanese</i> (U	ra 1994:34):		
	Zoo-ga	han	ia-ga	nagai.
	elephant-No	m nos	e-Nom	long
	[•] Lit. Elepha	nts. noses are l	long. (Elej	phants' noses are long.)'
(60)	Korean (Ura	a 1994:34):		
	Mary-ka	mv	vun-i	yeppu-ta.
	Mary-Nom	eye	-Nom	pretty

'Lit. Mary, eyes are pretty. (Mary's eyes are pretty.)'

(61) Modern Persian (Ura 1994:33):

Muhmud	ketâb-aš	gom	šod.
Mahmud-Nom	book-3sg-Nom	got	lost

'Lit. Mahmud, his book got lost. (it is Mahmud that his book got lost.)'

Multiple Scrambling

(62) *Multiple Scrambling in Japanese:*

a.	Mary-ga	John-ni	so-no hon-o	so-no hon-o		watasita.
	Mary-Nom	John-to	that book-A	cc		handed
	•Mary handed	i that book to John.				
b.	John-ni ₁	so-no hon-o ₂	Mary-ga	t_1	<i>t</i> ₂	watasita.
	John-to	that book-Acc	Mary-Nom			handed
c.	so-no hon-o ₂	John-ni _I	Mary-ga	t_1	<i>t</i> ₂	watasita.
	that book-Ac	c John-to	Mary-Nom			handed

(63) *Multiple Scrambling in Korean*:

a.	Mary-ka	John-ekey	ku-caek-ul	cwu-ess-tta.
	Mary-Nom	John-to	that-book-Acc	give-Past-Decl
	Mary gave the	at book to John."		
b.	John-ekey ₁	ku-caek-ul ₂	Mary-ka $t_1 t_2$	cwu-ess-tta.
	John-to	that-book-Acc	Mary-Nom	give-Past-Decl
c.	ku-caek-ul ₂	John-ekey1	Mary-ka t ₁ t ₂	cwu-ess-tta.
	that-book-Acc	John-to	Mary-Nom	give-Past-Decl

(64) Multiple Scrambling in Modern Persian (Karimi 1999:160):³⁸

a.	man	[_{VP} ke	tâb-â-ro	be Sep	ide	dâd-	am]	
	I	bo	ok-pl-râ	to Sepi	ide	gave	e-1 sg	
	'I gave th	ne book t	o Sepide.'					
b.	[ketâb-â-r	o] ₁	[be Se	pide] ₂	man	[vp	$t_1 \ t_2$	dâd-am]

- book-pl-râ to Sepide l gave-1sg Lit. 'The books, to Sepide I gave.'
- c. [be Sepide]₂ [ketâb-â-ro]₁ man [_{VP} t₁ t₂ dâd-am] to Sepide book-pl-râ I gave-1sg 'Lit. 'To Sepide, the books I gave.'

(65) *Multiple Scrambling in German*:

a.	weil ei	n Kind	dem	Mann	das Buch	gegeben	hat.
	because a	child _{nom}	the	man _{dat}	the book _{ace}	given	has
	·because a	child has g	iven t	he book to	o the man.'		

b.		weil das Buch	dem Mann	ein Kind	gegeben	hat.
		because the $book_{acc}$	the man _{dat}	a child _{nom}	given	has
c.	?	weil dem Mann	das Buch	ein Kind	gegeben	hat.
		because the man _{dat}	the book _{ace}	a child _{nom}	given	has

(66) *Multiple Scrambling in Hindi* (Kidwai 2000:3-4):

a.	nur-ne	ənjUm-ko	kıtab	di			
	Noor (SU)	Anjum (IO)	book (DO)	gave (V)			
	Noor gave Anjum a book.						
b.	ənjUm-ko	kıtab	nur-ne	di			
	Anjum (IO)	book (DO)	Noor (SU)	gave (V)			

³⁸ The particle $-r\hat{a}$ appears as -o and -ro in the colloquial language, and marks an object DP for specificity.

c.	kıtab	ənjUm-ko	nur-ne	di
	book (DO)	Anjum (IO)	Noor (SU)	gave (V)

(67) Multiple Scrambling in Russian:

a.	Ivan	podaril		Maše		sobaku	1.	
	Ivan-Nom	gave as a pres	ent	Masha	-Dat	dog-A	сс	
	'Ivan gave a d	og to Masha.'						
b.	Maše ₁	sobaku ₂	Ivan		podari	l	<i>t</i> ₁	t ₂ .
	Masha-Dat	dog-Acc	Ivan-N	lom	gave a	s a prese	ent	
c.	Sobaku ₂	Maše ₁	Ivan		podari	1	t_1	<i>t</i> ₂ .
	dog-ACC	Masha-Dat	Ivan-N	lom	gave a	s a pres	ent	

(68) *Multiple Scrambling in Serbo-Croatian*:

a.	Marija		daje		ovu	knjigu	Ivanu.
	Marija	Marija _{nom}			this	book _{acc}	Ivan _{dat}
	•Marija	a is giving this l	book to Ivan.				
b.	Ovu	knjigu	Ivanu			Marija	daje.
	this	book _{acc}	Ivan _{dat}			Marija _{nom}	gives
c.	Ivanu		ovu	knjigu		Marija	daje
	Ivan _{dat}		this	book _{acc}	c	Marija _{nom}	gives

(69) Multiple Scrambling in Turkish:

a.	Ahmet	Ayşe-ye	bu kitab-1	dün	ver-di.
	Ahmet-Nom	Ayşe-Dat	this book-Acc	yesterday	give-Past-3sg
	•Ahmet gave t	his book to Ayş	e yesterday.'		

b.	Ayşe-ye	bu kitab-1	Ahmet	dün	ver-di.
	Ayşe-Dat	this book-Acc	Ahmet-Nom	yesterday	give-Past-3sg
c.	bu kitab-ı	Ayşe-ye	Ahmet	dün	ver-di.
	this book-Acc	Ayşe-Dat	Ahmet-Nom	yesterday	give-Past-3sg

Scrambling and Weak Crossover

(70) Weak crossover mitigation by scrambling in Japanese (Saito 1992:73, Yoshimura 1992:56):

a.	?* [So-itu ₁ -no	hahaoya]-ga	dare ₁ -o	aisiteiru	no
	that-guy-Gen	mother-Nom	who-Acc	love	Comp
	•Who does his	mother love?			

b. ? Dare₁-o [so-itu₁-no hahaoya]-ga t_1 aisiteiru no who-Acc that-guy-Gen mother-Nom love Comp 'Who, his mother loves t_1 '

(71) Weak crossover mitigation by scrambling in Korean (Cho 1994:98-99):

a. *	ku _l -uy	sensayng-i	nwukwu ₁ -lul		ttayryess-ni?
	he-Gen	teacher-Nom	who-Acc		hit-Q
	His ₁ teacher	hit who ₁ ?			
b.	nwukwu ₁ -lul	ku1-uy	sensayng-i	t_1	ttayryess-ni?

who-Acc he-Gen teacher-Nom who_1 , his₁ teacher hit t_1 ?

hit-Q

(72) Weak crossover mitigation by scrambling in Modern Persian (Browning and Karimi 1994:79, 81):³⁹

a. *	Mehry	fekr-m	ikone [ke	madar-	ash	[har
	Mary	thinks-	3s	that	mother	-him		every
	danesho-i	ke	to-ye	een	kelas	ast]-ra		dust-dare]
	student-Ez	that	in-Ez	this	class	be-3s-OM		like-3s
	*Mary thinks t	hat his ₁	mother	likes ev	very stud	lent ₁ in this c	las	ss.'

