

THE ACQUISITION OF THE MECHANISM OF UNSELECTIVE BINDING, LF *WH*-MOVEMENT AND CONSTRAINTS ON MOVEMENT*

Yoshie Kabuto
Nanzan University

1. Introduction

In this paper, based on an experimental study, we discuss the acquisition of LF *wh*-movement and the constraints on the movement. The purpose of this paper is to provide some pieces of empirical evidence for the proposal that young children know the mechanism of unselective binding, and to present support for the claim that young children know constraints regulating the locality of LF *wh*-movement at a very early stage of language acquisition.

It has been reported in Sugisaki (1999) that Japanese-speaking children of three and four year olds know that *wh*-adverbial *naze* ‘why’ cannot appear in an island, and hence, children have the knowledge of LF *wh*-movement and constraints on movement. In this paper, based on the syntactic analysis by Tsai (1994) and his subsequent works, we compare two *wh*-phrases, *naze* ‘why’ and *dooiu riyuu-de* ‘for what reason.’ These two *wh*-phrases show different behavior when they appear within an island. More specifically, island effects are observed when *naze* ‘why’ appeared in an island, while no island effects are observed when *dooiu riyuu* ‘what reason’ appeared in an island. We examine when and how Japanese-speaking children acquire the differences between *naze* ‘why’ and *dooiu riyuu-de* ‘for what reason,’ and the relevant syntactic properties.

2. Theoretical Background

In this section, I will briefly discuss the mechanism of *wh*-movement and unselective binding in Japanese.

2.1 An Argument vs. Adjunct Asymmetry with Respect to the Empty Category Principle (Huang 1982, Lasnik and Saito 1992)

It has been argued that Japanese *wh*-element does not obligatorily move overtly (Kuno

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1973). According to Huang (1982), however, even in languages without overt *wh*-movement, the sentence becomes ungrammatical when an adjunct *wh*-phrase appears within an island. Compare (1) and (2).

- (1) Kimi-wa [NP [S' e₁ nani-o katta] hito]-o sagasiteiru no?
 you-TOP what-ACC bought person-ACC looking.for Q

Lit. 'What are you looking for the person [who bought *t*]?'

- (2) *Kimi-wa [NP [S' e₁ naze sono hon-o katta] hito]-o sagasiteiru no?
 you-TOP why that book-ACC bought person-ACC looking.for Q

Lit. 'Why are you looking for the person [who bought that book *t*]?'

(1) contains the *wh*-argument *nani* 'what' whereas (2) contains the *wh*-adjunct *naze* 'why.' In (2), contra to (1), the sentence becomes ungrammatical when an adjunct *wh*-phrase appears within an island. Huang (1982) explains the contrast in grammaticality between (1) and (2), employing the Empty Category Principle (ECP) and LF *wh*-movement.¹ According to him, *wh*-phrases undergo LF movement to the matrix CP. In (1), the initial trace of *nani* 'what' is properly governed by the lexical verb, and hence, the ECP is satisfied. In (2), on the other hand, the initial trace of *naze* 'why' cannot be governed by the verb because it is an adjunct. It is not governed by its antecedent either due to the presence of the NP node. Therefore, the ECP is not satisfied, and the sentence in (2) becomes ungrammatical. Based on this analysis, Huang (1982) suggests that the ECP holds in LF, while Subjacency is not applied to LF movement.

2.2. Unselective Binding (Tsai 1994)

Tsai (1994) presents another account for the contrast between (1) and (2). According to Tsai (1994), there are two ways to construe the operator-variable pair. One way is to unselectively bind *wh*-in situ by a Q(uestion) operator as in (3a). The other way is to move the *wh*-in-situ into the specifier position of [+*wh*] C, so that the moved *wh*-phrase binds its trace, as in (3b).

- (3) a. [X' Op_i[Q] [X' ... wh(i) ...]]
 b. [X' wh_i [X' ... t_i ...]]