- fekr-mikone [ke b. ? Mehry [har danesho-i ke Mary thinks-3s that every student-Ez that kelas ast]-ra to-ye een madar-ash dust-dare] class be-3s-OM in-Ez this mother-him like-3s
- (73) *Weak crossover mitigation by scrambling in German* (Grewendorf and Sabel 1999:16):

a. *	weil	seine ₁ Mutter	jeden Studenten ₁	liebt.
	since	his mothernom	every student _{acc}	loves
	·His ₁ mother l	oves every student ₁ .'		

b. weil [$_{1P}$ jeden Studenten_i [$_{1P}$ seine_i Mutter *t* liebt]]. since every student_{acc} his mother_{nom} loves

(74) *Weak crossover mitigation by scrambling in Hindi* (Mahajan 1994:305):

a. '.	???	uske ₁	maalik-ne		sab kitaabeN1		pheNk dii		
		its	author-ERG		all books		threw away		
'Its ₁ owner threw away all the books ₁ .'									
b.	. sab kitaabeN ₁		uskeı	maalik-ne <i>t</i>		pheNk dii			
		all boo	ks	its	author ERG		threw away		

³⁹ The *Ezafe construction* is a DP consisting of a head (an element with the feature [+N]), its modifier(s), an optional possessive DP, and the Ezafe particle <u>e</u> that is structurally used as a link between the head and its modifier.

(75) *Weak crossover mitigation by scrambling in Russian:*

a. *	Egoi	mama	ljubit		každogo	mal' čika	۱.		
	His	mother	loves		every	boy			
	'His ₁	'His ₁ mother loves every boy ₁ .'							
b. ?	Každo	ogo ma	ıl' čika _l	ego ₁	mama	ljubit	11.		

his

mother

loves

yesterday

call-Past-Agr

Weak crossover mitigation by scrambling in Serbo-Croatian:

boy

every

(76)

a. *	Njegova ₁	majka	voli	svakog ₁ .
	his	mothernom	loves	everyone _{acc}
	'His ₁ mothe	r loves everyone	eı.'	
b.	Svakogi	njegova ₁	majka	voli t_1 .

).	Svakogi	njegova	тајка	von	I_1 .
	everyone _{acc}	his	mothernom	loves	

everyone-Acc 3SG secretary-Agr-Nom

(77) Weak crossover mitigation by scrambling in Turkish:⁴⁰

a.	* [[pro ₁	secreteri]	ł	nerkesiı	dün	aramış]
		3SG	secretary-Agr-	Nom e	everyone-Acc	yesterday	call-Past-Agr
		•His ₁ s	ecretary called o	everyone	yesterday.'		
b.	??	Herkes	iı [[proı	secreteri] t ₁	dün	aramış]

⁴⁰ Kural (1992:262-3) marks * on both of the (a) and (b) examples. Yet, according to my own informant, whose judgement is shown above, there is a clear contrast in grammaticality between them. I do not have an explanation of why (b) is not perfect in Turkish, however.

Scrambling and Anaphor-Binding

- (78) Anaphor-binding by the Scrambled Phrase in Japanese (Saito 1992:74-75):
 - a. ?* [[Otagai₁-no sensei]-ga [karera₁-o hihansita]] (koto)
 each other-Gen teacher-Nom they-Acc criticized fact
 `Each other's₁ teachers criticized them₁'
 - b. ? [Karera₁-o [otagai₁-no sensei]-ga [t₁ hihansita]] (koto) they-Acc each other-Gen teacher-Nom criticized fact 'Them₁, each other's₁ teachers criticized t₁.'

(79) Anaphor-binding by the Scrambled Phrase in Korean (Cho 1994:101):

a. *	selo ₁ -uy	chinku-ka	kutul _l -ul	kosohayssta.
	each other-Gen	friend-Nom	they-Acc	sued
	'Each other ₁ 's frie	nds sued them ₁ .'		
b.	kutul ₁ -ul	[selo ₁ -uy	chinku-ka] t	kosohayssta.

- they-Acc each other-Gen friend-Nom sued 'Them_i, each other₁'s friends sued t_1 .'
- (80) Anaphor-binding by the Scrambled Phrase in Modern Persian (Browning and Karimi 1994:76):⁴¹

a. *	[madar-e	khodash] Ali-ra		koshte.	
	mother-Ez	self-him	Ali-OM	kill-3s	
	'His own mo	ther killed Ali.	•		

⁴¹ In contrast to a scrambled definite DP illustrated in (80), a scrambled indefinite DP is unable to bind an anaphor in the subject position, as shown in (i) (Browning and Karimi 1994:78).

 ⁽i) * [yek ashpaz-e kub] [madar-e khodash] *t* estekhdam kadre ast one cook-Ez good mother-Ez self-him hire-3s
 His own mother hired a good cook.

I do not have an account for this contrast.

b. ?	Ali-ra	[madar-e	khodash]	koshte.
	Ali-OM	mother-Ez	self-him	kill-3s

(81) Anaphor-binding by the Scrambled Phrase in German:

a.	*	weil	Lehrer	voneinander	den Hans	und den Otto	
		because	teachers	of-each-other	the Hans a	and the Otto	
		kritisiert	haben.42				
		criticized	have				
		'because the te	achers of each	other criticized	Hans and (Otto.`	
b.	*	weil	den Hans und	den Otto	Lehrer	voneinander	t
		because	the Hans and t	he Otto	teachers	of-each-other	
		kritisiert	haben.				

criticized have

⁴² The sentence becomes grammatical if the anaphor appears in object position:

(i)	German:		•••		
	weil der Hans und d	er Otto Lehrer	voneinander	kritisiert	haben
	because the Hans and th	ne Otto teacher	sof-each-other	criticized	have
	'because Hans and Otto	o criticized teache	ers of each other.	•	
The sar	ne holds for the example	s of other A'-scra	mbling language	es.	
(ii)	Hindi:				
	[mohən ər sita] ₁	ek dusre ₁ -ko	mara.		
	Mohan and Sita (SU)	each other (DO) hit		
	*Mohan and Sita hit ead	ch other.`			
(iii)	Russian:				
	[Ivana i Maša] ₁	uvideli	professorov	drug druga ₁ .	
	Ivan and Masha	saw	professors	each other	
	'Ivan and Masha saw th	ne professors of e	ach other.		
(iv)	Serbo-Croatian:				
	[Marko i Petar] 1	vole	prijatelje	jedan drugog ₁ .	
	Marko and Petar _{nom}	love	friends _{ace}	each other _{ge}	n
	*Marko and Petar love	friends of each of	ther.'	·	

(82) Anaphor-binding by the Scrambled Phrase in Hindi (Kidwai 2000:31):⁴³

a.	*	ek dusre ₁ -ne	[mohən ər sita] ₁ -ko		mara
		each other (SU)	Mohan and Sita (DC))	hit
		'Each other hit Mohan and Si	ta.'		
b.	*	[mohən ər sita] ₁ -ko	ek dusre ₁ -ne	t_1	mara
		Mohan and Sita (DO)	each other (SU)		hit

(83) Anaphor-binding by the Scrambled Phrase in Russian:

a. *	Professori	drug druga _l	uvideli	Ivana i M	lašu ₁ .
	professors	each other	saw	Ivan and	Masha.
	•The professo	ors of each other sav	w Ivan and Masha	•	
b. *	[Ivana i Mašu] professori	drug druga	uvideli	<i>t</i> 1.

), *	[Ivana i Mašu] ₁	professori	drug druga ₁	uvideli	1
	Ivan and Masha	professors	each other	saw	

 (v) Turkish:
 Adamlar [birbirlerinin sekreterlerini] dün aramış.
 men-Nom each other-Agr-Gen secretary-Pl-Agr-Acc yesterday call-Past-Agr
 The men called each other's secretaries yesterday.'

⁴³ Even though a scrambled phrase cannot license 'X-self' (complex) reflexive or the reciprocal, it can bind a possessive reflexive, at least for some speakers (Mahajan 1990:32-33, Mahajan 1994:307).

(i)	a.	*	apne ₁ maalik-ne	ek naukar _i	naukari	se	nikaal diyaa
			self's boss-Erg	a servant	service	from	dismissed
			*Self's boss dismiss	sed a servant.			

b.	?	ek naukar ₁	apne ₁ maalik-ne	naukari	se	nikaal diyaa
		a servant	self's boss-Erg	service	from	dismissed

Yet, Dayal (1994:249) argues that this is not possible in the dialect of most speakers. Thus, further investigation is necessary for the contrast between (82) and (i).

(84) *Anaphor-binding by the Scrambled Phrase in Serbo-Croatian:*

	a.	*	Prijatelji	jedan	drugog		vole		Marka i Petra.	
			friends _{nom}	each	othergen	n	love		Marko and Pet	ar _{acc}
			'Friends of eac	ch other	love M	arko and	l Petar.	,		
	b.	*	Marka i Petra			prijatelj	ji	jedan	drugog	vole.
			Marko and Pe	tar _{ace}		friends _r	ıom	each	othergen	love
(85)	Anc	aph	or-binding by t	he Scrai	nbled P	hrase in	Turkis	h (Kural	1992:263):	
	a.	* [[Birbirlerinin		sekreterleri]			adamları		
			each other-Ag	r-Gen	secreta	ry-Pl-Ag	gr-Norr	1	men-ACC	
			dün	aramış]					
			yesterday	call-Pa	ast-Agr					
			'Each other's	secretar	ies calle	d the me	en yeste	erday.		

b.	*	Adamlarıı	[[birbirlerinin	sekreterleri] t_1
		men-Acc	each other-Agr-Gen	secretary-Pl-Agr-Nom
		dün	aramış]	
		yesterday	call-Pst-Agr	

Appendix II to Chapter 3: Test Items and Individual Responses

Test Items in the MS Test

(86) Sentences with the basic order Subject - Locative PP - Object - Verb:

a.	Waninoko-ga	akai yane-ni	Pikachu-o	nosetayo.
	Waninoko-Nom	red roof-on	Pikachu-Acc	put
	•Waninoko put Pika	chu on the red roof.		
b.	Waninoko-ga	ookii puuru-ni	Pikachu-o	irechattayo.
	Waninoko-Nom	large pool-in	Pikachu-Acc	pushed
	Waninoko pushed	Pikachu into the large s	wimming pool.`	

(87) Sentences with the multiple-scrambled order Object - Locative PP - Subject - Verb:

a.	Togepy-o	doobutsuen-ni	Pikachu-ga	tsuretettayo.
	Togepy-Acc	zoo-to	Pikachu-Nom	took
	·Pikachu took Togepy	to the zoo.		
b.	Pikachu-o	ookii hako-ni	Pichu-ga	iretayo.
	Pikachu-Acc	large box-in	Pichu-Nom	put
	Pichu put Pikachu in	a large box.		
c.	Togepy-o	ookii booto-ni	Kasumi-ga	kaitayo.
	Togepy-Acc	large boat-on	Kasumi-Nom	drew
	•Kasumi drew Togepy	on the large boat.		
d.	Togepy-o	isu-ni	Pichu-ga	nosetayo.
	Togepy-Acc	chair-on	Pichu-Nom	put
	·Pichu put Togepy on	the chair.		

Test Items in the MNC Test

Structurally ambiguous sentences:

(88)	Osarusan-ga	ichiban	shippo-ga	nagai-tte	itta-no-wa
	the monkey-Nom	best	tail-Nom	long-C	said-C-Top
	darekana?				
	who-is it				
	Who was it that sa	id that the mo	onkey has the	e longest tail?' a	or
	•To whom was it th	hat the monke	y said, "You	tail is the longe	est"?"
(89)	Kumasan-ga	ichiban	mimi-ga	ookii-tte	itta-no-wa
	the bear-Nom	best	ear-Nom	large-C	said-C-Top
	dare-kana?				
	who-is it				
	[•] Who was it that sa	aid the bear h	as the bigges	t ears?' or	
	•To whom was it th	hat the bear sa	aid, "Your ea	rs are the bigge	st``?'
(90)	Pukachu-ga	ichiban	uta-ga	umai-tte	itta-no-wa
	Pikachu-Nom	best	song-Nom	good-C	said-C-Top
	dare-kana?				
	who-is it				

'Who was it that said Pikachu is the best singer?'

'To whom was it that Pikachu said, "You are the best singer"?"

(91)	Waninoko-ga	ichiban	oekaki-ga	jyoozuda-tte
	Waninoko-Nom	best	drawing-Nom	skillful-C
	itta-no-wa	dare-kana?		
	said-C-Top	who-is it		
	•Who was it that s	aid Waninoko	is the best in painti	ing?
	•To whom was it t	hat Waninoko	said, "You are the	best in painting"?

Structurally unambiguous sentences:

- (92) [Ichiban ude-ga nagai-tte] kumasan-ga itta-no-wa
 best arm-Nom long-C bear-Nom say-C-Top dare-kana?
 who-is it
 To whom was it that the bear said, "Your arms are the longest"?"
- (93) [Ichiban kakekko-ga hayai-tte] usagisan-ga itta-no-wa
 best running-Nom fast-C rabbit-Nom say-C-Top
 dare-kana?
 who-is it

'To whom was it that the rabbit said, "You are the fastest runner"?"