Whether the *wh*-phrase is unselectively bound in situ as in (3a) or move to the specifier

¹ The Empty Category Principle (ECP) (Chomsky 1981) is stated as follows:

- (i) A nonpronominal empty category must be properly governed-

Lasnik and Saito (1992) define proper government as follows:

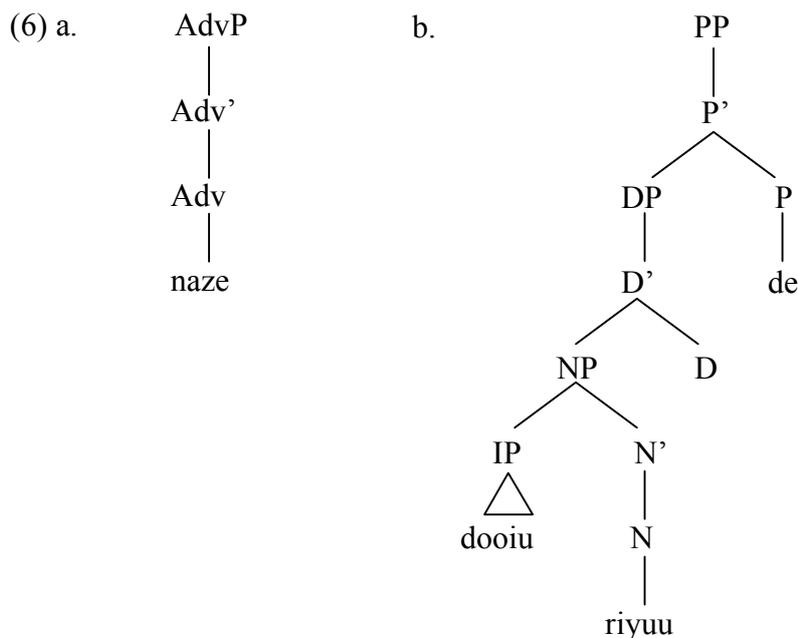
- (ii) a. α lexically-governs β if α c-commands β , and α assigns Case or a θ -role to β .
 b. α antecedent-governs β if α binds β , and β is subjacent to α .

position as in (3b) depends on whether the *wh*-phrase contains a nominal item or not. Specifically, when the *wh*-phrase contains a nominal element, it is a variable to be bound by Q-operator. When the *wh*-phrase does not contain a nominal element but a pure adjunct, the *wh*-phrase is not a variable but an operator and hence, it has to move to the specifier position.

Keeping this in mind, consider the Japanese examples in (4) and (5).

- (4) *John-wa [Mary-ga naze sono hon-wo yonda atoni] okotta no?
 John-TOP Mary-NOM why the book-ACC read after got.angry Q
 ‘Why did John get angry [after Mary read the book *t*]?’
- (5) John-wa [Mary-ga dooiu-riyuu-de sono hon-wo yonda atoni] okotta no?
 John-TOP Mary-NOM for what reason the book-ACC read after got.angry Q
 ‘For what reason did John get angry [after reading the book *t*]?’

Suppose Tsai’s (1994) account applies to Japanese, then the contrast between (4) and (5) is explained as follows: In (4), *naze* ‘why’ is an adverb, which cannot be a variable to be unselectively bound by a Q feature. Therefore, it cannot be licensed through unselective binding so that it has to move to the spec of CP. However, this movement violates the ECP and the sentence is ruled out. In (4), *dooiu riyuu* ‘what reason’ is an NP, and hence, it can be licensed through unselective binding. The inner structures of *naze* ‘why’ and *dooiu riyuu-de* ‘for what reason’ are represented in (6a) and (6b) respectively.



As in (6a), *naze* ‘why’ is an adverb. On the other hand, as in (6b), *riyuu* ‘reason’ is a noun and hence, *dooiu riyuu-de* ‘for what reason’ is a phrase including a nominal element.

The contrast between (4) and (5) is crucial in our experimental study, which will be discussed in Section 4.

3. Previous Studies on the Acquisition of *Wh*-questions

3.1. Acquisition of *Wh*-questions

I will briefly overview the acquisition of *wh*-questions in Japanese. Table 1 illustrates the developmental order for *wh*-words in Japanese.

Table 1 Developmental order for *wh*-words in Japanese

<i>wh</i> -word	Average age of acquisition
doko (where), nani (what)	1;8
dare (who)	1;11
dore (which)	2;1
dou (how), donna (what kind of)	2;3
doushite (why/ how)	2;5
dotti (which), dare-no (whose)	2;6
naze (why)	3;0
ikura (how much)	4;0
dono (which), itsu (when)	4;10

(Okubo 1967: 167)

For the purpose of this paper, I focus on children's utterances related to *naze* 'why' and *dooiu riyuu-de* 'for what reason.'²

The utterance of *naze* is observed at 3:0, as in (7).