Individual Responses

The MS Test

			Test Sentences					
			(86a)	(86b)	(87a)	(87b)	(87c)	(87d)
			True	False	True	False	True	False
1.	F	3;4	C	W	С	W	С	W
2.	F	3;9	С	С	W	W	С	W
3.	F	3;9	С	С	W	С	С	W
4.	Μ	4:0	С	С	С	С	С	С
5.	F	4;2	С	С	С	С	С	W
6.	F	4;4	С	С	С	С	W	С
7.	Μ	4;5	С	С	С	W	С	W
8.	М	4;6	С	С	С	С	С	W
9.	F	4;10	W	W	С	W	С	С
10	. M	4;10	С	W	С	С	W	С
11.	. F	4;11	С	С	С	W	С	С
12	. M	5:0	С	С	W	W	С	W
13	. M	5:0	С	С	С	С	С	W
14	. F	5:1	С	С	С	W	С	W
15	. M	5:1	С	С	С	С	С	С
16	. M	5:3	W	С	С	С	С	С

- C: Correct answer
- W: Wrong answer

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					<u>Test Se</u>	ntences		
			(88)	(89)	(90)	(91)	(92)	(93)
1.	F	3;4	М	D	φ	D	С	С
2.	F	3;9	D	М	М	М	C	W
3.	F	3;9	D	D	М	D	C	С
4.	Μ	4;0	М	D	М	М	С	С
5.	F	4;2	М	М	D	М	С	С
6.	F	4;4	М	М	М	М	W	С
7.	Μ	4;5	М	М	М	М	С	С
8.	М	4;6	М	М	М	М	C	W
9.	F	4;10	D	М	М	М	W	W
10	. M	4;10	М	М	М	М	C	С
11.	. F	4;11	М	М	М	D	С	С
12	. M	5;0	D	D	D	М	С	С
13	. M	5;0	М	М	М	М	W	С
14	. F	5;1	М	D	D	D	С	С
15	. M	5;1	М	М	М	М	W	С
16	. M	5;3	М	М	М	М	C	С

- C: Correct answer
- W: Wrong answer
- φ: No answer

.

- M: Multiple-nominative interpretation
- D: Non-multiple-nominative interpretation



Chapter 4

Resultatives and Parameters

4.1 Introduction

In this chapter. I will attempt to present a new argument from acquisition for the Compounding Parameter proposed by Snyder (1995a, 2001, 2002). by showing experimentally that Japanese-learning children acquire the knowledge of Noun-Noun compounding and the knowledge of resultative construction at around the same time.¹ The results not only provide the first systematic data concerning the acquisition of resultatives in Japanese, but also constitute another instance of delayed parameter-setting.

¹ This chapter is based on the work done in collaboration with Miwa Isobe (Isobe & Sugisaki 2000, Sugisaki & Isobe 2000).

The findings argue against the view adopted in early generative grammar (Chomsky 1965) that language acquisition is a process of constructing language-particular and construction-particular rules, and in turn lend further support to the parameter-setting model of grammar acquisition.

4.2 The Theory of Compounding Parameter

It has been argued in the syntactic literature that English permits several constructions in which main verb combines with a secondary predicate at an abstract level and forms a "complex predicate" in which the verb and the secondary predicate are semantically closely related.² The following list of examples is taken from Snyder (2001:325):

(1)	a.	John <u>painted</u> the house <u>red</u> .	(resultative)
	b.	Mary <u>picked</u> the book <u>up / picked up</u> the book.	(verb-particle)
	c.	Fred <u>made</u> Jeff <u>leave</u> .	(<i>make</i> -causative)
	d.	Fred <u>saw</u> Jeff <u>leave</u> .	(perceptual report)
	e.	Bob <u>put</u> the book <u>on the table</u> .	(put-locative)
	f.	Alice sent the letter to Sue.	(to-dative)
	g.	Alice sent Sue the letter.	(double-object
			dative)

² For analyses of this type, see Larson (1988a, b, 1990) and Hale & Keyser (1993), among others. Alternative approaches can be found, for example, in Stowell (1983), Kayne (1985), Hoekstra (1988), Carrier & Randall (1992), Svenonius (1994), den Dikken (1995), and Pesetsky (1995).

The typical examples are the transitive resultatives as in (1a), in which the main verb combines with an adjective phrase (*paint <u>red</u>*), and the separable-particle constructions as in (1b), in which the main verb combines with a particle (*pick <u>up</u>*).

It has also been observed that the availability of such complex predicate constructions varies across languages. While Germanic languages allow many of these constructions, Romance languages systematically exclude them. For example, in French, resultatives of the English-type as in (1a) are not possible (cf. Green 1973): An additional element is required between the direct object and the adjective phrase, as shown in (2). French does not permit double-object datives, either, as discussed in Kayne (1984, Chapter 9).

(2)	Jean	a pein	t	la	maison	* (en)	rouge.
	John	has pa	inted	the-Fem	house	in	red
	•John	painted	the hou	se red.'			(Snyder 1995a:33)
(3) *	Jean	а	donné	Marie		un	livre.
	John	has	given	Mary		a-Masc	book
	•John	gave M	ary a bo	ok.'			(Kayne 1984:193)

Given such cross-linguistic variation, the following question naturally arises within the principles-and-parameters approach: Do the constructions listed in (1) stem from the same parameter?

In order to answer this question, Snyder & Stromswold (1997) have investigated

in detail the spontaneous speech data of twelve English-learning children available in the CHILDES database (MacWhinney & Snow 1985, 1990). The age of acquisition for each of the sentence types was determined by the age of first clear use (followed soon after by regular use). The results of their transcript analysis revealed that every child acquired the constructions in (1b-g) as a group. Based on this finding from the acquisition of English, Snyder & Stromswold have proposed that the constructions in (1b-g) stem from a common source, namely from a single, parametric property of a grammar.

As the next step. Snyder (1995a. 2001) has examined whether the availability of constructions in (1) is connected to some morphological property of a language (for related ideas, see Borer 1984, Chomsky 1993, and Fukui 1988). A detailed cross-linguistic survey has led to a surprising finding: Languages that permit complex predicate constructions are a proper subset of those that allow productive N-N compounding (like *banana box, worm can*). Table 4.1 summarizes the results of his cross-linguistic survey (Snyder 2002).

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Language Group	Novel N-N compounds?	Transitive resultatives?	Separable particles?
Austroasiatic:	Yes	Yes	Yes
Khmer			
Finno-Ugric:	Yes	Yes	Yes
Estonian			
Germanic:	Yes	Yes	Yes
Dutch			
Sino-Tibetan:	Yes	Yes	Yes
Mandarin			
Tai:	Yes	Yes	Yes
Thai			
Japanese-Korean:	Yes	Yes	No
Japanese			
American Sign Language	Yes	Yes	No
Basque	Yes	No	No
Afroasiatic:	No	No	No
Egyptian Arabic			
Austronesian:	No	No	No
Javanese			
Romance:	No	No	No
Spanish			
Slavic:	No	No	No
Serbo-Croatian			

Table 4.1:Cross-linguistic Survey

Given this strong cross-linguistic association. Snyder (1995a, 2001) then addressed the question of whether productive noun compounding and the various complex predicate constructions in (1) are acquisitionally correlated with each other. The results obtained through the examination of spontaneous speech data of ten children acquiring English drawn from the CHILDES database have led to the following finding: The ages of acquisition for novel N-N compounding (diagnosed by the first clear use followed soon after by additional uses) robustly correlate with the ages of acquisition for verb-particle constructions (1b), causative-perceptual constructions (1c,d), *put*-locatives (1e), *to*-datives (1f), and double-object datives (1g). Thus, the acquisition data provided evidence for the parametric relationship between complex predicates and morphological compounds.

Based on such converging evidence from cross-linguistic variation and child language acquisition, Snyder (2001:328) proposed that UG is equipped with what he calls the *Compounding Parameter*:

(4) *Compounding Parameter*:

The grammar {disallows*, allows} formation of endocentric compounds during the syntactic derivation. [*unmarked value]

The idea behind the Compounding Parameter is that one of the necessary conditions for a language to have complex predicate constructions is that the language has an operation that combines the main verb and the secondary predicate into a single word (namely, endocentric compound) at the point of semantic interpretation, and the operation necessary to form this predicate is the same as the one required to produce nominal compounds.³ Thus, the positive setting of the parameter in (4) directly determines the

³ For a more detailed discussion of this point, see Snyder (1995a,b) and Beck & Snyder

possibility of productive, endocentric compounding in a given language, and at the same time constitutes a necessary condition for the availability of syntactic complex predicate constructions. Snyder (1995a, 2001) further argues that this parameter cannot be reduced to the properties of functional heads or closed-class lexical items, given that no such closed-class item has been provided any independent motivation in root compounds. Therefore, the Compounding Parameter constitutes an argument against the view suggested by Borer (1984). Fukui (1988) and Chomsky (1995:6) that the parameters are restricted to the lexicon. It rather supports the earlier view of parameters presented in Chomsky (1981:6). in which parametric variation is located in various components of the grammar.

4.3 A Remaining Issue: Acquisition of Resultatives

We have seen that children learning English acquire the complex predicate constructions in (1b-g) as a group. We have also seen that the knowledge of these properties is acquired at around the same time as the knowledge of novel N-N compounds. Furthermore, we have observed cross-linguistically that transitive resultatives are possible only in those languages that permit productive N-N compounding. Yet, we can see that there is a mysterious gap: Even though transitive

(2001a,b).

resultatives are claimed to stem from the Compounding Parameter, English-learning children never reliably used this construction in their speech. The same holds for Japanese: Miyoshi (1999) examined the spontaneous speech of one Japanese-learning child (Aki; Miyata 1995) available in CHILDES, but resultatives were not observed.⁴ If resultatives are governed by the Compounding Parameter, why are they lacking in children's speech while other complex predicates are frequently observed?

There are at least three possible explanations for the absence of the transitive resultative construction in the child's spontaneous speech. The first possibility is that resultatives, even though they have shown a strong cross-linguistic association with N-N compounding, do not stem from the Compounding Parameter: The implicational relationship between resultatives and N-N compounds is merely accidental, presumably due to the limited sample size. The second possibility is that even though resultatives stem from the Compounding Parameter, there is some grammatical reason that specifically delays the acquisition of that property. The third possibility is that even though the knowledge of the resultative construction is in the grammar of children as well as the knowledge of other complex predicate constructions, there is some extra-grammatical factor that prevents children from producing that construction. This third possibility would be the one Snyder (2001:327) has in mind: He notes that "[t]he resultative construction (1a) unfortunately had to be excluded from the

⁴ For discussion of resultatives in the adult grammar of Japanese, see e.g. Hasegawa (2000), Tsujimura (1994), and Washio (1997).
spontaneous-speech analysis, because of its extremely low frequency in the speech of both children and adults." Yet, the low frequency of resultatives means that spontaneous speech is an unreliable indicator of when that property becomes available to children. Thus, we still do not know which of the three possibilities is the correct explanation.

The present study is an attempt to overcome the limitation of the corpus study by conducting an experiment, and to investigate Japanese-learning children's knowledge of transitive resultatives. The acquisitional prediction that we can draw from the theory of the Compounding Parameter is the one given in (5).

 No child should acquire the transitive resultative construction significantly earlier than novel N-N compounding.

We have seen that cross-linguistically, the languages that permit resultatives are a proper subset of those that permit N-N compounds productively. In parametric terms, this means that while the positive setting of the Compounding Parameter is a <u>sufficient</u> condition for novel compounding, it constitutes a <u>necessary</u> condition for transitive resultatives. Since the language-particular knowledge required for compounding is a proper subset of that required for resultatives, the order of acquisition stated in (5) is predicted.

Yet, there is reason to believe that a stronger prediction can be made. The order of acquisition in (5) should hold not only for resultatives but also for other complex predicate constructions like separable-particles and double-object datives, since these properties are possible only in a subset of languages that allow productive N-N compounding. Yet, as we have discussed in the previous section, both compounding and complex predicates (other than resultatives) are acquired at around the same point in time by English-learning children. This means that the positive setting of the Compounding Parameter was the <u>last</u>-acquired prerequisite for the complex predicates.⁵ If we assume that the same holds for the acquisition of the resultative construction, the following prediction is made:

(6) The transitive resultative is acquired at around the same time as productive N-N compounding.

If the results of the experiment bear out the prediction in (6), then we can say that the third of the three possibilities noted above is the correct explanation for the absence of resultatives in the child's speech. Namely, we will obtain direct evidence for the view that the positive value of the Compounding Parameter is a crucial prerequisite for the availability of the resultative construction in a given language. The experiment that I will report shortly is an attempt to show acquisitionally that transitive resultatives are in fact governed by the Compounding Parameter, by verifying the accuracy of the prediction in (6).

⁵ A question remains as to why this should be the case. If recursive compounds are the trigger for the positive setting of the Compounding Parameter, as suggested in Roeper, Snyder & Hiramatsu (2002) (see Section 4.5.5), then their frequency in the input and/or their semantic complexity might be relevant.

4.4 Logic of the Experiment

If the theory of the Compounding Parameter summarized in (7) and the acquisitional assumption stated in (8) are on the right track, then we have the acquisitional predictions given in (9).

- (7) The positive setting of the Compounding Parameter constitutes a sufficient condition for the availability of productive N-N compounding, and a necessary condition for the availability of complex predicate constructions (including transitive resultatives).
- (8) The positive setting of the Compounding Parameter is the last-acquired prerequisite for the complex predicates.
- (9) *Predictions for Acquisition:*⁶
 - a. Those children who are capable of producing novel N-N compounds are also capable of interpreting resultative constructions correctly.
 - b. Those children who are *not* capable of producing novel N-N compounds are also *not* capable of interpreting resultative constructions correctly.

The experiment reported in the next section is based on (7) -(9).

⁶ These predictions are in part based on the tasks we use in the experiment. An elicited production is used for noun compounding, and a comprehension task is employed for resultatives. This task difference stems from the difficulty in the experimental design: It is quite difficult to construct situations which uniquely require the production of resultatives.

4.5.1 Subjects

The subjects were twenty monolingual Japanese-speaking children ranging in age from 3;4 (three years, four months) to 4;11 (mean age 4;2). There were seven three-year-olds and thirteen four-year-olds.

4.5.2 Methods

The experiment consists of two tests: the N-N Compounding Test (N-test) and the Resultative Test (R-test). All the subjects received the N-test first. In both tests, the relevant materials were presented on a laptop computer. The reason for giving the N-test first was to familiarize children with this mode of presentation by assigning them (what I think is) the simpler task first.

The N-test is intended to test whether children have the knowledge to create novel N-N compounds. The task is elicited production. In this task, the child was asked to name the object in a picture presented on the laptop computer. The task proceeds as follows:

(10) *Sample procedure* (translated from Japanese to English):

Experimenter:	(Showing a picture of a bear) Do you know what this is?
Child:	A bear!
Experimenter:	(Showing a picture of a clock) Do you know what this is?
Child:	A clock!
Experimenter:	(Showing a picture of a bear-shaped clock) Now what do
	you call a clock that is in the shape of a bear?