- (7) Karasu naze naku no desyo? (3;0)
crow why sing Q

'Why does a crow sing?'

(Okubo 1967: 165)

The use of *dooiu riyuu-de* 'for what reason' itself is not observed. However, it is a complex expression, and *dooiu* 'how' and *de* 'by', which are subparts of the expression, are independently observed in children's speech, as in (8) and (9), respectively.

- (8) Kojika Banbi tteiunowa dooiu mono-o tabemasu ka? (4;2)
child deer Banbi what is called what kind of thing-ACC eat Q

Lit. 'What does the what is called child deer Banbi eat?'

(Okubo 1967: 166)

- (9) Kuruma de? (1;11)
car by

'By car?'

(Okubo 1967: 92)

(8) is an utterance containing *dooiu* 'what kind of', which is found at the age of 4;2. (9) is an utterance containing *de* 'by', which is found at the age of 1;11. As for *riyuu* 'reason', there is

² See Okubo (1967) for more data.

no data listed, but it is reported that its first use was observed between 3;0 to 3;11 (Okubo 1967: 14).

Table 2 illustrates the developmental order for *wh*-words in English.

Table 2 Developmental order for *wh*-words in English

<i>wh</i> -word	Average age of acquisition
where, what	2;2
who	2;4
how	2;9
why	2;11
which, whose, when	After 3;0

(Bloom, Merkin, and Wootten 1982: 1086)

According to Bloom, Merkin, and Wootten (1982), the first use of *why* is observed at the age of 2;11. Since the first use of Japanese *naze* ‘why’ in the database we looked at was observed at 3;0, the acquisition of *why* in English and *naze* in Japanese is similar in terms of the age of acquisition. The use of *for what reason* is not reported. As for other types of *wh*-questions, Japanese *wh*-questions seem to be acquired earlier than English *wh*-questions in general. As Luigi Rizzi (p.c.) suggests, the age difference in the acquisition in English and Japanese may be due to the difference between overt vs. covert movement.

3.2. Acquisition of LF *Wh*-movement: Sugisaki (1999)

In this section, I overview a prior experimental study on the acquisition of LF *wh*-movement. Sugisaki (1999) conducted an experiment to investigate children’s knowledge of LF *wh*-movement and of the constraint on movement, namely, the ECP in Japanese. The subjects were seventeen Japanese-speaking children ranging in age from 3;4 to 4;8. The average age was 4;2. The method he used in the experiment was a comprehension task.

A question like (10) is asked by an experimenter after a story is presented.

- (10) Nande sono hon-o yomu maeni [_{CP} John-wa okotta no]?³
 why that book-ACC read before John-TOP got.angry Q
 ‘Why did John get angry before reading that book?’

(10) potentially has two interpretations, as in (11).

- (11) a. Nande [_{CP} *pro*_i sono hon-o yomu maeni] John_i-wa okotta no?
 why that book-ACC read before John-TOP got.angry Q
 ‘Why did John get angry *t* [before reading that book]?’

³ *Nande* is a colloquial form. When *nande* is used for asking reasons as *naze* is, it behaves in the same way as *naze* with respect to the obedience to various islands.

- b. * [_{CP} *pro*_i nande sono hon-o yomu maeni] John_i-wa okotta no?
 why that book-ACC read before John-TOP got.angry Q
 ‘Why did John get angry [before reading that book *t*]?’

In (11a), the *wh*-phrase *naze* ‘why’ is interpreted as an element of the matrix clause. On the other hand, in (11b), the *wh*-phrase is interpreted as an element embedded within the adjunct clause. However, this interpretation is impossible, as indicated by * in (11b), because LF *wh*-movement of *naze* is subject to the ECP. The trace of the *wh*-phrase in (11b) violates the principle. Therefore, if children interpret (10) to be (11a) but not (11b), then it implies that they know that a *wh*-phrase moves to the Spec of the matrix CP at LF and the movement in question is constrained by the ECP. However, there is one possibility to be excluded in order to confirm the result. Because the matrix verb comes after the verb of the adjunct clause, children may simply construe the *wh*-phrase as a matrix element presumably for a processing reason. In other words, children may have interpreted *naze* ‘why’ as an element of the matrix clause only because they tend to associate the *wh*-word with the verb they hear at last, regardless of whether the embedded clause is an island or not. Therefore, the question (12) is included in the experiment.