We expected that if children have the knowledge of nominal compounding, they could name the unfamiliar object in the third picture with a novel compound. and also that if they do not have that knowledge, they would combine the two nouns with the Genitive-case marker *no*, or simply produce one of the two relevant nouns.⁷

There was one practice item and four test items, which are presented in (11). As a practice item, we have chosen a compound that is relatively lexicalized. Among the four test items, two were shape compounds and the other two were material compounds. The order of presentation of test items was counter-balanced.

(11)	Practice item:	a.	A plane made of paper	kami-hikouki	(paper plane)
	Test items:	b.	Bread in the shape of a turtle	kame-pan	(turtle bread)
		c.	A clock in the shape of a bear	kuma-tokei	(bear clock)
				/ kuma-dokei	

[a Rendaku form]⁸

⁷ For example, given (10), we expected that children would answer *kuma-no tokei* (a clock of a bear), or simply, *tokei* (a clock) or *kuma* (a bear), if they lack the knowledge of nominal compounding.

⁸ Rendaku (sequential voicing) is a phonological phenomenon observed in Japanese in which the

d	An elephant made of balloons	fuusen-zousan	•
		(balloo	on elephant)
e	A panda made of ice	koori-panda	(ice panda)

The prerequisite for passing the N-test is to produce at least three N-N compounds out of the four test items.

The R-test is intended to test whether children can correctly comprehend transitive resultatives as in (12), and hence can distinguish them from the corresponding sentences with an attributive adjective like (13).

(12)	John-ga	aka-ku	ie-o	nutteiru.					
	John-Nom	red	house-Acc	painting					
	'John is painting the house red.'								
(13)	John-ga	aka-i	ie-o	nutteiru.					
	John-Nom	red	house-Acc	painting					
	John is pain	ting the red ho	use.						

An advantage in testing Japanese-speaking children is that while in English, the order between the noun and the adjective in resultatives is different from the one in sentences with attributive adjectives (as we can see in the translations of (12) and (13)), in Japanese, we can make minimal pairs as in (12) and (13) without any word-order difference: Both examples contain the order NP-AP-NP-V. The only difference between them is the

word-initial consonant of the second word of a compound is changed from [-voiced] to [+voiced] under certain conditions. See Vance (1987) and references cited there.

inflectional ending on the adjective: -ku in the case of resultatives, and -i in the case of attributive adjectives. If it is found that children can correctly distinguish between resultatives and sentences with attributive adjectives by making use of the subtle distinction provided by the inflectional endings (and without the help of a word-order difference), then this would be a clear indication that children have knowledge of the resultative construction.^{9,10}

The task is truth-value verification, developed by Stephen Crain (Crain & Thornton 1998). The child is told a story, which is accompanied by an animation presented on a laptop computer, and at the end of each story, the character Meowce appears on the screen and describes verbally what he thinks has happened in the story. The task for the subject is to judge whether Meowce's description is correct or false, by pointing at one of the cards Meowce has in his hands: O (circle, which means 'correct') or X (cross, which means 'wrong'). A sample story is presented below:

⁹ On the other hand, we expected that if Japanese-speaking children lack the knowledge of resultatives, they will interpret a resultative like (12) as a sentence with an attributive adjective like (13), given that they had the same word-order. The assumption that children would heavily rely on the word order when they have difficulty in comprehending a certain sentence is supported by the following observation made in the acquisition of scrambling: Japanese-speaking three- and four-year-olds tend to interpret the scrambled sentence as if they were in the basic order (ignoring the case particles) when no discourse is given. See Otsu (1994).

¹⁰ An experiment with English-speaking children is in preparation in which sentences of the following type are used:

⁽i) Pat is painting something red.

This sentence is ambiguous between the resultative interpretation and the interpretation in which the adjective modifies the object noun. Thus, we predict the responses of the children who have not acquired resultatives to be as follows: They will interpret the adjective as attributive, and will not be able to assign a resultative interpretation.

(14) *Sample Story* (translated from Japanese to English):

Today, Pikachu is playing in Ash's room. In the room, there are two chairs. One chair, which is blue, belongs to his good friend Ash, and the other chair, which is red and small, belongs to Pikachu. Pikachu wants these chairs to be the same color. He walks to Ash's chair, and starts thinking about painting that chair with red paint. However, Pikachu realizes that he will be scolded very much if he paints that chair without Ash's permission. Then, what can he do? He gets a good idea. He can paint his own chair. Now, he gets blue paint, and starts painting his chair with that paint.

Meowce:	Pikachu-wa	aka-ku	isu-o	nutte-imasu.		
	Pikachu-Top	red	chair-Acc	paint-ing		
	'Pikachu is painting the chair red.'					

In the above story, if the child has the knowledge to interpret resultatives correctly, then she will judge that the description is false, because even though Pikachu once thought about painting a chair red, he gave up that idea and started painting his own chair with blue paint. On the other hand, if the child does not have the knowledge of the resultative and has wrongly assigned the interpretation of 'Pikachu is painting the red chair,' then she will judge Meowce's description to be true.

The task consists of two practice items and six test items. which are listed in (15). The order of presentation of test items was counter-balanced.

(15)	Practice Items: Expected Answer								
	a.	Pikachu-ga	chairo-i	isu-ni	suwatta-yo.	True			
		Pikachu-Nom	brown	chair-on	sat				
		•Pikachu sat or	n the brown cha	ur.'					
	b.	Pikachu-ga	shikaku-i	pan-o	totta-yo.	False			
		Pikachu-Nom	square	bread-Acc	took				
		·Pikachu took	the square brea	d.'					
	Test Ite	t Items:							
	c.	Pikachu-wa	kiiro-ku	fune-o	nutte-imasu.	True			
		Pikachu-Top	yellow	ship-Acc	paint-ing				
		·Pikachu is pai	inting the boat	yellow.					
	d.	Pikachu-wa	aka-ku	isu-o	nutte-imasu.	False			
		Pikachu-Top	red	chair-Acc	paint-ing				
		•Pikachu is pa	inting the chair	red.'					
	e.	Pikachu-wa	shiro-i	jitensya-o	nutte-imasu.	True			
		Pikachu-Top	white	bicycle-Acc	paint-ing				
		•Pikachu is pa	inting the white	e bicycle.'					
	f.	Pikachu-wa	maru-ku	kami-o	kitte-imasu.	True			
		Pikachu-Top	round	paper-Acc	cut-ing				
		•Pikachu is cu	tting a sheet of	paper round.'					
	g.	Pikachu-wa	maru-ku	hamu-o	kitte-imasu.	False			
		Pikachu-Top	round	ham-Acc	cut-ing				
		'Pikachu is cutting a slice of ham round.'							
	h.	Pikachu-wa	hoso-i	ninzin-o	kitte-imasu.	False			
		Pikachu-Top	fine	carrot-Acc	cut-ing				
		•Pikachu is cu	tting the fine ca	arrot.'					

Among the six test items, three contained the verb *nuru* 'paint', and the other three contained the verb *kiru* 'cut'. Each of these three items consisted of two resultative sentences and one sentence with an attributive adjective. The criterion for passing the R-test is to give correct answers for all of the three items with 'paint', or for all of the three items with 'cut', or both.

4.5.3 A Note on Methodology

In this experiment and the experiment reported in the previous chapter, I set up a truth-value judgement task that makes use of some animations. There are at least three advantages for this mode of presentation. For one thing, we could reduce the difference among the obtained results when an experiment is replicated. Even though the truth-value judgement task is quite effective in ascertaining young children's linguistic knowledge as shown in Crain et al. (1996), it is a relatively difficult method, and the results seem to be affected by subtle differences in the experimental design and also by how familiar the experimenters are with the task. The use of computerized animation aims to reduce these difficulties and increase the ease of replicating the experiment. For another thing, we could easily conduct the same experiment with children who speak different native languages. If we could make the animation files easily accessible to those researchers who are interested in investigating the same topic cross-linguistically, they can test

children with their native language without having the difficulty of creating stories and pictures with the appropriate design. Finally, children typically have great interest in animations and their use makes it easy for us to keep children's attention during the experiment.

4.5.4 Results

The results are summarized in Table 4.2, and the individual responses are presented in the Appendix.

Table 4.2:Performance on the N-Test and the R-Test

		<u>R-Test</u>			
		Pass	Fail		
N-Test	Pass	10	2	-	
	Fail	2	6		

A statistically significant contingency was obtained between passing/failing the N-test and passing/failing the R-test (p= .0194 by two-tailed Fischer Exact Test). This result has borne out the acquisitional prediction in (9), which in turn lends support to the hypotheses in (7) and (8).¹¹

¹¹ I also tested two adult native speakers of Japanese, and they had no difficulty in any of the test

Let us discuss some details. The ages of subjects for each cell are presented in Table 4.3. As we can see, older children tended to fall in the pass/pass cell, and younger children tended to fall in the fail/fail cell.

N-Test	R-Test	Ages of Subjects									
Pass	Pass	3;7.	3;10,	4;0,	4;1.	4;4,	4;4.	4:5.	4;5.	4;7.	4;8
Pass	Fail	4;6.	4;8								
Fail	Pass	4;8.	4;11								
Fail	Fail	3;4.	3;4,	3;7,	3;10,	3;11,	4;0				

Table 4.3:Ages of Subjects

Among the twelve children who passed the N-test, nine children produced the appropriate N-N compounds for all of the four test items. Of the remaining three, two children failed in producing one of the shape compounds, and one child failed in producing one of the material compounds. Interestingly, there was no child who produced just one or two compounds: All the children who passed the N-test successfully produced at least three compounds out of the four test items.¹²

Among the twelve children who passed the R-test, three children gave correct answers to all of the test items. Five children passed 'paint' items only, and four children

items in either test.

¹² Incidentally, three children produced the Rendaku form *kuma-dokei* for the test item 'bear clock'.

passed 'cut' items only. Among these nine children who passed either 'paint' items or 'cut' items, six children made only one error out of the six test items.

One caveat is in order. Among the twenty children tested, four of them showed an unexpected pattern of responses, by passing one test and failing the other. All of these four children were among the oldest subjects, and they seem to have shown such unexpected behavior due to an extra-grammatical reason: Their attention tended to be directed to the computer itself, not to the animations. Some modification of the experimental method is necessary to prevent this kind of situation.

4.5.5 Discussion

The results of my experiment have revealed that there is a statistically significant contingency between passing/failing the N-test and passing/failing the R-test. This finding provides a new argument for the view that the possibility of noun compounding and that of transitive resultatives are both dependent on the positive setting of the Compounding Parameter. Furthermore, the results indicated that knowledge of resultatives is in the grammar of many Japanese-speaking three- and four-year-olds, even though they may not produce that construction in their spontaneous speech.

A consequence of the experimental results is the fact that Japanese-learning children take more time to set the Compounding Parameter than English-learning

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children: While children acquiring English set the value of this parameter before or around the middle of their second year (Snyder 1995a:41), children acquiring Japanese seem to set its value around the middle of their third year (or later). These observations raise the following two questions. First, why is the setting of the Compounding Parameter in English delayed, compared to the settings of parameters like the null-subject parameter and the verb-movement parameter, which are claimed to be set correctly at the earliest observable stage (around 1:6. Wexler 1998:29)? Second, why does the setting of the Compounding Parameter show further delay in the acquisition of Japanese?

Roeper. Snyder & Hiramatsu (2002) argue that the trigger for the marked setting of the Compounding Parameter would not be the compounds that consist of two nouns (like *hand chair*), given that even in French, which does not permit productive root compounding. many lexical compounds that consist of two nouns can be observed.¹³ Roeper et al. proposed instead that the crucial trigger would be recursive compounds, compounds that consist of more than two nouns (like *student film committee*), which are nearly or entirely absent in languages like French. They report that such recursive compounds were well-attested in the early adult input to every child they examined (ten English-learning children drawn from CHILDES). Some of their examples are given in (16).

¹³ An example is *homme grenouille* (lit. 'man frog'), which means 'undersea diver.' The compounds in French only have frozen meanings.

- (16) a. Christmas tree cookie
 - b. peanut butter sandwich

If Roeper et al.'s (2002) proposal is on the right track, we can speculate the following as a plausible answer to the first question: When choosing the marked setting of the Compounding Parameter, children need to analyze a certain number of recursive compounds. in order to make sure that the value they are going to select is the correct one, and it takes some time for children to reach this threshold.

Under this scenario, the further delay in setting the Compounding Parameter observed in the acquisition of Japanese can be attributed to the nature of the input. According to my search of one Japanese corpus available in CHILDES (Aki corpus; Miyata 1995), only two examples of recursive compounds were found in the parental speech, among the 56 files (21,056 utterances).

(17)	a.	konteena+umpansha	*container-carrying truck*	
		container+carry _{noun} -car		(Aki: file 06)
	b.	konkuriito+mikusaasha	<pre>`concrete mixer truck`</pre>	
		concrete+mixer-car		(Aki: file 18)

This observation suggests that the frequency of recursive compounds in Japanese is relatively low, compared to that of English.¹⁴ Therefore, Japanese-learning children need

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¹⁴ I should stress that the frequency of recursive compounds in Japanese can be *relatively* low, but should not be *extremely* low. If the latter were the case, then many children acquiring Japanese could not encounter enough triggering data and would not reach the target grammar.

more time than English-learning children to reach the threshold. Needless to say, only one corpus has been investigated so far, and hence further investigation is necessary to confirm the plausibility of this scenario.

4.6 Conclusion

The results of my experiment with Japanese-speaking children revealed that even three-year-olds have knowledge of transitive resultatives, and also that the emergence of this knowledge correlates with the emergence of the knowledge of productive noun compounding. These findings provide the first piece of acquisitional evidence for Snyder's (1995a, 2001) view that resultatives and endocentric root compounding are crucially dependent on the positive setting of the Compounding Parameter. The results obtained in this experiment provide another instance of delayed parameter-setting, which suggests that the time required to accommodate the triggering data for parameters plays a significant role in explaining why language acquisition is non-instantaneous and gradual. In other words, the findings in this study lend further acquisitional support to the parameter-setting model of grammar acquisition.

which is obviously an undesirable result. See Lasnik & Crain (1985:151) for relevant discussion.