- (12) Nande Pikachu-ga ouchi-ni kaettekita to Satoshi-wa omotta no?
 why Pikachu-NOM home-to came.back that Satoshi-TOP thought Q
 ‘Why did Satoshi think that Pikachu came back home?’

- (13) a. Nande [_{CP} Pikachu-ga ouchi-ni kaettekita to] Satoshi-wa omotta no?
 why Pikachu-NOM home-to came.back that Satoshi-TOP thought Q
 ‘Why did Satoshi think *t* [that Pikachu came back home]?’

- b. [_{CP} Nande Pikachu-ga ouchi-ni kaettekita to] Satoshi-wa omotta no?
 why Pikachu-NOM home-to came.back that Satoshi-TOP thought Q
 ‘Why did Satoshi think [that Pikachu came back home *t*]?’

In (12), the embedded clause is a CP complement, not an adjunct clause, and the *wh*-phrase *naze* ‘why’ can serve as a modifier within the embedded clause. Therefore, (12) is ambiguous as in (13a) and (13b). If children gives the ‘embedded’ answer more often with a ‘island-less’ question like (12) than with an ‘island’ question like (10), then children’s choice of (11a) over (11b) should not be due to the problems in processing mentioned earlier but due to the knowledge of the constraint on movement.

The result clearly confirms the prediction. For (10), the subjects chose the interpretation in (11a) 97% of the time. For (12), on the other hand, they chose (13a) only 36% of the time.

Sugisaki (1999) argues that children of three and four years of age have the knowledge of LF *wh*-movement and the ECP.⁴

4. An Experimental Study on Two Types of “Reason” Questions

In this section, I will discuss the experimental study on when and how children come to know the differences between *naze* ‘why’ and *dooiu riyuu-de* ‘for what reason’ and discuss when and how the mechanism of LF *wh*-movement and constraints on movement are acquired.

4.1. Purposes and the Hypothesis

The purpose of the experiment is to examine children’s knowledge of the mechanism of unselective binding, LF *wh*-movement, and the ECP, by using a contrast in grammaticality obtained between *naze* ‘why’ and *dooiu riyuu-de* ‘for what reason’ when they are embedded within an adjunct clause. The contrast between (14) and (15) is an illustration.

- (14) *_[CP pro_i nande sono hon-o yomu maeni] John_i-wa okotta no?
 why that book-ACC read before John-TOP got.angry Q

Lit. ‘Why did John get angry [before reading that book *t*]?’

- (15) _[CP pro_i dooiu riyuu-de sono hon-o yomu maeni] John_i-wa okotta no?
 for what reason that book-ACC read before John-TOP got.angry Q

Lit. ‘For what reason did John get angry [before reading that book *t*]?’

The hypothesis of this experiment is as follows:

- (16) If unselective binding, LF movement, and the ECP are operative in children’s grammar, children who pass the pre-test will interpret *naze* ‘why’ in the matrix clause, but not as an element of the adjunct clause, while they will interpret *dooiu riyuu* ‘what reason’ either inside or outside the adjunct clause.

4.2. Subjects

The subjects are forty children ranging in age from 3;0 to 6;7. The mean age is 5;2. There are ten three-year-olds, ten four-year-olds, ten five-year-olds, and ten six-year-olds. Ten adults are also tested as a control group. All of them are native speakers of Japanese. They are tested individually.

⁴ See Sugisaki (1999) for the detailed analysis.

4.3. Procedures

In the experiment, the Truth-Value Judgment Task was used. There are two experimenters for a subject. One experimenter tells a story and asks a question on it, and the other experimenter, having a puppet, answers the question. Then, a subject is asked to judge whether the answer is correct or not.

The experiment consists of a pre-test and a main test. In the pre-test, children are tested with respect to whether they have the lexical knowledge of *naze* ‘why’ and *dooiu riyuu-de* ‘for what reason.’ One of the test sentences is given in (17).

- (17) Naze Shou-kun-wa mainichi mikan-o taberu no?
 why Shou-TOP everyday tangerine-ACC eat Q
 ‘Why does Shou eat tangerine every day?’