Appendix to Chapter 4: Individual Responses

The Resultative Test

					Test Sente	ences		
				paint			cul	
			(15c)	(15d)	(15e)	(15f)	(15g)	(15h)
1.	F	3;4	С	С	W	W	W	W
2.	Μ	3;4	С	W	С	С	W	W
3.	F	3;7	С	С	W	С	С	С
4.	F	3;7	W	С	С	С	С	W
5.	F	3;10	W	W	С	W	W	С
6.	Μ	3;10	С	С	С	С	С	W
7.	F	3;11	С	W	С	С	С	W
8.	F	4;0	С	W	С	С	W	W
9.	Μ	4;0	W	W	С	С	С	С
10.	F	4;1	С	С	С	С	С	С
11.	Μ	4;4	С	С	С	С	С	W
12.	Μ	4;4	С	С	С	С	С	С
13.	F	4;5	С	С	С	W	С	W
14.	Μ	4;5	С	С	С	С	W	W
15.	F	4;6	С	W	С	С	W	С
16.	М	4;7	С	С	С	С	W	С
17.	F	4;8	С	С	С	С	С	C
18.	F	4:8	С	W	С	W	W	W
19.	М	4:8	С	С	W	С	С	С
20.	F	4;11	С	С	W	С	С	C

C: Correct answer

W: Wrong answer

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				<u>Test Items</u>			
			(11b)	(11c)	(11d)	(11e)	
1.	F	3;4	E0	E0	EO	E0	
2.	Μ	3;4	E0	E0	E0	E1	
3.	F	3;7	С	С	С	С	
4.	F	3;7	E0	E0	EO	E0	
5.	F	3;10	E1	E0	E2	El	
6.	Μ	3;10	С	С	E2	<u>C</u>	
					(koohii-g	guma [•] coffee b	ear')
7.	F	3;11	E0	E0	E0	E0	
8.	F	4;0	E0	E0	E0	E0	
9.	М	4;0	С	С	С	С	
10.	F	4;1	С	C+R	С	С	
11.	М	4;4	EO	С	С	С	
12.	Μ	4;4	С	C+R	С	<u>C</u>	
					(yuki-pan	ida *snow pano	ia')
13.	F	4;5	С	С	С	С	
14.	Μ	4;5	С	С	С	С	
15.	F	4:6	С	C	С	С	
16.	М	4;7	С	C+R	С	С	
17.	F	4;8	E0	E0	EO	E0	
18.	F	4;8	E2	С	С	С	
19.	М	4;8	С	С	С	С	
20.	F	4;11	E2	E0	E2	E0	

C: Production of an appropriate N-N compound, +R: with Rendaku

E0: No production

E1: Production of one of the two nouns (e.g. *pan* 'bread' for 'turtle bread')

E2: Insertion of *no* 'of' between the two nouns (e.g. *kame no pan* 'bread of turtle')



Chapter 5

Concluding Remarks

The Principles-and-Parameter approach to Universal Grammar proposed in Chomsky (1981) has given a very strong impetus to studies of language acquisition through the following two notions: *principles*, which are innately specified properties of language that have to be satisfied by any natural-language grammars, and *parameters*, which are innately specified points of grammatical variation that have simultaneous consequences for different aspects of the surface grammar. These two notions yielded two major lines of research within the field of grammar acquisition. One is to show that proposed principles of UG constrain grammar acquisition from virtually the very beginning of life, and the other is to show that children acquire several properties of the target grammar as a group, as a consequence of parameter-setting. While the former line of research has been quite successful, the latter has been less so. In other words, while many principles of UG have gained strong acquisitional support, few pieces of clear evidence have been presented from child language for parameters. This situation has led to the influential proposal by Wexler (1996, 1998) that "basic" parameters are set correctly at the earliest observable stages (*Very Early Parameter-Setting, VEPS*), which implies that child language acquisition has no potential for evaluating the nature of these basic parameters. The paucity of clear evidence suggests that the "strongest" form of VEPS is also conceivable, the hypothesis that *all* the parameters are set at the earliest observable stages and hence that the process of parameter-setting is not observable at all in the time course of acquisition. If this hypothesis were correct, child language acquisition would have no potential for revealing whether language variation is constrained by parameters, or what parameters are contained in UG.

In this dissertation, I argued against this "strongest" form of VEPS, by providing three new cases of delayed parameter-setting in the course of child language acquisition. In Chapter 2, I presented acquisitional evidence for Kayne's (1981, 1984) parametric system that creates a direct implicational relationship from the existence of the prepositional complementizer (PC) construction in a given language to the availability of preposition stranding (P-stranding). It was shown that English-learning children acquire P-stranding earlier than or at around the same time as the PC construction: They never acquire the PC construction significantly earlier than P-stranding, despite the fact that these two constructions have very similar age ranges for their acquisition. These acquisitional findings are especially valuable, in light of the fact that P-stranding and the PC construction are extremely rare, according to the typological data available at this point. The results succinctly indicated that the process of setting the parameter permitting P-stranding is observable in the course of acquisition. Furthermore, it was found that English-learning children do not show pied-piping of PPs before they acquire P-stranding. This finding, I argued, suggests that the parameter of P-stranding is not specified for a default value, and more generally, provides an empirical argument that not every parameter has a default setting.

In Chapter 3, converging evidence from child language acquisition and comparative syntax was provided for the parametric system of Grewendorf & Sabel (1999) that creates an implicational relationship between Japanese-type, A-scrambling and the multiple-nominative construction. An experiment with sixteen Japanese-learning children indicated that scrambling of the Japanese-type is never acquired earlier than multiple nominatives. The results provided an argument for the multiple-specifier parameter, which (at least) these two syntactic properties are dependent on, and revealed that the process of setting this parameter can be observed in the course of acquisition.

In Chapter 4, a new acquisitional argument was presented for the Compounding Parameter proposed by Snyder (1995a, 2001). An experiment was conducted with twenty children learning Japanese, and the results suggested that the transitive resultative construction is acquired at around the same time as novel endocentric compounding. This finding provided the first piece of evidence from acquisition for Snyder's view that there is a parameter that directly relates transitive resultatives to productive root compounding, and in turn indicated that the process of setting this parameter is observable in the acquisition of Japanese, as well as in the acquisition of English.

The three cases of delayed parameter-setting I presented strongly suggest that the "strongest" form of VEPS cannot be maintained. The findings demonstrated that not all parameters are set correctly at the earliest stage, which means that the setting of some parameters takes a certain amount of time, in order to accommodate the triggering data. This observation is an indication that, as originally envisioned by Hyams (1986). parameter-setting, or more accurately the time required to accommodate the data indicating the correct parameter-settings in fact plays an important role in explaining the non-instantaneous and gradual nature of grammar acquisition.¹ Even though the exact source of the delay in setting the relevant parameters remains to be investigated further, some speculations were made for each of the three parameters.

The broader theoretical implications of this dissertation are as follows. First, cross-linguistic variation is not limited to superficial, listed idiosyncrasies, but rather is a deep domain of inquiry: The relationships among superficially unrelated constructions

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¹ More exactly, both parameter-setting and the Single Value Constraint (Gibson & Wexler 1994:411) are responsible for the gradualness. See note 13 in Chapter 1.

discussed in this dissertation cannot be expressed unless points of grammatical variation can be highly abstract. Second, the idealization to the instantaneous acquisition is still valid, and makes it possible to attribute systematic variation in adult grammars directly to the parameters of the initial state. Finally and most importantly, this dissertation demonstrated that child language acquisition is a rich source of evidence concerning the innate constraints on language variation.

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