Then, to test whether the subjects have acquired the lexical knowledge of temporal adjuncts and conditional adjuncts, sentences such as (18) are used.

- (18) Shou-kun-wa mikan-wo tabeta atoni, te-o araimashita.
 Shou-TOP tangerine-ACC ate after hands-ACC washed
 ‘After Shou ate a tangerine, he washed his hands.’

The subjects are shown two pictures: one describes Shou, washing his hands after having eaten a tangerine while the other describes him eating a tangerine after having washed his hands. The subjects are asked to choose the picture which matches the story.

The main test consists of two sessions: session 1 and session 2. Session 1 consists of five questions, where *dooiu riyuu-de* ‘for what reason’ is used. The questions are divided into three types: (19), (20), and (21).

(19) Type 1: Temporal Adjunct

Dooiu riyuu-de banana-o moratta atoni kumasan-wa banana-o
 for what reason banana-ACC received after bear-TOP banana-ACC
 zenbu tabeta no?
 all have eaten Q

‘For what reason did the bear eat all the bananas after he got them?’

(20) Type 2: Conditional Adjunct

Dooiu riyuu-de byouin-e iku to Taro-wa beddo-ni neru no?
 for what reason hospital-to go if Taro-TOP bed-on lie Q

‘For what reason did Taro lie on a bed if he goes to bed?’

(21) Type 3: CP Complement

Dooiu riyuu-de Taro-wa Hanako-ga kouen-e itta to omotta no?
 for what reason Taro-TOP Hanako-NOM park-to went that thought Q

‘Why did Taro think that Hanako went to the park?’

In (19), (20) and (21), *dooiu riyuu* ‘what reason’ can be interpreted as an element either within the matrix clause or the adjunct clause.

Session 2 consists of five questions, where *naze* ‘why’ is used. The questions are divided into the same three types as those asked in session 1. (22), (23) and (24) are the test sentences.

(22) Type1: Temporal Adjunct

Naze gakkou-o yasunda atoni Kumasan-wa terebi-o mita no?
 why school-ACC absent after Bear-TOP television-ACC watched Q

‘Why did the bear watch television after he absented himself from school?’

(23) Type2: Conditional Adjunct

Naze suupaa-e iku to Taro-wa narande matsu no?
 why supermarket-to go if Taro-TOP in line wait Q?

‘Why does Taro wait in line if he goes to a supermarket?’

(24) Type3: CP Complement

Naze Hanako-wa Taro-ga giuniu-o nonda to omotta no?
 why Hanako-TOP Taro-NOM milk-ACC drank that thought Q

‘Why did Hanako think that Taro had drunk some milk?’

As noted in 2.2, *naze* ‘why’ cannot be unselectively bound and therefore has to move to the matrix CP, but this movement induces the ECP violation. Thus, (22) and (23) only allow the *wh*-phrase to be interpreted as a matrix modifier. However, in (24), *naze* ‘why’ is in a CP complement rather than an adjunct clause. Hence, it can be interpreted either within the matrix clause or the CP complement.

Table 3 summarizes the patterns attested in the main test.

Table 3 Possible interpretations of the test sentences used in the main test

Sentence type	temporal adjunct		conditional adjunct		CP complement	
	Embedded	Matrix	Embedded	Matrix	Embedded	Matrix
A given reading for what reason	OK	OK	OK	OK	OK	OK
why	*	OK	*	OK	OK	OK

As for ‘for what reason’ questions, the *wh*-phrase can be interpreted both as an element of the adjunct clause and an element of the matrix clause. On the other hand, the *wh*-phrase in ‘why’

questions cannot be interpreted as an element within the adjunct clause, although it can be interpreted as an element of the CP complement.

4.4. Results

Table 4 shows the results of the pre-test for different age groups.

Table 4 The results of the pre-test (different age groups)

	6-year-olds	5-year-olds	4-year-olds	3-year-olds	total
Percentage correct	100%	100%	100%	60%	90%

As seen in Table 4, four, five, and six year olds gave a correct answer for all the sentences in the pre-test. On the other hand, six out of the ten three-year-old children gave a correct answer for all the sentences.

Table 5 shows the percentages of the correct responses in the main test, sorted out by different age groups.

Table 5 The percentages of the correct responses in the main test (different age groups)

The type of a sentence		Temporal adjunct		Conditional adjunct		CP complement
A given reading		Embedded	Matrix	Embedded	Matrix	Embedded
3-year-olds (N=6)	for what reason	83.3%	100%	100%	100%	83.3%
	why	83.3%	100%	66.7%	100%	100%
4-year-olds (N=10)	for what reason	100%	90%	100%	100%	80%
	why	80%	100%	90%	100%	100%
5-year-olds (N=10)	for what reason	100%	100%	100%	100%	100%
	why	80%	100%	80%	100%	100%
6-year-olds (N=10)	for what reason	90%	100%	80%	90%	80%
	why	80%	100%	80%	90%	90%
Adults (N=10)	for what reason	100%	100%	100%	100%	80%
	why	100%	100%	100%	100%	80%

Since Table 5 illustrates the percentages of the correct responses, the percentages are acceptance rates except for those for the embedded responses to *naze* ‘why’ questions. The table reads as follows: for example, 83.3% on the left top indicates that the three year olds understood ‘for what reason’ as a modifier outside the temporal adjunct clause 83.3% of the time. On the other hand, as indicated by the second row of the same column, they refused, at the same rate, to interpret ‘why’ in such a way. Also, 66.7% in the second row under the ‘Conditional adjunct’ column means that the three years correctly rejected the matrix reading of ‘why’ at this rate.

4.5. Discussions and Conclusion

The results show that children accepted the interpretation of *dooiu riyuu* ‘what reason’ both as an element of the matrix clause and as that of the adjunct clause, almost as often as adults did. The results also show that children, almost as often as adults did, accepted the interpretation of *naze* ‘why’ as an element of the matrix clause and rejected the other, ECP-violating interpretation, although three-year-olds gave a correct answer at a little lower rate compared with the other age groups.

Judging from the percentages of the correct responses, we conclude that children know that only *dooiu riyuu-de* ‘for what reason’ but not *naze* ‘why’ can survive in the adjunct clause. Analyses of variance show that the effect was statistically significant ($p < .0001$).

For the CP complement sentences, both *wh*-phrases are interpreted by children as an element of the embedded clause. This result excludes the possibility that children simply construe the *wh*-phrase to the matrix verb for the processing reason mentioned above.

There may be a possibility, however, that the different judgments observed between ‘why’ and ‘for what reason’ questions are due to the fact that the stories for the ‘why’ sentence and ‘for what reason’ sentence are different. To exclude this possibility, a follow-up experiment is conducted. The procedure is the same as the one used in the main test. This time, however, *naze* ‘why’ is used in session 1 and *dooiu riyuu-de* ‘for what reason’ is used in session 2. Only those who gave the adult-like responses in the main test participated in this experiment.

Table 6 shows the percentage of the correct response of the follow-up test.

Table 6 The percentages of the correct responses of the follow-up test (different age groups)

The type of a sentence		Temporal adjunct		Conditional adjunct	
		Embedded	Matrix	Embedded	Matrix
3-year-olds (N=3)	why	100%	100%	100%	100%
	for what reason	100%	100%	100%	100%
4-year-olds (N=4)	why	75%	100%	100%	100%
	for what reason	100%	100%	75%	100%
5-year-olds (N=4)	why	100%	100%	75%	100%
	for what reason	75%	100%	100%	100%
6-year-olds (N=5)	why	100%	100%	100%	100%
	for what reason	100%	100%	100%	100%

As in table 6, 75% of the four-year-olds correctly rejected interpreting *naze* ‘why’ as modifier embedded inside a temporal adjunct. 75% of the five-year-olds correctly rejected interpreting *naze* ‘why’ as a modifier embedded inside a conditional adjunct. For *dooiu riyuu-de* ‘for what reason’ questions, 75% of the four-year-olds correctly accepted interpreting the *wh*-element

inside a conditional clause, and 75% of the five-year-olds correctly accepted interpreting it inside a temporal adjunct. Unlike these four cases, all the other responses are identical to the responses by the adults. The results show that there is no preference for construing one of the verbs in the test sentences for contextual reasons.

Therefore, the results imply that although both *naze* ‘why’ and *dooiu riyuu-de* ‘for what reason’ are *wh*-phrases for asking reasons, children as young as three know that only the latter, which contains a *wh*-nominal *dooiu riyuu* ‘what reason’, can appear in an island. That is, children are sensitive to the syntactic category of these *wh*-expressions and know that nominal *wh*-elements can be unselectively bound in situ, while *wh*-adverbs like *naze* ‘why’ cannot be unselectively bound, and therefore have to move into the specifier position of the matrix CP. In other words, children know that when *naze* ‘why’ moves into the specifier position of the matrix CP across an adjunct clause, the trace of it is not properly governed, and hence it violates the ECP.

5. Conclusion

In this paper, we discussed children’s knowledge on the mechanism of unselective binding and LF *wh*-movement. Based on the experimental study, I showed that children distinguish *naze* ‘why’ and *dooiu riyuu-de* ‘for what reason’ at a very early stage of language acquisition. Although we found that some of the children at the age of three years have not acquired the lexical knowledge of the *wh*-phrases used in the experiment, our study showed that once children acquire the relevant *wh*-phrase, they become capable of unselective binding, and sensitive to constraints regulating the locality of LF *wh*-movement.

References

- Bellugi, Ursula. (1971) “Simplification in Children’s Language.” In R. Huxley and E. Ingram (eds.), *Language Acquisition: Models and Methods*, 95-119. New York: Academic Press.
- Bloom, Lois, Susan Merkin, and Janet Wooten. (1982). “Wh-questions: Linguistic Factors that Contribute to the Sequence of Acquisition.” *Child Development* 53: 1084-92.
- Chomsky, Noam. (1981) *Lectures on Government and Binding*. Dordrecht: Foris Publications.
- Chomsky, Noam. (1986) *Barriers*. Cambridge, MA: MIT Press.
- Clancy, Patricia. (1985) “The Acquisition of Japanese.” In D. I. Slobin (ed.), *The Crosslinguistic Study of Language Acquisition (vol.1)*. Hillsdale, NJ: Lawrence Erlbaum Associates Publishers.
- Collins, Chris. (1991) “Why and How Come.” *MIT Working Papers in Linguistics* 15: 31-45. Cambridge, MA: MIT.
- Crain, Stephen and Rosalind Thornton. (1998) *Investigations in Universal Grammar*. Cambridge, MA: MIT Press.
- Goodluck, Helen, Michele Foley and Julie Sedivy. (1992) “Adjunct Island and Acquisition.” In H. Goodluck and M. Rochemont (eds.), *Island Constraints*, 181-194. Dordrecht: Kluwer Academic Publishers.

- Huang, C.-T. James. (1982) *Logical Relation in Chinese and the Theory of Grammar*. Ph.D. Dissertation, MIT.
- Klima, Edward, and Ursula Bellugi. (1966) "Syntactic Regularities in the Speech of Children." In J. Lyons and R.J. Wales (eds.), *Psycholinguistic Papers*, 183-208. Edinburgh: Edinburgh University Press.
- Kuno, Susumu (1973) *The Structure of the Japanese Language*. Cambridge, MA: MIT Press.
- Lasnik, Howard and Mamoru Saito. (1992) *Move α* . Cambridge, MA: MIT Press.
- Murasugi, Keiko. (1991) *Noun phrases in Japanese and English: A Study in Syntax, Learnability and Acquisition*. Ph.D. dissertation. University of Connecticut.
- O'Grady, William. (1997) *Syntactic Development*. Chicago: The University of Chicago Press.
- Okubo, Ai. (1967) *Yooji Gengo no Hattatsu*. Tokyo: Tokyodo.
- Reinhart, Tanya. (1998) "Wh-in-situ in the Framework of the Minimalist Program." *Natural Language Semantics* 6: 29-56.
- Stromswold, Karin. (1990) *Learnability and the Acquisition of Auxiliaries*. Ph.D. Dissertation. MIT.
- Sugisaki, Koji. (1999) "LF Wh-Movement in Child Japanese." Paper presented at GALA '99.
- Tsai, W.-T. Dylan. (1994) *On Economizing the Theory of A-bar dependencies*. Ph.D. dissertation. MIT.
- Tsai, W.-T. Dylan. (2006) *Lectures on the Syntax & Semantics of How and Why*. Handout of the Summer Intensive Seminar at Nanzan University, September 12th-13th, 2006.